

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

applications by **Otamatapaio Station Limited**
filed under:

CRC012047 – a water permit to divert, take and use water from the Otamatapaio River for domestic use, stockwater and irrigation of 345 hectares at Otamatapaio Station, SH83

CRC012049 – to discharge bywash water into Clarks Creek; and

CRC012727 – to maintain a diversion and intake structure in the bed of the Otamatapaio River

**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

- 1.1 This is a decision on three applications by **Otamatapaio Station 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

- 2.1 This proposal is to replace consents for irrigation of the property that have recently expired and irrigate additional land through a spray irrigation system. The following description includes modifications made to the proposal since notification (including the exclusion of stock water requirements), which we discuss further below.
- 2.2 The applicant proposed to divert, take and use water up to a maximum rate of 170 litres per second from the Otamatapaio River (at or about map reference NZMS 260 H40:774-195). This water will be used to irrigate an area of 200 hectares within a command area of approximately 425 hectares on Otamatapaio Station.
- 2.3 The rate of take will vary depending on the flow in the Otamatapaio River as follows:
- (a) Where flows are greater than 600 L/s, the maximum rate of take shall be 170 L/s;
 - (b) Where flows are between 600 L/s and 450 L/s, the maximum rate of take shall be 140 L/s;
 - (c) Where flows are between 450 L/s and 200 L/s, the maximum rate of take shall be 140 L/s and the applicant shall comply with a flow sharing regime with Bog Roy Station (CRC12019) to ensure the minimum flow remains above 200 L/s; and
 - (d) Where flows are less than 200 L/s, all takes for irrigation purposes shall cease.
- 2.4 Although the application proposes a maximum rate of 170 litres per second, the "usual" rate of abstraction will be 140 litres per second. The volume of water diverted shall not exceed 1,496,760 cubic metres per year. A total of 716,800 cubic metres of water per year will be used on the area identified in the Figure 1 as "Crossover irrigation area" in conjunction with consent CRC012330 (discussed further below).
- 2.5 Based on the FEMP provided by the applicant, approximately 136ha of the property is currently irrigated under existing consents, including 76 ha of spray irrigation, 20 ha under modern border dykes and 40ha under an older border system using wild flooding. For the first five years of the consent, it is proposed that water will be used for irrigation using the existing irrigation system. Water will be conveyed from the diversion point through a race system that serves the current border-dyke system and a gravity-fed to a centre pivot at the lower end of the irrigation area.
- 2.6 Within five years of granting this consent, the irrigation system will be upgraded to irrigate a total of 200ha on the property using spray irrigation only. This is an increase of approximately 64ha from the area currently irrigated. The applicant advised that an upgrade of the race system to pipes will be considered when the spray system is established and will depend on flow losses. There is no change to the annual volume proposed when this conversion occurs as the above annual volume of 1,496,760 cubic metres per year has been calculated based on a spray system.
- 2.7 Unused irrigation and stockwater diverted through the race system will be discharged into Clarks Creek at a rate of up to 200 litres per second and 120,960 cubic metres per week. The applicant has proposed that the discharge will not cause erosion to the bed or banks of Clark Creek.
- 2.8 A land use consent has also been applied for general maintenance works of the existing twin pipe intake structure and any upgrade of the fish screen that may be required. Further details on the land use consent are as follows:

- (a) The works shall include repair or replacement of the intake structure should it be washed out or damaged following a flood or fresh in the river and works to divert water upstream of the intake to enable flow past the intake structure.
 - (b) The works are expected to take up to one day to complete each time and will be periodic.
- 2.9 If complete replacement of the intake is required, the stream may need to be diverted around the works site so as 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.
- 2.10 Figure 1 below illustrates the location of the proposed take, the irrigation area (including the "Crossover irrigation area", and the discharge point into Corbies Creek.

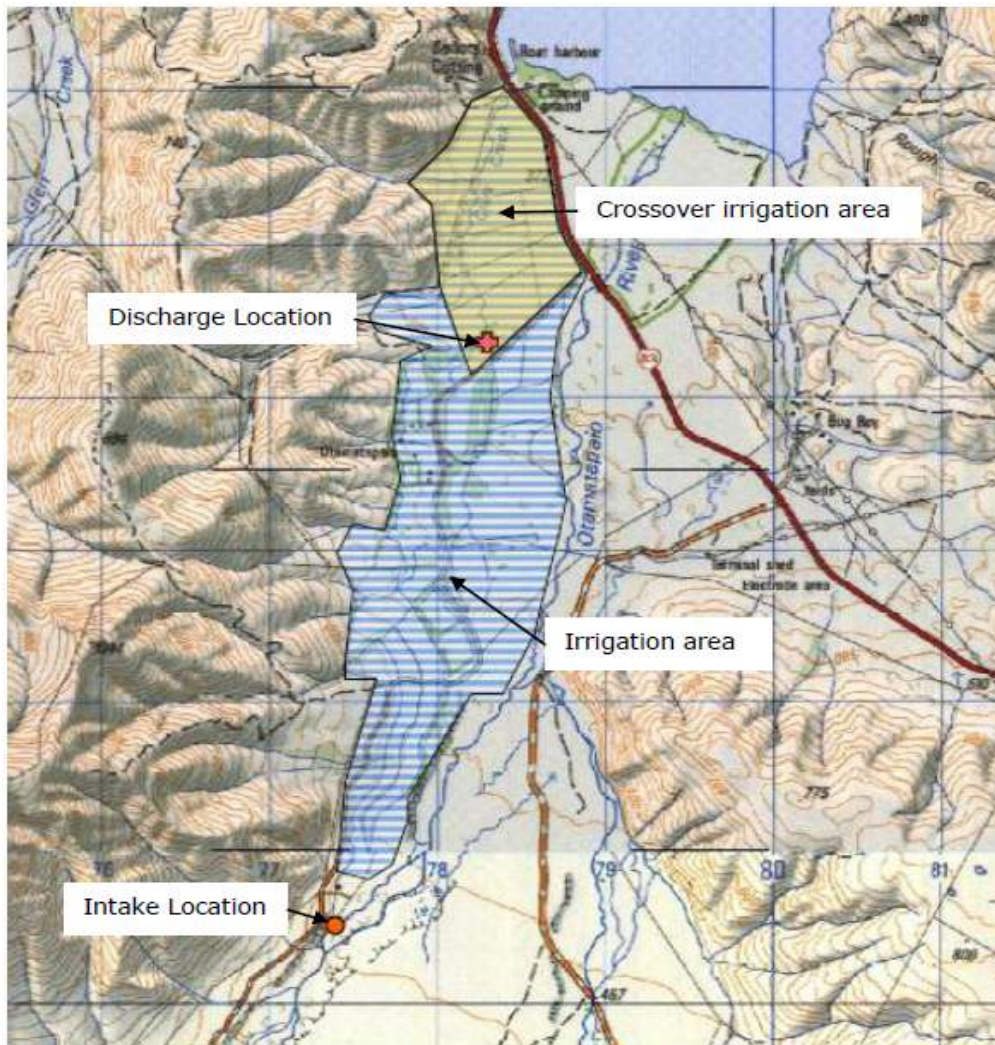


Figure 1: Indicative Location Plan

The applications

- 2.11 There are three separate applications that make up this proposal as follows:
- (a) **CRC012047** - a water permit to take and use surface water pursuant to section 14 of the RMA;
 - (b) **CRC012049** - a discharge permit to discharge contaminants into the environment pursuant to section 15 of the RMA;
 - (c) **CRC012727** - a land use consent for an activity in the bed of a lake or river to pursuant to section 13 of the RMA.

2.12 The water and discharge permits were lodged with the Canterbury Regional Council (ECan) on 30 March 2001, with the land use consent being lodged on 18 June 2001. Consent is required under the WCWARP and the NRRP, as discussed below. All applications were publicly notified and there were a number of submissions that are referred to later in this decision.

Modifications after notification

2.13 Since the application was lodged, there have been a number of amendments as follows:

- (a) The total annual volume now being sought has been reduced from 3,139,500 cubic metres (as notified) to the currently proposed 2,442,840 cubic metres;
- (b) The total rate of diversion has been reduced from 370 litres per second (as lodged) to 250 litres per second (as notified) to the currently proposed maximum of 200 litres per second;
- (c) The irrigation area was initially 345 hectares (as notified) but is now a total of 200 hectares; and
- (d) Micro hydro-electricity power generation is no longer proposed.

2.14 These final amendments were made in December 2008 with further clarification in June and August 2009.

2.15 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 above changes do not significant alter the intensity or effects of the proposal and that no party would be adversely affected by allowing the changes.

Stockwater

2.16 In addition to taking water for irrigation, the original application also sought to take for stock water supply. However, subsequent to notification the applicant advised that they were no longer seeking consent for stock water and were instead relying on their rights under section 14(3) of the RMA. This was confirmed in the final set of conditions we received from the applicant where the reference to stock water was deleted from the description of the use.

2.17 On this basis, we have not considered the issue of stock water in this decision, other than as part of the proposed discharge. Any discussion of appropriate volumes relates solely to the water required for irrigation purposes. As discussed in our Part A decision, the applicant retains the ability to take water for stock and domestic use without the need for resource consent, subject to the limits in section 14(3) of the RMA.

2.18 Stockwater is an important element of this proposal simply because of its volume. Notwithstanding the amendment to the proposal by the applicant, Ms Penman told us that the proposed rate and volume for stockwater (946,080 cubic metres per year as calculated by the applicant) is required primarily because of the current type of open race distribution system through which the stockwater flowed.

2.19 The applicant in its calculation concerning stockwater allowed for race losses of approximately 10 L/s for the conveyance system. It is hoped that when the applicant converts to spray irrigation (discussed subsequently) that the stockwater needs would be conveyed through a piped network rather than the continued use of the current open race distribution system.

2.20 Our concern would be that if the existing conveyance system is used to convey stockwater, then the amount utilised for stock and domestic water purposes is, we would think, excessive and may not fit within Section 14(3) RMA. However, given the way the proposal has been amended and presented to us we leave this as a matter to be resolved between ECan and the applicant as stockwater does not now form part of the proposal we assess.

Related consents and applications

Expiring consents - WTK690251A.1, WTK690251B.1 and WTK690251C.1

2.21 Subject to what is recorded below, these applications are replacing existing consents that expired

on 1 October 2001 ("the WTK consents). As the current applications were lodged prior to the expiry of the above consents, the applicant is currently operating under s124 continuation.

- 2.22 These WTK consents provide for the diversion, take and use of water from the Otamatapaio River at "a rate not exceeding 370 litres per second, but usually at a rate of 140 litres per second, for stock, domestic, irrigation and power generation purposes".
- 2.23 The WTK consent documents clearly outline that the maximum rate of 370 litres per second was for power generation purposes in the winter months, while the "usual" rate of diversion of 140 litres per second (up to 170 litres per second) would be in the summer months for irrigation and stockwater.
- 2.24 The total irrigation area was identified in the WTK consents as being 59 hectares, however, upon requesting renewal of this water right in 1984, the applicant identified that the irrigation area had increased to 73 hectares. This does not appear to have been recorded on the consent document. In addition to that 73 hectares, the remaining 127 hectares of the 200 hectares was also currently spray irrigated (near Clarks Creek), but does not appear to be provided for under this original consent, or any other existing consent.
- 2.25 Based on the above, we were faced with the circumstance where the irrigation activity was occurring over a land area that was not specified by any of the existing consents. For the purpose of our assessment of effects we have chosen to adopt a pragmatic approach and accept that this activity (that of irrigating over this land area) forms part of the existing environment. We have undertaken our assessment of effects on that basis. We form the view that if this issue had caused concern for ECan it would have taken some form of enforcement proceeding against the applicant. We were not told that this had occurred. So we have decided to proceed on this basis.

New consents – CRC021330

- 2.26 In addition, in March 2010 the applicant was granted a separate consent to take water from Lake Benmore for irrigation of 112ha of land. This enables irrigation of land within with "Crossover irrigation area" (as shown in Figure 1 above), along with an additional area of land between SH83 and Lake Benmore.
- 2.27 The key limits of the activity that may be undertaken under this consent are:
- (a) The maximum rate of take from Lake Benmore is 60 litres per second, with a volume not exceeding 252,000 cubic metres between 1 July and the following 30 June; and
 - (b) The combined seasonal volume on the area to be irrigated by either CRC021330 or any other consent (such as that we are now considering) shall not exceed 716,800 cubic metres between 1 July and the following 30 June.
- 2.28 This consent provides a "top up" on the current applications in order to improve the reliability of supply for the irrigation system. It was not part of the ministerial call in and was therefore considered separately outside the hearing process for the current applications.
- 2.29 This new consent (CRC021330) is important in terms of considering the landscape and amenity effects of the application before us. This is so because the area in which the activity under the new consent (CRC021330) and the application before us can occur, overlap. The overlap, which is important in terms of landscape and amenity issues, is that area located close to the State Highway and the lake edge. We will return to this issue subsequently.

3 DESCRIPTION OF THE ENVIRONMENT

- 3.1 Otamatapaio River arises from the Hawkdun and St Cuthbert Range, with Corbies Creek being the main tributary contributing to overall flows. Otamatapaio River generally flows in one channel but at times braids into a number of channels in the lower reaches.
- 3.2 The Otamatapaio River is an important spawning and juvenile rearing tributary of Lake Benmore for both brown and rainbow trout. It also provides some angling opportunity before flows are reduced. Fish species identified in the Otamatapaio River, and other small tributaries were predominantly brown trout, upland bully and common bully with some recordings of long-jawed galaxias. Suitable habitat for several invertebrate species is provided in these waterways.

- 3.3 The Otamatapaio River, previously known as Maka tipua is of great significance to Māori, being pre-Mamoe. Before Lake Benmore, a temporary camp site was sited at the river mouth, and rock drawings from this period were lost due to the creation of the lake. We note that the Tipa and Associates' "Cultural Impact Assessment" (CIA) refers in section 4.10 on 'trails' to a place named "Ma Ka Tūpuna" and, in brackets, to a stream at Robertson Saddle. The CIA also refers to Ma Ka Tūpuna as one of a number of stopover sites for travellers heading inland to such places as Lake Hawea.
- 3.4 The total catchment area of the river is 184 km². The hydrology of the catchment is reasonably well understood with flow recording beginning in 1988. The Upper catchment consists of mainly snow and short tussock vegetation on hill and steep land terrain, while the lower catchment consists of mainly low producing pastures on terraces, floodplains and rolling land and fans.
- 3.5 Below the Bog Roy intake (CRC012019) the Otamatapaio River goes dry with significant flow losses over a 2 km distance between the proposed intake and the Bog Roy intake. This typically occurs when flows are less than 300 litres per second. However, in a natural state with no abstraction, the occurrence of flows less than 300 litres per second and subsequently a dry river bed would occur only 3% of the year.
- 3.6 Otamatapaio Station covers an area of approximately 7917 hectares and lies between the Lake Benmore and the Ewe and Hawkdun Ranges, northwest of Otamatata. It comprises nearly all the country from valley floor to ridge summit on the true left of the Otamatapaio River.
- 3.7 The proposed irrigation area is predominantly gently sloping and flat land at the base of the valley hills. Lower areas of the irrigation area will be visible to general traffic along State Highway 83. The vegetation of the proposed irrigation area has been intensively developed and elsewhere has extensive Hieracium, briar and matagouri. Clarks Creek runs along the north-western boundary of the proposed irrigation area
- 3.8 There are no Recommended Areas for Protection (RAP) within proximity of the irrigation areas, however, adjacent to the irrigation areas are two Sites of Special Wildlife Importance (SSWI) and an area of national significance. Lake Benmore, which the Otamatapaio River flows into, has a statutory acknowledgement in the Ngāi Tahu Claims Settlement Act 1998.
- 3.9 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 familiarise ourselves with the site from the air.

4 PLANNING INSTRUMENTS

- 4.1 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) Waitaki Catchment Water Allocation Plan (WCWARP);
 - (b) Natural Resources Regional Plan (NRRP);
 - (c) Proposed and Operative Canterbury Regional Policy Statement (CRPS); and
 - (d) Waitaki District Plan (WDP)
- 4.2 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

- 4.3 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.

CRC012047 – Divert, take and use water (s14)

- 4.4 This application is listed in Schedule 2 of the Resource Management (Waitaki Catchment) Amendment Act 2004. Section 88A therefore does not apply and the relevant plan for this activity is the operative WCWARP.
- 4.5 The following rules from the WCWARP are applicable to this application:
- (a) Rule 2, clause (1) – The applicant proposed the minimum flow of the 5-year 7-day low flow of 200 litres per second in the Otamatapaio River at the Footbridge (Table 3, row (xxii)). This minimum flow location is above all abstractions in the catchment. The lower reach of the Otamatapaio River is ephemeral.
 - (b) Rule 6 – The activity is within the allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam.
 - (c) Rule 15 - Classifying rule – discretionary activity.
- 4.6 Based on the above, the diversion, taking and use of water is a **discretionary** activity under Rule 15 of the WCWARP.
- 4.7 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.

CRC012049 – Discharge water (s15)

- 4.8 This application is listed in Schedule 2 of the Resource Management (Waitaki Catchment) Amendment Act 2004. Section 88A of the RMA therefore does not apply and the relevant plan for determining the status of this activity is the operative NRRP.
- 4.9 The relevant provisions of the NRRP are as follows:
- (a) Rule WQL1 – permits the discharge of water into a river, subject to compliance with a range of conditions
 - (b) Rule WQL48 – provides for the status of a discharge to water where it fails to comply with any of the conditions in WQL1. Will be classified as either a discretionary or non complying activity, depending on whether it complies with the listed conditions.
- 4.10 The discharge is unlikely to meet conditions 1 and 3 of Rule WQL1; therefore the activity is classified under Rule WQL48. The activity is likely to comply with the conditions of that rule; therefore, the discharge is classified as a **discretionary** activity.

CRC012727 – Disturb the bed (s13)

- 4.11 This application is listed in Schedule 2 of the Resource Management (Waitaki Catchment) Amendment Act 2004. Section 88A of the RMA therefore does not apply and the relevant plan for determining the status of this activity is the operative NRRP.
- 4.12 The relevant provisions of the NRRP are as follows:
- (a) Rule BLR 2 – permits the use and maintenance of structures that were lawfully erected or placed before 1 November 2010, subject to compliance with a range of conditions
 - (b) Rule BLR5 – permits the excavation, drilling, tunnelling, depositing, reclamation, drainage or disturbance in, on, under or over the bed, subject to compliance with a range of conditions
- 4.13 It is possible that these activities could be carried out to meet the permitted activity criteria, however from the information available it is not clear that they will. In particular, conditions 6(b) of Rule BLR2 and conditions 2 and 4 of Rule BLR5 are unlikely to be complied with. The activity is therefore classified as a **restricted discretionary** activity under Rule BLR5.

- 4.14 As a restricted discretionary activity, the matters we can consider are limited to those specifically identified in Rule BLR5 of the NRRP. However these matters are wide ranging and effectively include all of the key issues that we would be considering if the application was fully discretionary, including effects on bank stability, flooding, other activities, water quality and ecosystems

Overall status of the proposal

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

5 NOTIFICATION AND SUBMISSIONS

- 5.1 All three applications were notified in July 2003. They were subject to the December 2003 “ministerial call-in” and re-notified in August 2007 with 200 other applications for similar activities in the Waitaki catchment.
- 5.2 In the 2007 public notification, 21 submissions in total were made on the take and use application (CRC012017). Of these 2 were in support, 17 in opposition, and 2 neither supported nor opposed this application. In the July 2003 notification, a total of 12 submissions were received with 4 in support and 9 in opposition. In the December 2003 “ministerial call-in”, a total of 314 submissions were received on these applications.
- 5.3 None of the submissions made any reference to the discharge applications or the effects of the proposed discharges.
- 5.4 Table 1 is based on the relevant s42A reports and summarises those submissions that directly referenced the take and use 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 CRC012047

Submitter	Reasons	Position
Fish & Game NZ ^{1, 2, 3}	Important fish spawning tributary and abstraction may be affecting continuous flows to Lake Benmore	Oppose
Meridian Energy Ltd ^{1, 2, 3}	Concerned about water quality, metering and reasonable use	Oppose
Department of Conservation ^{1, 2, 3}	Potential effects on instream ecosystems given high cumulative rate of take from catchment; efficiency of use; duration	Oppose
CJ Munro ³	Water needed for stockwater and winter feed crops	Support
KJ, DK & SR Anderson ^{1,3}	Existing user and applicant from Otamatapaio River. Concerned that replacement rate should only be 140 L/s not 200 L/s. Want flow sharing, suitable min flow site and conditions for secure stock supply provided.	Oppose
Grays Hills Station ³	Irrigation is sustainable use of water	Support
A Campbell ³	Reduction in flow of small streams, duration – suggest 5 years, would support water harvesting	Oppose
Waimate Rod & Gun Club ³	River used to support trout fishery before irrigation abstractions, fish screens, oppose border-dyke irrigation	Oppose
NZ Salmon Angers Association ³	Use for irrigation has caused river to go dry and affect angling opportunities and spawning	Oppose
Te Runanga o Waihao and Ngāi Tahu ^{1, 2, 3}	Cultural significance of area to Ngāi Tahu Whānui	Oppose

1 August 2007
 2 Call-in 2003
 3 July 2003

- 5.5 Overall, the key effects of concern to submitters include effects on: ecosystems, water quality, allocations, minimum flows, natural character and landscape, efficiency and cultural values.

6 THE SECTION 42A REPORTS

- 6.1 Two section 42A reports on these applications were prepared by ECan's Consent Investigating Officer, Ms Clare Penman. Report 29A dealt with applications CRC012047. Report 29B dealt with applications CRC012049 and CRC012727, being the discharge and land use permits, respectively.
- 6.2 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.
- 6.3 Ms Penman had concerns about the following issues in relation to the divert, take and use application:
- (a) Water quality;
 - (b) Efficient and reasonable use;
 - (c) Ecosystems;
 - (d) Landscape and amenity;
 - (e) Cultural values;
 - (f) Other users.
- 6.4 We discuss these issues in greater detail subsequently.
- 6.5 In his report, Mr Chris Glasson placed the Otamatapaio site within his Landscape Unit 8 – Aviemore.
- 6.6 He noted that the common characteristics of all takes in the Aviemore Landscape Unit were that all sites were small, with discreet locations on fans or flats of existing modified landscape, and located between State Highway 83 and/or Lake Benmore and streams. All of the sites, due to the proximity to the roads, the lake, and streams, were visible. At the time of this application, Mr Glasson noted that no mitigation measures had been proposed. Due to the close proximity of the proposed irrigated land to Lake Benmore and State Highway 83 he considered significant to moderate landscape effects would be created.
- 6.7 He suggested mitigation such as removing the irrigation on the north-east side of State Highway 83 (that is, the lake side) and creating a 100 m buffer of irrigation on the south side of State Highway 83; then he considered the adverse effects would be less than minor.
- 6.8 In terms of the discharge permit (CRC012049) Ms Penman after considering the flood-carrying capacity and erosion effects, water quality and ecosystems, downstream users and amenity values, and tangata whenua values concluded that all such effects were minor.
- 6.9 In terms of the land use consent (CRC012727) Ms Penman considered flood-carrying capacity and erosion effects, manmade structures and their effects, water quality effects, riparian plants and animals and effects on the same, and tangata whenua values. She concluded all such effects were minor.

7 THE APPLICANT'S CASE

- 7.1 Legal counsel for the applicant, Mr Ewan Chapman, presented opening submissions and called four witnesses as follows:
- (a) Ms Scanlan (Manager of Otamatapaio Station)
 - (b) Mr Boraman (Hydrologist)
 - (c) Ms Haidee McCabe (Consultant)
 - (d) Mr Craig (landscape)

Opening submissions

- 7.2 The applicant is part of the Upper Waitaki Applicant Group, 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.
- 7.3 Mr Chapman also said that UWAG has not tabled a final set of conditions or final farm management plans. These matters will be worked through and provided to all parties as the hearing progressed. UWAG was of the view that one suite of conditions was inappropriate. There were variables between sub-catchments, take points, and the "type" of consent applied for which mean individual conditions would need to be worked through. When possible, he said UWAG would engage with the consent authority and submitters informally on the wording of conditions.
- 7.4 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.
- 7.5 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.
- 7.6 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.
- 7.7 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.
- 7.8 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.
- 7.9 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.
- 7.10 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 own tailored farming management practices.
- 7.11 Mr Chapman also said that UWAG had not tabled a final set of conditions or final farm management plans. He told us these matters would be worked through and provided to all parties to the hearing as the hearing itself progressed. He told us UWAG was of the view that one suite of conditions was inappropriate. There were variables between subcatchments, take points, and the "type" of consent applied for, which would mean that individual conditions would need to be developed and worked through.

Ms Scanlan – farming activities

- 7.12 Ms Scanlan said that the two properties, Otamatapaio Station and Glenburn, were run as a joint venture. The company was owned by the Botto Family of Reda Successori, Biella, Italy.

- 7.13 The farming operation was formed with the objective of owning a high country fine wool producing property with breeding objectives of supplying wool to an end user, which would allow the Botto and Lempriere families to gain a better understanding of the issues related to producing specialty merino wool, i.e., the environment, climate, alongside management programmes.
- 7.14 Ms Scanlan said that Otamatapaio Station in conjunction with Glenburn consisted of 5,568 ha and 1,163 ha respectively of freehold land between Omārama and Otematata. These properties had been owned and operated by the present owners since 1993.
- 7.15 This consent application was located at Otamatapaio Station which was a well balanced property of hill country and flats. The flats were already partially developed with an existing irrigation system operating and sustaining the property for many years, during ever to frequent dry summer conditions.
- 7.16 Ms Scanlan said that the original application for the Otamatapaio water consent dates back to 1920 for stock and domestic, with an application in 1926 for water for hydro electricity. The wild flooding/border dyke irrigation system was developed in the late 1950s early 1960s at Otamatapaio Station.
- 7.17 In today's terms the mechanisms of those early irrigation projects were particularly crude. No particular value was attached to water at that time and so the race systems were not lined and significant leakage occurred from the system. In September 1993 the property was purchased and the company inspected all race systems, employed contractors and carried out major maintenance to the race systems.
- 7.18 Ms Scanlan said that an integral part of the early system on Otamatapaio was the race system which provided drinking water for stock and probably paved the way for the first phase of more intensive development of the high country. The curving race system was still evident on the property - even on the areas they had developed further it was a marvel in engineering terms and in landscape terms was difficult to detect when looking up at the slope of the hill. The labour spent on the race systems must have been a very significant outlay for the then family occupying the property.
- 7.19 The site of the initial gallery was still the place where they took water from today. For the flats and down country on Otamatapaio it provided an efficient gravity feed system to irrigate much of the property. In 2004, a gravity fed pivot irrigation of 76ha was added to the system to commence improving efficiency.
- 7.20 Ms Scanlan said that tenure review had recently been completed which had reduced the total land area of Otamatapaio and Glenburn from 7,949 ha to 5,568 ha which had meant the complete loss of the wether flock. However the applicant proposed to increase the stock units from the present 5-6000 (this at Otamatapaio only) to approximately 7-8000 depending on the extent of the irrigation development.
- 7.21 Ms Scanlan then said that wool, which was approx 80% of their income, was now only 50% of their income. This change in the proportions between wool and meat income were consistent with other properties farming in the basin. With the completion of tenure review in 2006, and the loss of 2380 ha of summer grazing. More emphasis had been placed on the importance of balance of the hill and flat areas and the irrigated parts of the property. Post tenure review Otamatapaio total area was 5,568 ha, the current irrigated area was 2.4% of the total area.
- 7.22 Ms Scanlan detailed the current area under irrigation as:
- (a) 76 ha Pivot, (commissioned March 2004)
 - (b) 20 ha Modern border dyke
 - (c) 50 ha Older border/wild flooding
- 7.23 She said that the above areas were strategically watered depending on water availability for pasture, crops and any surplus hay requirements.

Proposed Re-development of irrigation area/system

- 7.24 Ms Scanlan said that the benefits of the proposed development, would re-develop the present area of old borders and wild flooding into a modern spray irrigation system, to a total area of 200

ha, which would lift the irrigated area to 3.5% of the total area of Otamatapaio. This would be done over a five year period under a gravity fed system.

7.25 Ms Scanlan believed that from a financial perspective the company would not then have to rely solely on the income from wool, which was a very volatile market, thus reducing the risk of relying heavily on one commodity to supply 75% + of the year's income.

7.26 There was also an added benefit to the wider community with the proposed re-development programme, every contractor used inside the property gate, had a flow on effect to the local community and wider business.

Water Quality

7.27 Ms Scanlan said that for Otamatapaio Station, the desktop environmental risk assessment identified the following potential risks:

- (a) Property boundaries Lake Benmore
- (b) Irrigation run-off feeds into catchments that flow directly into Lake Benmore
- (c) Nutrient run-off from border dykes
- (d) Potential chemical/fertiliser hazards

7.28 The applicant had committed to carrying out a full on farm risk assessment, proposing mitigation, monitoring and auditing would occur within 12 months of the commencement of the consents (as these applications seek renewal of existing activities), and this had been proposed as conditions of consent.

Future Compliance/Monitoring

7.29 Ms Scanlan said that as a company they had and would continue to maintain diligent monitoring programmes for all water related issues, i.e. flow monitoring, and water quality monitoring. She added that whilst the riparian planting was important in controlling surface water run-off the greatest gains in nutrient management would be from the 5 year implementation of more efficient irrigation systems and their ability to control and monitor their overall nutrient management and water application rates.

7.30 Finally, Ms Scanlan said that for the future long term farming of Otamatapaio, this water consent renewal was very important to the sustainability and profitability of the operation. The key to a sustainable farming operation was having a good balance of country.

Mr Boraman - hydrology

7.31 Mr Boraman said that the Otamatapaio River was located on the southern shores of the Ahuriri Arm of Lake Benmore, approximately half way between Otematata and Omārama. Boraman Consultants Ltd was engaged to investigate the hydrology and check the validity of the statistics of Otamatapaio River proposed by Environment Canterbury.

7.32 The Otamatapaio River drains directly into the southern side of the Ahuriri arm of Lake Benmore. Mr Boraman said that investigations were undertaken into the hydrology of the Otamatapaio River and had been added to existing data collected previously by Waitaki Catchment Commission, ECan and Environmental Consultancy services.

7.33 Mr Boraman said that the Otamatapaio River had a catchment area above SH83 of 185 km². The catchment altitude ranges from 360m up to 1850m, the upper catchment had snow on the shady faces for much of the winter months.

7.34 Large rainfall events in the catchment generally came from the easterly quarter, in the winter; this may fall as snow in the upper catchment. Occasional large westerlies may provide rainfall, but not usually in large quantities.

7.35 Mr Boraman then described the hydrology of the Otamatapaio River. He said that the Otamatapaio River had significant losses in its system and was often dry below the Corbies Creek confluence. Although the WCWARP states the minimum flow should be set at the lower end of the catchment, however the lower reach was ephemeral and historical measurements were carried

out at the footbridge so that there was a significant record of flow at that site, it was decided that the gorged area was the most practical for a minimum flow site. The site would act as a trigger site for the entire Otamatapaio / Corbies Creek Catchment.

- 7.36 Mr Boraman said that the Otamatapaio River was monitored regularly over the summer months from 1971 to 1978 with 33 gaugings carried out by the Waitaki Catchment commission. In 2001 and 2003 a series of profile gaugings were done down the Otamatapaio River by Environmental Consultancy services with another 3 measurements to add to the dataset.
- 7.37 A staff gauge and a Trustrack automatic water level recorder were installed on 26 September 2007. This provided continuous water level readings every 15 minutes. The site was on the abutment of the old footbridge access track at map reference NZMS260 H40:759-168. During the period of operation there have been a total of 10 flow measurements made. All flow measurements plotting within the accepted 8% of the derived flow rating curve. The site proved to be stable, with only one rating change during the period of operation.

Corbies Stream

- 7.38 Mr Boraman said that historic gaugings that were carried out concurrently on both Otamatapaio River and Corbies Stream by the Waitaki Catchment Commission were analysed. There was a very poor relationship between Otamatapaio Footbridge and Corbies 'Old Gorge' bridge particularly at low flows, this makes it very difficult to ascertain Corbies contribution, it can vary between 15 to 40% of the flow, an assumption was made that it was approximately 25% of the flow at Footbridge.
- 7.39 On 21 February 2007 Mr Boraman carried out a comprehensive flow loss survey in the Otamatapaio and Corbies Catchment. This showed significant losses particularly in the lower Otamatapaio. A similar survey was carried out by Environmental Consultancy Services on 15 January 2003. The flows on that day were much higher and continuous to the lake. The measurements indicated that in the lower reaches of the Otamatapaio (below Bog Roy intake) there was more than 300 litres per second loss. Confirming that even without abstraction it would not be possible to maintain continuous flow in the Otamatapaio River.
- 7.40 Mr Boraman said that continuous flow to Lake Benmore was not possible; therefore the minimum flow site for the greater Otamatapaio Catchment should be located at the Footbridge. He confirmed that his analyses support the contention that the appropriate figure for the 5 year seven day low flow of the Otamatapaio River at the Footbridge was 206 litres per second and recommended a minimum flow of 200 litres per second.

Ms McCabe - planning

- 7.41 The following comments from Ms McCabe on rates of take all include reference to stock water and domestic supply. However, as mentioned above, we are not assessing stock water or domestic takes as part of the proposal.
- 7.42 Ms McCabe said that the applicant sought the renewal of existing use rights WTK690251 A, B, C and D, which authorised the diversion and taking of water from the Otamatapaio River at a maximum rate of 370 L/s but usually at a rate of 140 L/s for stock, domestic, irrigation and power generation purposes. Plus to discharge water to Clarkes Creek at a maximum rate of 370 L/s but usually at a rate of 140 L/s.
- 7.43 Ms McCabe said that the applicant over the years had reduced water requirements and sought 140 L/s for irrigation and stock water when flows in the Otamatapaio River were above the minimum flow of 200L/s, and up to 200 L/s when flows were in excess of 600 L/s. When the minimum flow applied, 30 L/s was still required for stock and domestic requirements.
- 7.44 The current border dyke operations include 50 ha of old and 20 ha of new border dykes. Because of the various race levels border dyke by-wash was able to be collected and used again in the lower races.
- 7.45 Ms McCabe said that a 76 ha pivot was commissioned in 2004 which was fed from the main race into a pipe for gravity irrigation. This was installed to commence converting the property to spray irrigation to improve efficiency. An irrigation development plan would be implemented on renewal of this consent, with a five year period for conversion to spray. The intake was successfully upgraded prior to 2000, to allow flows to be manually controlled by two slide gates to regulate flows and a water meter had been operating since 2002.

- 7.46 Stock water was currently raced to the paddocks with the irrigation water but also during the winter when the irrigation was not operating.
- 7.47 Excess water from the race system was discharged into Clarkes Creek which subsequently discharges at Sailors Cutting into Lake Benmore. With the upgrade to spray irrigation, in time this discharge would reduce to fairly much stock water only or water in the race system when an irrigator shuts down.
- 7.48 Ms McCabe said that Otamatapaio also applied for consent to take water for irrigation purposes directly from Lake Benmore (CRC021330). These applications were adjourned part heard at the time the Upper Waitaki applications were called in and accordingly do not form part of these hearings. These lake take consents at Glenburn and at Otamatapaio were largely to irrigate new areas on the lake side of State Highway 83. However they were integrated into the overall farm management plan for irrigation. Importantly, the "lake take" consent dovetails into this consent to provide for supplementary water at times when river flows do not provide sufficient supply. Derogation approvals for this activity have already been obtained from Meridian Energy for these new areas.
- 7.49 In December 2006, an annual volume of 3,139,500 cubic metres per year for irrigation purposes was proposed for an irrigation area of 345 ha. The flow rate was reduced to 200 L/s for irrigation and 50 L/s for stock water. It indicated that further work was proposed on irrigation efficiency in relation to this seasonal volume.
- 7.50 In December 2008, an annual volume of 1,496,760 cubic metres per year for irrigation purposes and 946,080 cubic metres for stock water was proposed (total of 2,442,840 cubic metres). Furthermore a flow rate of 200 L/s but usually at a rate of 140 L/s plus 30 L/s for stockwater.
- 7.51 Ms McCabe in an email dated 3rd July 2009 to Ms Penman, provided further clarification that 200 ha was considered a replacement even though this exceeded the WTK consent area. The reason was that the flow rate and volume required was considered well within the existing consent. However this applicant was using the water more efficiently in order to meet WCWARP efficiency requirements.

Water Source

- 7.52 Ms McCabe said that the Otamatapaio River drains the Hawkdun and St Cuthbert Range, directly into the southern side of the Ahuriri Arm of Lake Benmore at Sailors Cutting. The Otamatapaio River had a catchment area above SH83 of 185 km². Corbies Creek also contributes to the Otamatapaio catchment.
- 7.53 The catchment altitude ranges from 360m up to 1850m, and the upper catchment had snow on the shady faces for much of the winter months and therefore low flows in the catchment were usually experienced in winter.
- 7.54 There were significant flow losses down the system below the Foot Bridge; however the losses were the greatest approximately 200 metres downstream of the Corbies Creek confluence where often in the summer months the river bed was completely dry.
- 7.55 The Otamatapaio supports fisheries common to high country rivers. These include common and upland bullies, common river galaxies, rainbow and more predominantly brown trout.
- 7.56 Ms McCabe said that several submission raised concerns in relation to 370 L/s which had subsequently been reduced to a usual rate of 140 L/s which was now considered consistent with submissions.
- 7.57 The applicant and Bog Roy Station had agreed to a minimum flow and were committed to flow sharing, having signed a Memorandum of Understanding (MOU) on the 23rd September 2009.
- 7.58 The above information had also been provided to DoC during the course of consultation and was clarified in an email dated 11th August 2009. Feedback was sought but had not been received.

Effects on other water users

- 7.59 Ms McCabe said that this was the renewal of an existing water right. No increase in rate or weekly volume (as currently authorised) was being sought, and the applicant had proposed a minimum flow in accordance with Table 3, Row xxii of the WCWARP. A Memorandum of

Understanding, including a flow sharing regime had been signed by all water users in the catchment.

- 7.60 Otematata Station also sought consent to take water from the Glen Bouie Stream which was a tributary of the Corbies Creek.
- 7.61 Boraman Consulting Ltd had been engaged to install a flow recorder on the Otamatapaio River in 2004. Data from the site had been used to determine the required minimum flow on the Otamatapaio River and had also been used to develop a flow sharing arrangement between the water users.
- 7.62 This proposed takes were within the area defined as Upstream of Waitaki Dam, but not Upstream of the outlets of the Glacial Lakes in Table 5 of the WCWARP. Ms McCabe said that granting these consents would not exceed the cumulative allocation of 275 million m³/year for this area.
- 7.63 Ms McCabe considered that, effects on other users to be minor.

Effects on Ecosystem values

- 7.64 Ms McCabe said that the applicant accepted the minimum flow required under the WCWARP for the Otamatapaio River which was "all other rivers and streams". It was her opinion that this minimum flow was developed to ensure that the aquatic values of the stream were protected.
- 7.65 Boraman Consulting Ltd installed a flow recorder on the Otamatapaio River in 2004. This information had been used to determine the required minimum flow for the WCWARP of 5-year 7-day low flow and would also be used to develop a flow sharing arrangement between the water users.
- 7.66 Ms McCabe said that the minimum flow had been agreed with ECan and Fish and Game. This minimum flow was consistent with the WCWARP. From verbal communications with DoC it was understood that they also accept this minimum flow.
- 7.67 Consequently the total level of abstraction proposed for the Otamatapaio River main stem was now 250 L/s when flows were less than 600 L/s, leaving more water for instream aquatic values.
- 7.68 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".
- 7.69 Ms McCabe considered the conditions of minimum flow and flow-sharing arrangement to manage the flows above the minimum flow for all water users and fish screen, that the effects on the ecosystem values were minor.

Effects of inefficient water use

- 7.70 Ms McCabe said that the proposed irrigation annual volume for the current system was based on a design system capacity of 1500mm/ha/year for 73ha, for a 155 day irrigation season. The irrigation season length was that determined by Mr Rob Potts as the average number of days in the Upper Waitaki Catchment for a border dyke irrigation system. The proposed irrigation annual volume was based upon the derogation approval provided by MEL.
- 7.71 Ms McCabe said that the proposed stock water annual volume take and use, had been determined using Schedule WQN11 of the NRRP. The proposed stock water volume was 946,080 cubic metres and had been based on a diversion of 30 L/s to enable the water to get to the end of the race system including race losses. Excess water was discharged into Clarkes Creek prior to it entering Lake Benmore.
- 7.72 Because the proposed application depth of 15-35mm per return period was less than 50% of the water holding capacities expected, Ms McCabe considered it to be an efficient use of water. She also added that the irrigation systems would be determined and managed to ensure compliance with the varying soil types at different locations.
- 7.73 Over the years the applicant had substantially reduced their rate of take (notified at 250 L/s for irrigation and 50 L/s for stock water) and consequently seasonal volume abstracted. This had been reduced to 140 L/s for irrigation and stockwater but up to 200 L/s when flows in the Otamatapaio River exceed 600 L/s. It was Ms McCabe's view that this was consistent with Policy 15, 18 and 28 of the WCWARP in terms of efficiency and effectiveness of use.

- 7.74 Ms McCabe said that Policy 28 recognised the value of investment of the existing consent holder, and this had to be considered. The applicant had reduced water requirements and proposes to upgrade all the system to spray within 5 years.
- 7.75 Policy 21 of the WCWARP required all water takes to be metered. The intake had been flow metered since 2002 and proposed to continue to do so.

Effects of the use of water on water quality

- 7.76 Ms McCabe said that the property, according to the MWRL Water Quality Study, was located within the Otamatapaio and Ahuriri groundwater and 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.
- 7.77 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.
- 7.78 OVERSEER® had been run by a qualified person to model the N 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	Phosphorous Threshold
MWRL Water Quality Study Property Thresholds	22,466	588
OVERSEER® Outputs	16,747	291

- 7.79 Ms McCabe said that the applicant was committed to implementing the "Mandatory Good Agricultural Practices" set out within the Farm Environmental Management Plan (FEMP). Implementing these practices ensure that the OVERSEER® results were validated. This along with ensuring that the property thresholds of the WQS (set out in the table above) were not exceeded would ensure that the cumulative effects of the use of water for irrigation on water quality were no more than minor.
- 7.80 A "desk top" on farm risk assessment was undertaken. This was considered to be the "starting point" of the FEMP. The FEMP was proposed as a condition of consent.
- 7.81 As part of the proposed FEMP audits, measures and actions in case of non-compliance were proposed, including water quality sampling to detect change once the FERA had been completed as part of finalising the FEMP. Baseline sampling had commenced so there was a starting point and to assist setting triggers to ensure the effects on water quality were no more than minor.
- 7.82 The applicant intended to convert to spray within a 5 year period and had proposed this by way of consent condition.
- 7.83 Ms McCabe said 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 would be minor.

Effects on People, Communities and Amenity Values

- 7.84 The activities all occur in a rural setting, where the dominant land use was pastoral farming, given that the proposed activities all occur on private farmland; as such the use of water was unlikely to adversely affect amenity values. The Sailors Cutting camp ground was located on the north side of SH83 and irrigation has occurred alongside this since 2004 without any adverse effects.
- 7.85 The Plan sets an annual allocation "cap" for agricultural and horticultural activities within defined areas (Table 5) which in Section 5.2 was considered to be met. The proposed minimum flow was also consistent with the WCWARP.

- 7.86 Therefore, given the applicant's commitment to ensuring efficient use of water on their properties, to the minimum flow and flow-sharing regime to protect in-stream values and other users, it was considered that effects on people, communities and amenity would be minor.

Effects on Tangata Whenua Values

- 7.87 Te Rūnanga o Ngāi Tahu submitted on all applications in the catchment, seeking that all applications be declined.
- 7.88 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.
- 7.89 This application was considered to be within the allocation limits and in accordance with the minimum flows of the WCWARP.
- 7.90 Information detailing amendments to the Otamatapaio proposal since notification and information about other users within the Otamatapaio catchment was forwarded to Mr Paul Horgan on the 26th August 2009. A response was received on the 27th August which acknowledged the improvements made by the application and that it was unlikely they would be specifically challenging this given it was a replacement application but were more interested in the catchment based cumulative effects.
- 7.91 However, it was acknowledged that Te Rūnanga o Ngāi Tahu have a significant relationship with the Waitaki Catchment. As such, appropriate minimum flow conditions, and management of water quality effects by way of implementation of the FEMP, was proposed by the applicant to ensure that the potential effects on the environment, including tangata whenua values were minor.

Effects of Works in the Bed - CRC012727

Effects on flood carrying capacity and bank erosion

- 7.92 Ms McCabe said that the intake structure consisted of a concrete wing-wall and 2 slide gates located on the true left of the Otamatapaio River. It was located in a position where the river comes to a natural bend and deflects away to carry on downstream, with the structure itself being located further back from the river bank
- 7.93 The structures location does not impede the flood carrying capacity given the main river channel was not obstructed in anyway by the structure. In the past this structure had not impeded any flood flows and had withstood numerous flood events and the river had a large area of river fans to carry such flows.
- 7.94 Furthermore Ms McCabe said that there was no evidence of any erosion or increased bank instability since the structure had been operating. The intake was installed prior to 2000, and only maintenance was required in the future plus ensuring flowing water to the intake location.
- 7.95 The SH83 Bridge was located some 5km downstream and over 1km from Bog Roy's intake. Ms McCabe said that neither were considered effected by the activities given the distance.
- 7.96 Ms McCabe said that on completion of works in-stream, the area would be re-levelled to blend with the natural river environment. She considered effects on flood carrying capacity and erosion of Otamatapaio River to be minor.

Effects on instream values and water quality

- 7.97 Ms McCabe said that works on the intake were undertaken on an as needed basis, but since it installation prior to 2000, it had only been maintained on a few occasions. The intake was not located in the main river flow.
- 7.98 The proposed intake structure in Ms McCabe's view should not impede fish passage given the location further back from the river bank and therefore the main channel was not obstructed in any way. 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".

- 7.99 She acknowledged that the in-stream works could cause a temporary discoloration of the water and particularly from the perspective of aquatic ecosystems that may be present in the stream; such sedimentation could have an impact on sensitive times such as spawning.
- 7.100 Ms McCabe said that sedimentation could also affect downstream users taking water for domestic or stock water purposes. But works on the intake structure were likely to only be needed once or twice per year or after flood events when sediment levels were naturally high anyway.
- 7.101 Ms McCabe said that the most common approach to reducing sediment levels during works was to avoid undertaking works within flowing water. Thereby avoiding the possibility of increasing levels of suspended sediment contained within the waterway. Therefore if the intake was being replaced the water flow can be temporarily diverted around this area until the work was completed to reduce continuous increased sediment levels.
- 7.102 Ms McCabe also explained that at times, redirection of surface flow was required upstream of the intake (e.g. after a flood event if the river changes course) and the applicant was now proposing to limit this work to 50mtrs upstream of the intake whereby water will need to be re-diverted to the intake. Works related to this may need to occur in flowing water.
- 7.103 Ms McCabe said given the proposed mitigation, effects on instream values and water quality were minor.

Effects on amenity, people, communities and Tangata Whenua values

- 7.104 Ms McCabe said that the proposed intake abstraction point was located over 5km upstream from SH83 and the intake had been operating since 2000 in future the only works required would be maintenance.
- 7.105 In relation to Tangata Whenua values, accidental recovery protocol had already been proposed by the applicant. Furthermore email correspondence with Ngāi Tahu, had indicated the land use consent had not been raised as a concern associated with the water permit.
- 7.106 The Reporting Officer also considered the effects on Tangata Whenua values were minor given effects on water quality were minor. The works were for maintenance only and the mitigation proposed; the effects on amenity, people, communities and Tangata Whenua values were considered minor.

Effects of Discharge - CRC012049

- 7.107 Ms McCabe detailed the potential effects considered to be relevant to this activity as:

Effects on flood carrying capacity and bank erosion

- 7.108 When water was discharged into a waterway, the flow, and potentially the velocity, of the receiving water body was increased, thereby increasing the volume of water in the water body and potentially scouring the banks where the discharge occurs.
- 7.109 Ms McCabe said that this discharge was historical and had been occurring since the 1920s into Clarke Creek. The existing WTK consent was for a flow rate up to 3701/s which had now been reduced to 2001/s. This stream therefore had the capacity to manage this discharge given how long it had been operating without any evidence of erosion. In time once this system was upgraded, the discharge would be very minimal if not, non-existent.
- 7.110 Ms McCabe said that this discharge was the majority of the main flow of Clarkes Creek, other than small waterways that flow into this at times of high rainfall. During high rainfall events irrigation would not be occurring so the discharge should only be stockwater.
- 7.111 Ms McCabe considered the flood carrying capacity and erosion from the discharge of water was considered minor.

Effects on instream values and water quality

- 7.112 Ms McCabe said that the water that was discharged into Clarkes Creek was excess water that was diverted as well as irrigation by-wash water from the border dyke system. With the upgrade to spray irrigation, this discharge would reduce to fairly much stock water only or water in the race system when an irrigator shuts down.

- 7.113 As part of the Farm Environmental Risk Assessment carried out for this property, the existing wetland/swamp area was identified to act as a filter type system for by-wash water. This was located below the hill area border dykes and again prior to Clarkes Creek entering Lake Benmore. This effectively polishes the water by a process of nutrient and sediment removal, and it was these contaminants in the water that affect water quality and ecosystems.
- 7.114 Ms McCabe said that as part of the proposed FEMP audits measures and actions in case of non-compliance were proposed, including water quality sampling to detect change. Baseline sampling had commenced so there was a starting point and to assist setting triggers to ensure the effects on water quality were no more than minor. Ms McCabe considered effects on water quality and ecosystems to be minor.

Effects on amenity, people, communities and Tangata Whenua values

- 7.115 When water was discharged there was the potential to cause adverse effects on other users of the water body due to the contamination of the water, or create an unsightly plume that may affect amenity.
- 7.116 Ms McCabe said that in this case, the receiving water body was Clarkes Creek and subsequently Lake Benmore. The volume discharged was a very small volume of water in proportion to the volume of water in the lake and would reduce further once the full spray system was operational.
- 7.117 She reminded us that this had been occurring since the 1920s and the effects were decreasing with the system upgrade as already discussed in the sections above.
- 7.118 Water would be polished through wetlands areas, prior to its discharge and this would ensure that any nutrients and sediment were removed. Furthermore the implementation of the FEMP also deals with water quality as identified in the previous section.
- 7.119 Therefore, in Ms McCabe's view effects on amenity, people, communities and Tangata Whenua values were minor.

Mr Craig - Landscape

- 7.120 Mr Andrew Craig a landscape architect provided general and specific recommendations on behalf of UWAG clients to this hearing. He concluded that the general effects on the Mackenzie landscape of these further applications within the basin would be significantly less than minor.
- 7.121 Mr Craig said that this was a replacement application, the area of land concerned was already irrigated and part of a substantially modified rural environment, whereby cultivation and grassing, new fencing, and a commencement to upgrade to spray irrigation had already occurred. Here we took Mr Craig to be referring to the activity commenced under CRC021330.
- 7.122 An existing pivot already operated in the vicinity of SH83 (since 2004). The buffer distance from the SH83 was approximately 25 metres at the closest point.
- 7.123 The land area of concern was located within "Rural Scenic" under the Waitaki District Plan of which the applicant had received a Certificate of Compliance for the irrigation system, including the proposed spray system for centre pivots and hard hose guns. The surrounding ridgelines would not be affected by the irrigation development.

8 SUBMITTERS

- 8.1 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.

Mr Mark Webb (Fish & Game)

- 8.2 Mr Webb said that all of the applicants abstracting from the Otamatapaio River proposed a minimum flow of the 1 in 5 year 7-day minimum flow at the footbridge of 200 L/s. In addition Otamatapaio Station proposed to take up to 140 L/s when the Otamatapaio River flow was between 200 L/s and 600 L/s and the take would be 200 L/s when the Otamatapaio River was more than 600 L/s. A 10 L/s minimum flow had also been proposed by Otematata Station for Glen Bouie Creek.

- 8.3 Mr Webb said that he understood that Otamatapaio Station and the Andersons had agreed between them that the total of their takes from the mainstem of the Otamatapaio River would not exceed 250 L/s when the river was less than 600 L/s and they would actively manage their takes when river flows at the footbridge were in the range of 450 L/s to 200 L/s. A telemetered water level recorder at the footbridge would be operated by the water users.

Otamatapaio River Fish and Game Values

- 8.4 Otamatapaio River provided valuable, though flow-limited spawning opportunities for Lake Benmore resident trout. An annual run in the order of 100 trout migrated into the lower reaches of the river for up to 5km between May and September when flows are sufficient to provide fish passage.
- 8.5 Mr Webb said that productivity of spawning was determined by the occurrence of floods during egg incubation and the ability of fry and fingerling trout to make it down to the lake the following summer when the stream rarely flows in its lower reaches.
- 8.6 Habitat in the upper river, above the footbridge, sustained a small resident population of adult trout supplemented by a few lake trout that stay after spawning. Mr Webb said that juvenile trout produced from spawning of resident trout in the upper river would also contribute to the Lake Benmore fishery if they were able to reach it.
- 8.7 The most commonly fished river reach was upstream from Lake Benmore to the SH 83 Bridge with the length of river available diminishing to nothing in midsummer. The Otamatapaio River mouth was targeted by boat anglers where the flowing water entering Lake Benmore carried food to lake trout.

Otamatapaio River: Fish and Game Issues

- 8.8 Mr Webb said that Glen Bouie Creek and Backyard Stream were unlikely to contain sports fish populations. However the contributions these streams made to surface flows in Corbies Stream and the Otamatapaio River which did sustain trout, required that there was sensitive management of the irrigation take. Restriction on abstraction from Glen Bouie Creek when Otamatapaio River flows are between 200 L/s and 600 L/s would provide for natural flow regression in receiving waters downstream and rejuvenation of habitat from natural flushes.
- 8.9 The Plan required a minimum flow of the 5-year, 7-day low flow set at the downstream end of the catchment. For the Otamatapaio River any flow monitoring site in the lower 2 km of river was likely to have a mean annual 7-day low flow of zero. Mr Webb said that the applicants had based their minimum flow on the footbridge flow monitoring site which was about 3 km upstream from the most upstream intake from the Otamatapaio River. This was a viable alternative to a monitoring site in the lower catchment provided there was real-time monitoring of all takes to ensure compliance with minimum flow conditions.

Remedy Sought by Fish & Game

- 8.10 Mr Webb sought a consent condition that gave effect to the undertaking of Otamatapaio Station and the Andersons to work together to share available water in the mainstem of the Otamatapaio River recognising the need to reduce the effects on fisheries values to an acceptable level.
- 8.13 He also said that Fish and Game supported a minimum flow of 200 L/s at the footbridge as the 1 in 5 year 7-day minimum flow at that site. Abstractions from the mainstem and tributaries were tied to the footbridge monitoring site. Abstractions should be monitored by instantaneous and remote recording to ensure compliance with minimum flow conditions.
- 8.14 The irrigation season should be that proposed by the applicants 1 October to 31 March.
- 8.15 Fish and Game also supported stock exclusion and buffer zones for Otamatapaio River and Corbies Stream.

Mr Frank Scarf – hydrologist for Fish & Game

- 8.16 Mr Scarf said that there were four applications to take from the Otamatapaio River. They were:
- (a) CRC012047 – The current application by the applicant.

- (b) CRC012017 K J Anderson Family to divert and take 110 L/s and 1,749,656 m³/yr from Corbies Stream at map reference H40:787178 for irrigation of 105 ha.
 - (c) CRC012019 K J Anderson Family to divert and take up to 110 L/s and 1,188,806 m³/yr from Corbies Stream at map reference H40:786213 for irrigation of 105 ha.
 - (d) CRC041033 Otematata Station Ltd to divert up to 400 L/s from Glen Bouie Stream and to discharge that water into Backyard Stream for subsequent diversion into storage located some 2km downstream. Water was to be taken from storage at a rate of 75 L/s for irrigation of 120 ha.
- 8.17 Otamatapaio Stream was not separately identified within Rule 2 Table 3 and therefore defaults to the 'All other rivers and streams' category. Hydrologists acting for the various parties agree that the minimum flow site should be on the Otamatapaio River at Footbridge (H40:759168). The 1:5 yr LF estimate for this site was 200 L/s. Mean flow was assessed to be 1120 L/s.
- 8.18 Mr Scarf said that the proposed minimum flow site was located immediately upstream from the Otamatapaio Station intake. In her s42A report Ms Penman proposes that all takes from the Otamatapaio River including those from Corbies and Glen Bouie streams should be subject to the following water management restrictions.
- (a) When the flow was in the Otamatapaio River at Footbridge was greater than 600 L/s then water may be taken at the maximum rate specified on the consent.
 - (b) When the flow was less than 600 L/s at the Footbridge but greater than 200 L/s then the rate of divert/take shall be reduced according to the following formula.

% of take rate allowed = (Observed flow - 200) / 400
 - (c) When the flow recedes to less than 200 L/s at Footbridge all taking of water for irrigation purposes shall cease and flow in all diversion races shall be restricted to that required solely for stockwater purposes.
- 8.19 Mr Scarf supported this management regime for these four applications. Under the above condition, all consents would be reduced to half their consented take when flow at the Footbridge fell below 400 L/s. Concurrent gaugings work carried out by Fish and Game indicated that between the Corbies confluence and SH 83 there was a loss of about 200 L/s. The minimum flow regime proposed would ensure that some flow in this section was retained for much of the time so enabling fish passage from Lake Benmore to the upper reaches of both Corbies Stream and the Otamatapaio.

Mr Graeme Hughes (Fish & Game)

- 8.20 Mr Hughes said that the Otamatapaio River was a tributary of the Ahuriri River. Due to the inundation of the lower Ahuriri River when Benmore Dam was built it now flows into Lake Benmore but retains its importance as a spawning water for lake trout. Both species, brown and rainbow trout, ascend the river during their spawning periods. Although the river was small, as in other tributaries, a number of post-spawning adults would stay in the river where they were available to anglers. In most years, during the height of summer the lower 3 or 4 kilometres would dry due to naturally occurring lows flows, exacerbated by irrigation abstractions. Downstream migration of juvenile trout was stopped and many perish amongst the substrate as the water receded.

Mr Paul Horgan (Te Runanga o Ngāi Tahu)

- 8.21 Mr Horgan told us that Ngāi Tahu had taken a balanced approach when assessing the applications and resisted the temptation to simply oppose all applications in the entirety. More particularly, Ngāi Tahu has generally placed its emphasis upon the new (rather than replacement) consent applications and those that will result in large scale land use intensification, rather than the taking of water so as to provide security of supply for existing farming operations.
- 8.22 Mr Horgan told us that Ngāi Tahu had adopted two focal points against which they assessed the applications; the Ahuriri Delta was one of these as it would be one of the most acute receiving environments for the discharge of nutrients from the irrigation proposals. He told us it was also an area where Ngāi Tahu proposes to undertake mahinga kai restoration.

8.23 Mr Horgan told us that provided the smaller applicants carry out appropriate riparian planting and fencing and undertake not to significantly increase the intensity of their farming operations, then Ngāi Tahu were not opposed to the granting of consent. This position was evident in the exchange referred to by Ms McCabe (#7.82) where Mr Horgan acknowledged the improvements made by the applicant and that it was unlikely they would be specifically challenging it given it was a replacement application.

Ngāi Tahu-Mamoe Fisher People

8.24 Submissions were received in opposition to this application from Ngāi Tahu-Mamoe Fisher People. The concerns of the Ngāi-Tahu Mamoe Fisher People seem to relate specifically to the resource consent process, rather than this specific application.

Department of Conservation

8.25 In the legal submissions advanced on behalf of the Department of Conservation (DoC) we were told that the Director-General is particularly concerned about:

- (a) The possible effects on threatened indigenous fish populations in the lower Ahuriri, lower Tekapo and Pukaki Rivers (bignose galaxiids, in particular); and
- (b) The cumulative effects of these proposals on habitat for threatened fish and birds in the Upper Waitaki.

8.26 DoC put forward a range of briefs of evidence from very experienced ecological consultants and employees. We signalled in Part A we would refer to that where relevant in terms of individual applications within the context of Part B decisions.

8.27 An overriding theme coming through the DoC expert evidence was a criticism of the applicant group, including UWAG applicants, that very few of the streams and rivers subject to applications to take water were the subject of assessments of aquatic fauna and there was little in the way of information on the ecological effects of the proposed application.

8.28 DoC was concerned that key ecological information was lacking assessments of effects for all indigenous fish and birds.

8.29 DoC were critically concerned that an increase in nutrient levels and periphyton in streams and rivers has the potential to alter the invertebrate fauna of these streams, from communities with organic and nutrient pollution-sensitive species (such as mayflies) to communities with organic and nutrient pollution-tolerant species (such as snails and chironomids).

8.30 These experts noted that fish and bird diets that are closely linked to mayflies and caddisflies have the potential to be affected by changes to the invertebrate community, and this has not been assessed by many applicants.

8.31 The approach will be to refer to the maps and plans given by DoC, which identified the locations of indigenous fish populations in relation to applications sites. For this application Mr Peter Ravenscroft identified a population of the bignose galaxiids in streams adjacent to the application site.

Mackenzie Guardians – Ms Di Lucas

8.32 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.

8.33 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 #41.

8.34 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.

8.35 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, nor did it have a high natural landscape rating. We noted from her Attachment 16, she

had identified the site as being with an existing cultivated area. She had also classified the site as not being visible or having a viewshed from State Highways. We also noted from her attachments, particularly Attachment 19, the subject site was not noted as being available to view from public land and public access and/or public viewpoints.

Mackenzie Guardians – Dr Susan Walker (ecologist)

- 8.36 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.
- 8.37 In terms of her assessment as per Attachment 15, Dr Walker assessed the application site as being approximately 55% converted. She considered that the potential effects of irrigation on terrestrial biodiversity to be moderate. She told us that a tenure review had been completed and the biodiversity values mapped. In terms of her comments on existing biodiversity and reasons for concern she noted that the site was partly developed but overlaps parts of Clark Creek/Otamatapaio River Swamp (SSWI), which is a waterfowl and wader habitat. She noted that the application site does not appear to overlap with significant inherent values identified in the tenure review, but she noted there was little current information about the site. We observe that she used CRC reference number CRC012727, which relates to the disturb the bed application in Otamatapaio River. However, we think that her assessment more correctly related to the divert, take, and use application, namely CRC012047.

Meridian Energy Ltd

- 8.38 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.
- 8.39 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.
- 8.40 The current applications were included in the Meridian Energy Ltd list of consent applications of concern. The principle 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 UPDATES TO THE SECTION 42A REPORTS

Ms Penman

- 9.1 The addendum s42A report of Ms Penman discussed additional matters that had been identified throughout the hearing, or provided comment on changes proposed by the applicant.

Divert, take and use - CRC012047

- 9.2 Ms Penman agreed that proposed conditions should be included in the condition set - 50 m layback from Lake Benmore and 25 m layback from waterways for fertiliser application and riparian planting along Clarks Creek.
- 9.3 Ms Penman said that provided the proposed fish screen complied with the NIWA guidelines than she is satisfied with this amendment.
- 9.4 Ms Penman also identified some discrepancies with the OVERSEER® input parameters used by the applicant and noted that the total irrigation area of 166 ha was used, but 200 ha are applied

for under this application. Also 600mm irrigation application depth is used, but 748 mm is applied for under this application for the entire 200 ha area.

- 9.5 Ms McCabe confirmed that the rate of abstraction will be usually at 140 L/s but will be up to 200 L/s when the flows in the Otamatapaio River are greater than 600 L/s (paragraphs 13-15).
- 9.6 Ms McCabe noted that the fish screen will be located within the race downstream of the intake itself to avoid work in the river bed. Provided this complies with the NIWA guidelines Ms Penman was satisfied with that amendment.
- 9.7 A draft FEMP for the applicant and assessment of cumulative water quality effects was included with Ms McCabe's evidence (Appendix D).
- 9.8 Condition (3) was amended to include "storage" and "domestic use" under this consent. Ms Penman agreed with this amendment.
- 9.9 Condition (3) was also amended to remove the reference to "excluding milking dairy cows". If this condition is amended, she recommended it specify that irrigated pasture will be "only for grazing of sheep and beef cattle" instead.

Discharge - CRC012049

- 9.10 Condition ((5)) (Appendix C) for the discharges has been deleted as Ms McCabe does not consider it necessary to meter the rate of discharge. We agree with this condition being deleted.

Works in the bed - CRC012727

- 9.11 Recommended condition (6) for CRC012727 noted that in undertaking the works authorised under that consent, any diversion of a braid within the bed, shall not be more than 50m in length. This was a condition proposed by the applicant in their application to mitigate effects on water quality. However, 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.
- 9.12 Ms Penman considered that there is sufficient information provided by the applicant within the application material to enable issue of a permit to temporarily divert water during works (in accordance with Rule 24 of the WCWARP, given that exemption is not provided in the plan for diversions of this nature). She provided us with a range of draft conditions to utilise should we be minded to grant a temporary diversion permit.

Mr Glasson

- 9.13 Mr Glasson in his addendum report did note Mr Craig's landscape assessment. He noted that irrigated was only to occur on the inland side of the highway and not on the lakeside.
- 9.14 His recommendation however was that with the removal of irrigation from the lakeside and riverside of the road, the irrigation proposal is now acceptable.
- 9.15 As we earlier noted, CRC021330 already allows the applicant to irrigate on the lakeside and also the roadside of station. That is, on the southern side of the station site from State Highway 83. Thus, it is not open to us to impose landscape and/or amenity controls in respect of this application because the applicant can still undertake irrigation activities utilising CRC021330 within a certain distance of the road. This application does not extend to the northern side of the road in any event.

Dr Freeman

- 9.16 Dr Freeman said that the Otamatapaio Station proposal was one that, on the basis of the currently available information, he had significant uncertainties about potential adverse effects on cumulative water quality. However, depending on additional considerations relating to issues other than cumulative water quality effects, could be granted, provided that either more information is obtained to reduce the uncertainties and/or subject to strict comprehensive monitoring and response conditions that would enable a rapid and effective control response that would adequately prevent the occurrence of significant adverse effects,

10 APPLICANT'S RIGHT OF REPLY

- 10.1 Mr Chapman addressed FEMP compliance with OVERSEER® and nutrient modelling.
- 10.2 He said it had already been explained in evidence that Otamatapaio was a property in transition undergoing conversion to spray irrigation of replacement consents. It was also a property with significant border dyke irrigation under a separately held consent.
- 10.3 In addition the OVERSEER® model had not accounted for the site specific mitigation options identified in the FEMP with respect to filter strip planting, fencing and settling basins. Within the FEMP, two OVP files have been generated based on borders and spray irrigation which have both been sent to Dr Freeman for audit. It had also included the irrigation area proposed within two lake consents which are outside this hearing process but which it was anticipated should be granted shortly.
- 10.4 The table below identified that while the border dyke system still operates P thresholds will be exceeded until they are converted to spray irrigation, whereby P thresholds will be met.

	OVERSEER® proposed modelled outputs kg/year with existing Glenburn borderdykes	OVERSEER® proposed modelled outputs kg/year with Glenburn borderdykes converted to spray	WQS threshold kg/year
Total N leaching/runoff	17771	16993	22466
Total P leaching/runoff	891	312	588

- 10.5 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.
- 10.6 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.
- 10.7 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.
- 10.8 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.
- 10.9 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.
- 10.10 We did subsequently receive from Mr Chapman generic conditions and revised FEMPs applicable to all the UWAG applicants.
- 10.11 We received FEMPs in April 2010; they were followed by further FEMPs that we received in November 2010. We have considered the November FEMPs in our overall determination and, in particular, in respect of conditions.

11 STATUTORY CONTEXT

- 11.1 The relevant statutory context for a **discretionary** activity 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

12 EVALUATION OF EFFECTS

- 12.1 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 in respect of all consents are :
- (a) Effects on flows and ecosystems
 - (b) Effects of inefficient take and use on other users
 - (c) Effect of use on water quality
 - (d) Effect on Tangata Whenua values
 - (e) Landscape effects
 - (f) Effects of discharge
 - (g) Effects of works in bed
 - (h) Positive effects
- 12.2 In assessing effects we have borne in mind that we are in fact assessing two parts of this proposal. The first we call the 'existing' irrigation system, made up of border dykes and distribution channels. The second part is the intended spray irrigation system.
- 12.3 In terms of the first part, this activity is a different set of effects than the second, which are generally more adverse. However, we think a continuation of these adverse effects is acceptable, taking into account the following points.
- 12.4 First, the activity has been ongoing for a considerable number of years. Consequently, the effects of it are already present within the environment. Secondly, the activity will only continue for a limited period of time. Finally, continuation of the status quo enables funding to accrue to provide for conversion to spray irrigation, which will provide an overall improved environmental outcome.
- 12.5 What follows in terms of assessing effects principally relates to the spray irrigation system.

Effects on flows and ecosystems

- 12.6 There were a number of submissions concerned with minimum flows and protecting fisheries values in all rivers and tributaries in the Upper Waitaki catchment. Fish and Game NZ lodged several submissions on this application and describe in detail the Otamatapaio catchment, its importance for fisheries values.
- 12.7 There was no minimum flow on the original consent. ECan had assessed the minimum flow on the Otamatapaio River as 200 litres per second at the Footbridge which was equivalent to the 5year 7day low flow, in line with Table 3, row xii of the WCWARP. The applicant proposed this

minimum flow. Although the minimum flow site is not at the "downstream end of the catchment" it is a long established recorder site located approximately 5 kilometres upstream of the Otamatapaio River and Corbies Creek confluence.

- 12.8 Fish & Game (Mr Frank Scarf) was satisfied with the proposed minimum flow and monitoring location.
- 12.9 Dr Adrian Meredith (surface water scientist, ECan) had also provided comment on the location of the proposed minimum flow site and proposed minimum flow. He considered that for the periods of the summer when peak abstraction would be occurring and when flows would be lowest, the proposed minimum flow (200 litres per second) and monitoring site was suitable for protecting those matters outlined in Policy 4. Dr Meredith considered that in the shoulder irrigation season, when trout and salmon spawning was likely to occur, it would be beneficial to have higher flows in the order of 400 litres per second to ensure surface flow is retained at SH83.
- 12.10 While it may be desirable to have a minimum flow that is higher in the shoulder seasons, the natural flows in the river at this time are likely to be above the minimum for most of the time. We also note that as the assessed 5-year 7-day low flow in terms of compliance with Table 3 has been set at 200 litres per second, the application would be consistent with the intention of the WCWARP in setting minimum flows.
- 12.11 While sustaining a higher minimum flow in the shoulder irrigation period may afford a higher degree of protection to fish habitat, particularly for spawning (Policy 4(e)), this must be balanced against, along with other matters, consideration of naturally occurring dry river or stream beds (Policy 4(j)). While the proposed minimum flow of 200 litres per second, measured at the Footbridge, may not ensure a surface flow is retained at the downstream end, as the river naturally goes dry, we do not consider that this would result in unacceptable effects on instream habitat.
- 12.12 We received evidence from Mr Boraman on behalf of the applicant as to the appropriate minimum flow regime for the proposed take, including discussion of flow sharing regimes. We accept Mr Boraman's evidence and have included his recommended conditions into the conditions of consent. In summary this provides for a minimum flow of 200 L/s in the Otamatapaio River, with a reduction regime between 450 L/s and 200 L/s. We consider that adopting these restrictions on minimum flows will adequately protect the ecosystems of the streams and takes into account effects on other users.
- 12.13 The applicant proposed to screen fish on the intake via a submerged gallery. The gallery will be constructed in accordance with "Fish Screening: good practice guidelines for Canterbury, NIWA Client Report".
- 12.14 While there were submissions concerned with ecological values and minimum flows, this had been adequately addressed above. We consider that in setting minimum flows for the WCWARP, protection of instream ecological values has been taken into account. The applicant proposed to install a suitable fish exclusion gallery, and they proposed to cease abstraction in accordance with the environmental flow and allocation limits established for the Otamatapaio catchment as set out in the WCWARP, we therefore consider the effects of the proposed diversion and take on ecosystems to be minor.
- 12.15 In respect of the issues raised by the Department of Conservation, we consider that these issues are adequately addressed by the imposition of a setback from water bodies, which has been incorporated into the conditions of consent.

Effects of inefficient take and use on other users

- 12.16 The applicant proposes to take water at a rate not exceeding 170 litres per second and use up to 1,496,070 cubic metres of water per year for irrigation of 200 hectares. The applicant said this was a replacement consent. However, this assumption appears to be based on the fact that the maximum rate of take has not been increased and on the assumption that they are entitled to increase the area irrigated because their conversion to the more efficient spray irrigation would allow them to irrigate a larger area with the same maximum rate of take.
- 12.17 That assumption suggests that the only reason for incorporating the efficiency polices in the WCWARP was to allow more land to be irrigated. That is not correct. Any significant increase in the scope of the existing proposal must be considered as a new application.

- 12.18 With 80% efficiency, and the rate of water applied for, the maximum application depth would be 6.9 millimetres per day. The applicant considered that the proposed volume and rate was efficient.
- 12.19 Once converted to spray, the proposed rate of take (170 L/s) would be more than that required for an efficient irrigation system over the proposed 200 hectares. The applicant said that the "usual" rate for irrigation will be 140 litres per second which equates to a daily application rate of 4.8 millimetres per day at 80% efficiency which is, in their opinion suitable for spray irrigation in this area. They have identified that off-line storage may be utilised for times when 170 litres per second is being diverted.
- 12.20 In terms of assessing the proposed annual volume against Policy 16, the applicant undertook an analysis using the Irricalc methodology, which they consider incorporates the requirements in the WCWARP but they failed to produce any soil moisture measurement data as required by Policy 16. No supporting information for the Irricalc methodology was provided and there are uncertainties surrounding its suitability for use in the Waitaki catchment.
- 12.21 The Irricalc outputs for the proposed irrigation area were 1,617,400 cubic metres per year. Because the proposed volume was less than this, they consider that it would be efficient and had taken into consideration the policies of the WCWARP.
- 12.22 As a comparison, Ms Penman used ECan's GIS system and the method outlined in Report U05/15 to determine an appropriate annual volume for spray irrigation of the proposed area in accordance with Policy 16(c). She based this calculation on intensive land use with 60% light soil (PAW <75mm) and 40% medium soil (PAW 75-110mm), and Effective Summer Rainfall of 175mm. Using the above figures, an annual volume of 1,228,000 cubic metres would be considered an efficient volume of water for spray irrigation of this area.
- 12.23 As acknowledged by the applicant, under Policy 16 of the WCWARP there are two acceptable methods for calculating an 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.
- 12.24 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.
- 12.25 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 1,228,000 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.
- 12.26 We also consider that the standard efficiency condition (WP05) is appropriate to ensure that water is not applied to the soils above their average water holding capacity, nor onto unproductive areas of land.

Effects of use on water quality

- 12.27 The applicant considered that effects on water quality would continue to be minor. The applicant committed to implementing the "Mandatory Good Agricultural Practices" set out within the Farm Environmental Management Plan (FEMP). Implementing these practices 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.
- 12.28 A "desk top" on farm risk assessment was undertaken and the implementation of the mitigation required derived from that assessment will be a key requirement of the FEMP which had been proposed as a condition of consent.
- 12.29 The current system is border-dyke, and wild flooding with a conversion to spray systems proposed. Mr Chapman in his reply presented a table identified that while the border dyke system still operates, P thresholds will be exceeded until the border dykes are converted to spray

irrigation whereby P thresholds will be met. The data presented indicated that the conversion will lead to a lower discharge of nutrient from the property.

Water Quality Cumulative effects

- 12.30 The applicant has been involved with the study by 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.
- 12.31 The report by MWRL had been audited and a separate s42a planning report prepared by Dr Michael Freeman and a number of technical s42A reporters (Reports 4A-F).
- 12.32 Subsequent to the presentation of the applicant's evidence, Dr Freeman listed this application as one where, on the basis of the currently available information, there are significant uncertainties about potential adverse effects on cumulative water quality and depending on additional considerations relating to issues other than cumulative water quality effects could be granted, provided that either more information is obtained to reduce the uncertainties and/or subject to strict comprehensive monitoring and response conditions that would enable a rapid and effective control response that would adequately prevent the occurrence of significant adverse effects.
- 12.33 Within Part A of this decision we have reviewed the MWRL WQS and our findings have been taken into account in our consideration of this application.
- 12.34 At the hearing the applicant submitted a draft copy of a farm environmental management plan (FEMP). The applicant tabled a final FEMP dated 22 November 2010, which included a Farm Environmental Risk Assessment (FERA).
- 12.35 An OVERSEER assessment indicated that the applicant could 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 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).
- 12.36 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 trophic state of the Ahuriri Arm of Lake Benmore;
 - (b) Groundwater chemistry and in particular the proposed threshold of 1 mg/L NO₃-N; and
 - (c) Periphyton growths and other ecological effects in the Otamatapaio River and Corbies Stream.
- 12.37 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.
- 12.38 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) The soils are a mixture of fine sandy loams, organic soils, and stony silt loams. No specific information is given on soils within the irrigation area but as they have been irrigated for many years we assume they are reasonably developed and that the developed setting in OVERSEER will give a reasonable estimate of nutrient losses.
 - (b) 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.

- (c) The mitigations proposed in addition to those assumed in OVERSEER are listed as:
- (d) No winter application of fertiliser on the irrigation area
- (e) N fertiliser applications split to under 50 kg N/application
- (f) No P fertiliser within three weeks of irrigation
- (g) Olsen P of below 30 maintained

12.39 The above mitigations appear to us to be quite standard and are practices that we would view as conforming to Good Agricultural Practice.

12.40 Measures proposed to mitigate site specific risks identified in the FERA are:

- (a) Redevelopment of existing irrigation, conversion to spray irrigation at Otamatapaio and Glenburn
- (b) Install a culvert in the watercourse at Glenburn where the main track crosses the water course
- (c) Development of settling pond at Clark Creek, just prior to crossing SH8
- (d) 20 metre layback from any water way when applying fertiliser by land based application e.g. bulk spreader
- (e) Fencing stock out of permanently flowing waterways namely Clark Creek through riparian fencing within the irrigated area at Otamatapaio
- (f) Monitor and manage stock access, stock type and stock number from all permanently flowing waterways within other non irrigated intensively farmed areas

12.41 We note that further mitigation measures are proposed relating to the grant of CRC961829.

12.42 The conversion from border-dyke to spray irrigations proposed within the FEMP will make a significant difference in minimising nutrient loss from the irrigated area even though the area irrigated will be greater. Together with the other mitigation measures offered, our view is that considering the relatively small scale of the proposal, these measures represent a comprehensive package, which will give us confidence that offsite nutrient losses will be minimised.

12.43 The critical issues for us for are:

- (a) Is the predicted nutrient load from the three properties realistic?
- (b) What effect will the predicted nutrient load (alone and in combination with other applications we grant) have on the waterbodies listed above making reasonable assumptions about flow paths?
- (c) Can the effects be avoided, remedied or mitigated?

Predicted load realistic

12.44 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 McFarlane's point on this but not 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. The applicant did not provide information that allowed us to gauge whether such shallow soils are prevalent on the properties. However because they have been irrigated for at least 40 years we have assumed that there is reasonable soil development and that the developed setting in OVERSEER should provide a

reasonable estimate of nutrient losses. There being no other issues in Mr McNae's opinion that would affect the accuracy of OVERSEER predictions, we accept that the loads predicted are reasonable.

Effects on waterbodies

Ahuriri Arm of Lake Benmore

- 12.45 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 together with priority issues.
- 12.46 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. Dr Freeman's (Table 7) figures (based on modelling using the developed setting only) gave the total predicted nitrogen load lost from the properties as 16,747 kg N/y), which represents a ~9.6% of the current load estimated for the Ahuriri Arm (see Part A, Section 9).
- 12.47 However there are to the following mitigating factors to consider in this case:
- (a) This is largely a replacement for an existing activity that has been going on for ~40 years then it will be contributing to the current trophic state of the Ahuriri Arm.
 - (b) Dr Freeman's (Table 7) figures provide the total predicted nitrogen load lost from the whole property. The total irrigated area (consented, replacement plus new) represents only 3.5% of the total property area. Given the small proportion of the farm currently irrigated, we estimate that the N loss (unmitigated) from the new area irrigated would increase only marginally and be of the order 1000 kg/y.
 - (c) With the package of mitigation measures proposed (the most significant of which is conversion to spray) we are of the view that total nutrient loss will not increase and that based on Dr Robson's evidence (Part A) and the applicants OVRSEER modelling may even decrease slightly. Converting from border dyke to spray will have a greater impact on phosphorus than nitrogen losses and given that the Ahuriri Arm is more sensitive to phosphorus (evidence of Dr Romero, Part A) this can only be beneficial.

Periphyton growths in Clark Creek and Otamatapaio River

- 12.48 The applicant did not provide an assessment of the current environmental condition of streams potentially affected by their current irrigation activities (Clark Creek, Otamatapaio River) and we note that no similar assessment was carried out in this catchment by Dr Coffey for MWRL.
- 12.49 No evidence was presented on periphyton in any of the above waterbodies, however we do not accept that there is no issue to consider. In our view the nutrient load on Clark Creek may already result in nuisance periphyton growths in that stream under summer low flow conditions. Nuisance periphyton growths in the Otamatapaio River as less likely because of its higher flows.
- 12.50 If granted consent, conditions would include periphyton monitoring. However in our view the conversion from border dyke together with the other mitigation measures proposed by the applicant should, in our view, decrease the risk of nuisance periphyton growths in this creek.

Avoided, remedied or mitigated

- 12.51 We acknowledge that the applicant has proposed significant mitigation measures in the FEMP to minimise the effects of their activities. In our view, the most significant of these measures is elimination of border dyke and the replacement with more efficient spray irrigation systems. Such measures will, in our view, ensure no increase in nitrogen load and a significant decrease in phosphorus load to Clarks Creek, the Otamatapaio River and the Ahuriri Arm of Lake Benmore.

- 12.52 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. We have noted in decisions for new irrigation that the lock-step approach is not a substitute for a robust Assessment of Environmental Effects in which the state of the existing environment is well defined. This also applies to replacement consents, where (as in this case) it is incumbent on the applicants to assess the effects of their existing activities. 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.
- 12.53 In summary, our view is that the adverse effects on water quality from the proposed activity are no more than minor with the package of mitigation measures proposed by the applicant.

Landscape effects

- 12.54 We conclude, primarily relying upon the evidence of Mr Craig that the landscape effects arising from the grant of this application would be acceptable. We note the interaction between this activity and CRC021330. In short, there are existing irrigation activities that already occur in the "visually sensitive parts of the station along the lakeside and abutting State Highway 83". Those activities are beyond our control and form part of the existing environment. Further, we note that the activities to do with irrigation have been occurring on the subject site for many years. Thus whatever landscape effects may arise from the grant of this consent have been assessed against that existing circumstance, leading us to the overall finding that such landscape and amenity effects are minor.

Adverse effects on Tangata Whenua values

- 12.55 Mr Paul Horgan advised us that following an intense period of assessing the applications that Ngāi Tahu had shifted the focus of their concerns to applications that involved large scale intensification and dairying.
- 12.56 This application for a replacement consent and also for a moderate increase of new irrigation, which does not constitute a significant increase in the scale or intensity of this farming operation. A significant point is that with conversion to spray and implementation of mitigation measures proposed through the FEMP and MGAPs it will cause no increase of nutrients being discharged from the property.
- 12.57 We consider that the proposal with the mitigation measures proposed and move to a more efficient water conveyance and spray irrigation will have an effect on tangata whenua cultural values that is minor.

Effects of discharge and works in bed

- 12.58 There were no submissions on either the discharge or the works in the bed. Both the Section 42A reporting officer and the applicant's consultant agreed that all the potential adverse effects from these two activities were minor. After a close consideration of their evidence we concur with their opinion.
- 12.59 We also make the observation that these activities have been occurring on site for a significant period of time.
- 12.60 In addition, with the consequent to change to spray irrigation there is less likelihood of need of works in the bed of the river and also the discharge will reduce in quantity. We do acknowledge there is likely to be a continued discharge as a consequence of stockwater takes.

Positive effects

- 12.61 The applicant has already replaced part of the border dyke and old wild flooding system with an efficient spray irrigation system and has agreed to complete the conversion to replace all border dykes with spray. This will give rise to positive effects in terms of economic benefits to both the applicant and others within the district.
- 12.62 We have already noted that we are persuaded to allow continuation of the border dyke irrigation system for a limited term to enable the applicant to accrue the economic wherewithal to enable the ultimate conversion to spray irrigation for the entire station.

Key conclusions on effects

- 12.63 In relation to the actual and potential effects of the proposal, our key conclusions are as follows.
- 12.64 The effects, both locally and at a cumulative level, on landscape and amenity will, based on the evidence of Mr Glasson and Mr Craig (which we accept), be no more than minor.
- 12.65 We have concluded that the existing terrestrial vegetation on the subject site is of low ecological value. While irrigation will irreversibly eliminate any residual native vegetation, there was no direct evidence before us of rare or endangered species present on the subject site. We concluded overall that the effects on terrestrial vegetation caused by the irrigation activity will be minor.
- 12.66 With the package of mitigation measures proposed the most significant of which is conversion to spray irrigation, we are of the view that the total nutrient loss will not increase and - based on Dr Robson's evidence (Part A) and the applicant's OVERSEER modelling - may even decrease slightly. Converting part of the property from border dyke to spray irrigation will have a greater impact on phosphorus and nitrogen losses and given that the Ahuriri Arm is more sensitive to phosphorus, this can only be beneficial.
- 12.67 We have concluded that the effects on water quality are minor. Thus we are satisfied that the effects on tangata whenua values will be minor.
- 12.68 In terms of periphyton, we had little evidence of value presented on periphyton in Clark Creek and Otamatapaio River. However, we have concluded that whatever nuisance periphyton growths may occur as a consequence of irrigation, suitable conditions (which require monitoring and a response to that monitoring) would suffice. We are of the view that conversion to spray irrigation should decrease the risk of nuisance periphyton growths in Clark Creek and Otamatapaio River, provided a minimum flow of 200 litres per second at the "footbridge" is included as a condition, which flow is equivalent to the 5-year, 7-day low-flow in Table 3, Row xxii WCWARP.
- 12.69 The placement of the flow recorder at the footbridge while it is not at the downstream end of the catchment, given it is long established recorder site located approximately 5 km upstream of the Otamatapaio River and Corbies Creek confluence, this will, we think, comply with the WCWARP and contribute to the understanding of water flows in the Otamatapaio River.
- 12.70 In terms of efficient use of water we are of the view that an annual volume of 1,228,000 cubic metres would be an efficient volume of water for spray irrigation of the proposed 200 hectare irrigation area.
- 12.71 The granting of these consents would result in the preservation of the economic benefits currently accruing to the applicant, as well as a likely increase in the same. In addition, there will be economic benefits to the district.
- 12.72 We believe that provided there is adequate monitoring imposed together with metering and fish screens, that the effects of these replacement consents can be limited to less than minor.

13 EVALUATION OF RELEVANT PLANNING INSTRUMENTS

- 13.1 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.
- 13.2 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.
- 13.3 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.

Water quality

- 13.4 In relation to water quality, the key documents we have considered are the WCWARP (incorporating the objectives of the PNRRP and the operative NRRP provisions).
- 13.5 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, lakes, and Objective 1(d) seeks to safeguard the integrity, form, functioning and resilience of a braided river system.
- 13.6 We have determined that granting these consents with conditions (particularly those set out in the FEMP) combined with the conversion from border dyke to spray irrigation will help to minimise nutrient loss from the irrigated area. This gives us confidence that the off-site nutrient losses will be minimised and the health of streams flowing through the properties will be enhanced. We are also satisfied that with the applicant's proposed changes in the irrigation system and mitigation package, our view is that there will be no significant net increase to the nutrient load on the Ahuriri Arm of Lake Benmore.
- 13.7 In terms of potential periphyton growths in Clark Creek and Otamatapaio River, we received no data on the current state of streams or likely future change. However, given that this is a replacement consent for existing activities, we consider that the change in irrigation system and proposed mitigation measures should decrease the incidence of any nuisance periphyton growths in these water bodies.
- 13.8 Overall, we can conclude that given the change in irrigation systems from border dyke to spray and mitigation measures proposed that those measures will not increase the net nutrient load on Lake Benmore, Clark Creek and Otamatapaio River. Thus we are able to conclude that a grant of consent would be consistent with Objective 1(b) and 1(d) WCWARP.
- 13.9 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 in terms of periphyton annual biomass not exceeding MfE guidelines during summer low-flow conditions, then our view is that granting consent would be consistent with Objective 1(c).
- 13.10 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.
- 13.11 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 of the PNRRP not being achieved. As we 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. However we have generally given greater weight to the NRRP provisions on the basis that they represent the current approach for achieving the common goal of protecting water quality.
- 13.12 Under the NRRP Clarks Creek and the Otamatapaio River (within the vicinity of the application site) are classified as "Hill Fed Lower". 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 200 mg /m² (periphyton guideline for safeguarding aquatic biodiversity and also recreation). As mentioned above, we received very little evidence on this issue. However we are nonetheless satisfied that with appropriate periphyton monitoring conditions, granting this consent (in combination with others we grant) will not result in breaching of the periphyton guidelines and would remain consistent with this objective.
- 13.13 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) caused the TLI maximum to be breached.

- 13.14 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 would not be consistent with the key objectives and policies of both of these plans relating to water quality.

Environmental flow and level regimes

- 13.15 Policies 3 and 4 of the WCWARP refer to the setting of environmental flow and level regimes to achieve the objectives of the WCWARP. This is reflected in the rules of the PNRRP, which specify minimum flows and levels for waterbodies and allocation limits for specific activities.
- 13.16 In relation to this application, the applicant is proposing to adopt the 5-year, 7-day low-flow required by the WCWARP Table 2, Row xx, along with the minimum flow provided by the AWCO. We consider this to be appropriate in the circumstances. Compliance with this minimum flow should ensure the proposal is consistent with Policies 3 and 4.
- 13.17 Policy 41 deals with the environmental flow regime in the tributaries of Lake Benmore. Policy 41(ii) enables access to water for the activities identified in Objective 2, to the extent consistent with Objective 1.
- 13.18 The applicant is proposing to adopt the minimum flow equivalent to the 5-year 7-day low flow as required by the plan, and is within the allocation for agricultural and horticultural activities identified in Rule 6, Table 5, therefore, the proposal is considered to be consistent with this policy.

Efficient and effective use

- 13.19 As we read the provisions of the WCWARP, there is a strong and clear focus on the efficient use of water.
- 13.20 Policies 15 – 20 provide for an efficient use of water so that net benefits are derived from its use and are maximised and waste minimised. In particular, Policy 16 requires us to consider whether the exercise of these consents would meet a reasonable use test in relation to both the instantaneous rate of abstraction and the annual volume for take, use, dam or divert. As discussed in our evaluation of effects, provided that the lower annual volume calculated by the s42 officer is adopted, we are satisfied that the rates and annual volumes reflect an efficient and effective use of water and that the reasonable use test can be met.
- 13.21 Objective 3 of the WCWARP requires us to recognise the beneficial and adverse effect on the environment of allocating water, along with the national and local costs and benefits. We consider that if water is allocated inefficiently, then this results in adverse effects on the environment in terms of water quality and also increased costs and lower benefits. On the other hand, if water is allocated in a manner that ensures its efficient use, the reverse is likely to be true.
- 13.22 Objective 4 of the WCWARP requires us to promote the achievement of a high level of technical efficiency in the use of allocated water. That can be achieved in this instance by converting the remaining border dyke systems, which are technically inefficient, to spray irrigation. Application by spray within the constraints of an annual volume will require a high degree of efficiency to ensure that crops and pasture are not stressed in extreme conditions and water is not wasted.
- 13.23 Relevant in this circumstance because we are here considering a replacement application, is Policy 28. Under this policy we need to consider whether the applicant has made all reasonable attempts to meet the efficiency expectations of this plan. We must recognise the value of investment that the existing consent holder has made and we must maintain the inclusion of the consent if granted in any allocation limits and priority plans on the waterbody concerned.
- 13.24 In terms of whether or not all reasonable attempts to meet the efficiency expectations of the Plan have been undertaken, with the proposal to convert the remaining border dyke system to spray irrigation we conclude that the applicant has taken all reasonable attempts to meet the efficiency expectations of the Plan.

Landscape and amenity

- 13.25 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. In considering these provisions we are informed by the provisions of the Waitaki District Plan which identifies the applicant's property as a classified Rural Scenic Zone.

- 13.26 For the reasons already advanced, we think that, given the existing environment, the landscape effects of this proposal are not significant and that a grant would achieve consistency with the relevant objectives and policies, particularly those of the proposed and operative CRPS.

Tangata whenua

- 13.27 Objective 1(a) of the WCWARP relates to the integrity of mauri and is closely linked to Objective 1(b). Mr Mikaere (for MWRL) submitted that there are two aspects of mauri; the tangible and the intangible and that we could only properly deal with tangible. His view was that the tangibles are able to be addressed if mauri is considered as representing the health of the particular water body in question. Given that we consider that by granting these consents with conditions and with the mitigation measures proposed by the applicant that sustainable water quality outcomes can be achieved, it follows that the integrity of the mauri will be attained.
- 13.28 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) safe-guarding their value for providing mahinga kai for Ngāi Tahu and (d) protecting wāhi tapu and other wāhi taonga of value to Ngāi Tahu. This Objective aligns with one of the principal aspirations expressed by Ngāi Tahu during the hearing of enhancing mahinga kai resources and supporting ecosystems. Our finding is that there is unlikely to be deterioration in water quality of the Ahuriri Arm as a consequence of this proposal and that this application is consistent with this Objective.
- 13.29 Objective WTL1(d) from Chapter 7 NRRP seeks to achieve no overall reduction in the contribution wetlands make to the relationship of Ngāi Tahu and their culture and traditions with their ancestral lands, water, mahinga kai sites, wāhi tapu, and wāhi taonga. We find that this proposal is within the acceptable thresholds for water quality and would be consistent with this Objective.

Works in the bed

- 13.30 The key objectives and policies that are relevant to this activity 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.
- 13.31 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 the proposed activity is consistent with these policies.
- 13.32 In respect of the temporary diversion associated with works in the bed, 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.

Discharges

- 13.33 In relation to the discharge application (CRC041332), the key provisions of relevance can be found in the water quality chapter of the NRRP (Chapter 4). This includes Objective WQL1.1 discussed above, along with Policy WQL1 which relates specifically to point source discharges that may enter surface water. Given our conclusion on the effects of the discharge above, we are satisfied that the proposed activity is consistent with these provisions.

Key conclusions on planning instruments

- 13.34 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, works in the bed and discharges.

14 EVALUATION OF OTHER RELEVANT S104 MATTERS

14.1 Section 104(2)A RMA provides:

“When considering an application affected by section 124, the consent authority must have regard to the value of the investment of the existing consent holder”

14.2 We consider that the value of the investment of the existing consent holder includes the current irrigation system as well as the farming business. Taking that investment into account, we think it appropriate that we extend consent for a limited period of five years to enable further use of the existing irrigation system. This will enable the farming business to continue and accrue financial resources to support the full conversion to spray.

15 PART 2 RMA

15.1 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

15.2 Section 6 RMA identifies matters of national importance that we must “recognise and provide for” when making our decision, including, relevantly in this application: preserving the natural character of lakes and rivers (s6(a)); protecting outstanding natural features and landscapes (s6(b)); the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna (section 6(c)); and the relationship of Māori with the environment (s6(e)).

15.3 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.

15.4 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.

15.5 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.

15.6 In relation to section 6(e) we are cognisant of the relationship that Ngāi Tahu hold with the natural resources of this area, and while no specific values were specified by Ngāi Tahu in relation to this application, we believe that the mitigation measures and conditions provide for the cultural relationship to this catchment that is of importance to Ngāi Tahu.

15.7 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

15.8 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:

15.9 Sub-section (a) refers to kaitiakitangā. We consider that the proposed activity with mitigation measures and conditions sits within the acceptable environmental parameters outlined by Ngāi Tahu such that that it will not cause distress to the function of kaitiakitangā.

15.10 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, particularly after conversion to spray irrigation, results in the efficient use and development of the water resource.

15.11 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.

- 15.12 In terms of sub-section (d), because of the assessments we have made in relation to ecosystems, we have had particular regard to the intrinsic values of ecosystems and we consider that through the grant of consent with the conditions imposed such values will be safeguarded.
- 15.13 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.
- 15.14 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

- 15.15 Finally, section 8 requires that we shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).
- 15.16 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 the 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.
- 15.17 We are satisfied that the consultation procedures provided Ngāi 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

- 15.18 Turning now to the overall purpose of the RMA, that is, “*to promote the sustainable management of natural and physical resources*”.
- 15.19 We make the following comments regarding s5 RMA:
- (a) We consider the development and use of land is consistent with the purpose of sustainable management;
 - (b) Irrigation will 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) will all be sustained.
- 15.20 This leaves section 5(2)(c) RMA and the obligation to avoid, remedy or mitigate any adverse effects of activities on the environment. The applicant has proposed mitigation for the adverse effects of activities on the environment.
- 15.21 The proposal will allow the development of land to occur, which may provide for the economic and social well-being of the community.

16 OVERALL EVALUATION

- 16.1 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.

- 16.2 The major impediment to the granting of consent was water quality and in particular effects on the trophic state of the Ahuriri Arm. We have carefully evaluated the proposal and the proposed mitigation measures together with the effects of other nearby proposals. Taking all factors into account our view is that there will be no net change in nutrient load to the Ahuriri Arm arising from the applicant's property will be minor. Taking into account priority issues and the safeguards provided by consents monitoring conditions we are comfortable with allowing the proposal to proceed.
- 16.3 Another factor in our consideration was the efficiency benefits to be gained by converting the remaining border dyke system on the property to spray irrigation, which provides efficiency and environmental benefits. We consider that allowing the continuation of the border dyke system for a limited period strikes an appropriate balance between value of the existing infrastructure and improved environmental outcomes.
- 16.4 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 which best achieves the purpose of the Act is to grant consent.

17 CONDITIONS

- 17.1 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.
- 17.2 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.
- 17.3 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.
- 17.4 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

- 17.5 In Part A we rejected the MWRL proposition that we could grant all the applications before us with conditions.
- 17.6 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.
- 17.7 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.
- 17.8 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.

- 17.9 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.
- 17.10 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,
- 17.11 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 does, 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.
- 17.12 We recognise that 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.
- 17.13 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.
- 17.14 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).
- 17.15 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 TTLI 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.
- 17.16 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.
- 17.17 An advantage of the approach discussed above is that it rewards applicants (through the granting of consents) prepared to convert from inefficient border dyke systems to modern pivot irrigators. Not only are there efficiency gains to be made by such conversion, but significant reductions in nutrient losses will also result.

18 DURATION

- 18.1 The applicant has sought a duration of 35 years for the take and use consent. We note that despite the fact that the applicant is seeking to irrigate new areas of land, the final conditions sets provided do not include the common conditions sought by Meridian, including an expiry date of April 2025.
- 18.2 Meridian through Mr Turner suggested 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.

- 18.3 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;*
- 18.4 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.
- 18.5 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.
- 18.6 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, 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.
- 18.7 In terms of the applications to discharge water (CRC012049) and disturb the bed (CRC012727), 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.
- 18.8 We note that the discharge of surplus irrigation water may cease upon full conversion to spray. However there may remain the need to discharge excess stock water, depending on whether or not the applicant retains the existing irrigation races. Unlike the take of stock water, this discharge is not covered by s14(3) of the RMA. We have therefore decided to provide consent for a full 35 year term to provide flexibility to the consent holder. If the discharge ceases within this time, then the consent could easily be surrendered by the consent holder.

19 DECISION

- 19.1 Pursuant to the powers delegated to us by the Canterbury Regional Council; and
- 19.2 For all of the above reasons and pursuant to sections 104 and 104B of the Resource Management Act 1991, we **GRANT** the applications by Otamatapaio Station Limited for the following activities:
- CRC012047** to divert, take and use water from the Otamatapaio River for domestic use, stockwater and irrigation of 200 hectares at Otamatapaio Station, SH83; and
- CRC012049** to discharge irrigation bywash, excess stock and domestic water into Clarks Creek; and
- CRC012727** to maintain a diversion and intake structure in the bed of the Otamatapaio River.
- 19.3 Pursuant to section 108 RMA, the grant of consent is subject to the conditions specified at **Appendices A, B & C**, which conditions form part of this decision and consent.

19.4 The duration of CRC012047 shall be until the 30th April 2025. The duration of CRC012049 and CRC012727 shall be for 35 years from the commencement of the consent.

DECISION DATED AT CHRISTCHURCH THIS 21ST DAY OF DECEMBER 2011

Signed by:

Paul Rogers 

Dr James Cooke 

Michael Bowden 

Edward Ellison 

APPENDIX A

Conditions of Consent: CRC0120 – Divert, take and use

1. Water shall only be taken from the Otamatapaio River at or about map reference NZMS 260 H40: 7868-2126
2. Water may be diverted , taken and used as follows:
 - a. At a rate not exceeding 170 litres per second when river flows in the Otamatapaio River at Footbridge are greater than 600 litres per second; and
 - b. At a rate not exceeding 140 litres per second when flows in the Otamatapaio River at Footbridge is equal or less than 600 litres per second but greater than 450 litres per second
 - c. at a rate not exceeding 140 litres per second when river flows in the Otamatapaio River at Footbridge are equal or less than 450 litres per second but greater than 200L/s, provided that the take complies with a sharing regime that limits the combined rate of abstraction to ensure that the flow in the Otamatapaio River at Footbridge less the combined flow of CRC012047 (Otamatapaio) and CRC012019 (Bogroy), is equal to or greater than 200 litres per second
 - d. when the flow in the Otamatapaio River is equal to or less than 200 litres per second taking of water in terms of this permit for irrigation purposes shall cease.
 - e. With a volume not exceeding 1,228,000 cubic metres between 1 July and the following 30 June

OR

provided that 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 which limits the total daily 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 this condition.

3. There shall be a minimum 5 metre setback for all conversion to spray irrigation from any permanently flowing waterways within the irrigation area marked on Plan CRC012047
4. Water shall be used for the border dyke and spray irrigation of 200 hectares of crops and pasture per irrigation season as described in the application, within the irrigation areas identified on attached "Plan CRC012047, CRC012049 and CRC012727", which forms part of this consent.
5. An annual volume not exceeding 716,800 cubic metres per year shall be used on the 112ha area identified as "Crossover irrigation area" on attached "Plan CRC012047, CRC012049 and CRC012727", in conjunction with CRC021330.
6. 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.
7. Water shall only be temporarily diverted within the bed of Otamatapaio Stream as follows:

- a. diversion shall only be for the purpose of re-installation and maintenance of the intake, in accordance with consent CRC012727*;
 - b. diversion shall only be over a length of the bed of less than 50 metres, located in accordance with Condition 1; and
 - c. diversion shall not impede fish passage or cause the stranding of fish in pools or channels.
- 8.
- a. A fish exclusion device shall be installed, operated and maintained on the intake to ensure that fish are prevented from passing into the intake.
 - b. The fish exclusion device shall be positioned to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the fish screening device.
 - c. The fish exclusion device shall be designed or supplied by a person with experience in freshwater ecology and fish screening techniques, who shall ensure that the performance criteria specified in clauses (a) and (b) of this condition are achieved, and that the device is designed in accordance with best practice, as outlined in the document Fish Screening: Good Practice Guidelines for Canterbury, NIWA Client Report 2007-092, October 2007.
 - d. Prior to the installation of the fish screen, a report containing final design plans that demonstrate that the fish screen will meet the performance criteria specified in clauses (a) and (b) of this condition, and an operation and maintenance plan for the fish screen, shall be provided to Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager.
 - e. Before the taking of any water in terms of this permit, a certificate shall be provided to Canterbury Regional Council, by a person with experience in freshwater ecology and fish screening techniques, to certify that the design plans and operation and maintenance plan for the fish screen will meet performance criteria as outlined in this condition, and that the fish screen has been installed in accordance with the details provided to Canterbury Regional Council in accordance with clause (d) of this condition.
 - f. The fish screen shall be maintained in good working order. Records shall be kept of all inspections and maintenance, and those records shall be provided to Canterbury Regional Council upon request.
9. The consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.
10. The consent holder shall cease irrigation using border-dyke systems and convert the property to spray irrigation within 5 years from the date of commencement of this consent.
- 11.
- a. The consent holder shall, within six months of the commencement date of this consent at the point of take:
 - i. 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 Otamatapaio River is measured; and
 - ii. install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes and have the capacity to hold at least one season's (as specified in conditions (3) and (4(a))) data of water taken as specified in clause (b) (i), or which is telemetered, as specified in clause (b)(ii).

- b. The water meter and recording device(s) 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:
 - i. 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
 - ii. 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.
- c. The measuring device shall be installed at a site likely to retain a stable rating (i.e. a man-made channel, concrete, steel or fibreglass pipe). Installation shall be in accordance with ISO 1100/1-1981 or equivalent and be undertaken by a suitably qualified person.
- d. The water meter and recording device(s) shall be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.
- e. The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.
- f. All practicable measures shall be taken to ensure that the water meter and recording device(s) are at all times fully functional and have an accuracy standard of 10%.

12.

- a. The water meter installed in accordance with Condition 11 shall be an electromagnetic or ultrasonic meter; or
- b. The consent holder shall, within six months of the commencement date 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.

13. Within one month of the installation of the measuring or recording device(s), specified in conditions 11 or any subsequent replacement measuring or recording device(s), 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, and demonstrating by means of a clear diagram, that:

- a. the measuring and recording device(s) is installed in accordance with the manufacturers specifications; and
- b. data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition 11.

14. 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 condition 11 and
- b. the tamper-proof electronic recording device is operating as specified in condition 11

15.

- a. The consent holder shall, prior to exercising this consent, install a water meter measuring device at (map reference NZMS 260 H40:759-168) in the Otamatapaio River that will

enable the determination of the continuous rate of flow in the reach of the waterbody to within an accuracy of 10 percent.

- i. The measuring device shall, as far as is practicable, be installed at a site likely to retain a stable relationship between flow and water level. The measuring device shall be installed in accordance with the manufacturer's instructions.
 - ii. install a tamper-proof electronic recording device such as a data logger(s) that shall time stamp a pulse from the flow meter at least once every 15 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (d)(i) and (d)(ii), and which is telemetered, as specified in clause (d)(iii).
- b. The recording device(s) shall:
 - i. 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
 - ii. 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 Councils form for Water Metering Data Collection; and be readily accessible to be downloaded by the Canterbury Regional Council or by a person authorized by the Canterbury Regional Council: RMA Compliance and Enforcement Manager; and
 - iii. shall 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.
- c. The measuring and recording devices described in clauses (a) and (c) shall be available for inspection at all times by the Canterbury Regional Council.
- d. All data from the recording device described in clause (c), and the corresponding relationship between the water level and flow (b), 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.

16.

- a. The consent holder shall within a period of 5 years from the commencement date of this consent, convert to spray irrigation and advise the Canterbury Regional Council as to the staging of any conversion.
- b. Any rights to continue border dyke irrigation shall cease 5 years from the date of this consent
- c. The consent holder shall advise the Canterbury Regional Council of the completion of conversion prior to the commencement and use of the new spray system.
- d. For the avoidance of doubt, any conditions requiring testing as a precursor to the exercise of consent shall, with respect to the exercise of this replacement consent, occur prior to the next irrigation season following the commencement date.

Nutrient loading

17. For the purposes of interpretation of the following conditions the Otamatapaio Station shall be defined as the areas in certificates of title and Pastoral Lease numbers OT235/735,OT15D/945 which total 6731 hectares
18. The consent holder shall prepare once per year, an Overseer® nutrient budgeting model report, and shall prepare, at least once per year and not less than one month prior to the commencement of the irrigation season, a report of the annual farm nutrient loading for the Bog Roy Station using the model Overseer® (AgResearch model version number 5.4.3 or later

19. A copy of the report prepared in accordance with condition 18 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, upon request
- 20.
- a. 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 18 from Otamatapaio Station shall not exceed 19,459 kg of nitrogen and 975kg of phosphorus, unless these amounts have been reduced by the application of a receiving water quality nutrient trigger conditions, in which case the reduced NDA shall apply.
 - b. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with at the earlier of the first full year (1 July to 30 June) following completion of the irrigation conversion or 5 years from the commencement of consent.
21. 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.
- 22.
- a. The consent holder shall at all times comply with the mitigation measures set out in section 5 of the Farm Environmental Management Plans (FEMPs) for Otamatapaio Station as provided to Environment Canterbury in November 2010.
 - b. Subject to condition 22(a), the consent holder shall implement, and update annually the Farm Environmental Management Plan (FEMP) for Otamatapaio Station. The FEMP shall include
 - i. Verification of compliance with NDA's (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).
 - ii. When undertaking the modelling outlined in Condition 18, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
 - iii. Implementation of Mandatory Good Agricultural Practices ("MGAPS") and requirements to manage in accordance with the Otamatapaio Stations Overseer[®] model inputs, which shall be supplied to the Canterbury Regional Council.
 - iv. The Overseer inputs parameter report
 - v. 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.
 - vi. A requirement to review the risk assessment if there are any significant changes in land use practice
 - c. 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.
 - d. A report based on Overseer[®] modelling shall be provided within one month of completion of the Overseer modelling by the person with the qualifications described in condition 21 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[®] modelling.

- e. Changes may be made to Appendix A Otamatapaio Station 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.
- f. 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.

Fertiliser

23.

- a. 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.
- b. 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.
- c. For land based spreading of fertiliser an independent fertiliser spreading contractor shall be used to spread any fertiliser on the property except as provided for by clause (b) below.
 - i. 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.
 - ii. Where the applicant's own fertiliser spreaders are used, the consent holder shall test and calibrate the fertiliser spreaders at least annually, and every 5 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.
- d. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September in any year except for the use of nitrification inhibitors
- e. 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.
- f. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
- g. 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.
- h. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
- i. For land based spreading no fertilizer shall be applied within 20 metres of a water course.

Irrigation Infrastructure

24.

- a. The consent holder shall ensure that all new (not on the property at the time of commencement of this consent) irrigation infrastructure is designed and certified by a suitably qualified independent expert holding National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design.

- i. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request.
 - ii. All irrigation infrastructure shall be 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.
 - iii. The expert shall prepare a report within two months of the testing, outlining their findings and shall identify any changes needed to comply with the code of practice.
 - iv. Any changes needed to comply with this code of practice 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.
- b. 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:
- i. The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
 - ii. This report shall be obtained within three months of the first exercise of the consent.
 - iii. Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
- c. A copy of the report shall be forwarded to the Canterbury Regional Council within 3 months of the report being completed.

Subdivision

25. 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 5,568 hectares. The recalculated NDAs shall replace the NDAs specified in condition 12. 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.

Soil Management

- 26.
- a. The consent holder shall use, where practicable, direct drilling as the principal method for establishing pastures; and
 - b. On the irrigation area the consent holder shall, where practicable, sow and irrigate all cultivated areas as soon as possible following ground disturbance.

River water quality monitoring and response

27. The water quality of the Otamatapaio River and Clarkes Creek shall be monitored within 6 months of first exercise of consent and annually thereafter as follows:
- a. Location:
 - i. Map reference:H40: 774-195 co-ordinates immediately upstream of all irrigation takes on Otamatapaio River
 - ii. Map reference: H39: 784-249 co-ordinates downstream of the irrigation areas (Clarkes Creek)

Advice Note: *Unless otherwise agreed the coordinates for Otamatapaio River and Clarkes Creek monitoring shall be as specified 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.*

- b. Water quality variables monitored shall include: (a) dissolved inorganic nitrogen (b) dissolved reactive phosphorus (c) Dissolved oxygen (d) conductivity (e) turbidity; (f) periphyton biomass as chlorophyll *a* per square metre;(h) 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.
28. Trigger Response Condition: Exceedance of surface water Early Warning Trigger – Otamatapaio River
- a. If the monitoring undertaken in accordance with condition 27 shows that the average sample result for the Clarkes Creek monitoring site specified in condition 27 over the monitoring period (December to April) in any year is greater than 0.14 mg/l of DIN; or 0.006 mg/l DRP; or 90 mg chl *a*/ m² (early warning trigger) but does not exceed 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl *a*/ m², the consent holder shall commission a report into the cause of the breach of the early warning trigger. The report shall 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.
 - b. The report shall:
 - i. include the experts' 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
 - ii. include an assessment as to whether there is likely to be a continuation of the monitored results;
 - iii. be completed by 30 July following the sampling; and
 - iv. be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.

- c. If both the authors of the report prepared in accordance with clauses (a) and (b) 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 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 if the report concludes that it is unlikely that there is a trend towards exceedence of the environmental standard trigger pertaining to the Clarkes Creek monitoring sites, then no further action needs to be undertaken by the consent holder, and no nutrient load reductions or Remedial Action Plan shall be required i.e., Conditions 28(d) and 28(e) shall not apply.
- d. If the monitoring undertaken in accordance with condition 27 shows that the average sample result for the Clarkes Creek monitoring site specified in Condition 27 over the period December to April is greater than 0.14 mg/l of DIN; or 0.006 mg/l DRP; or 90 mg chl *a*/ m² (early warning trigger) but does not exceed 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl *a*/ m² (environmental standard trigger), then the property nutrient load (NDA), as specified in condition 20, 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 exceedence under this resource consent divided by the total farm area (being 200 hectares on a total farm area of 6,732 ha
- e. If the monitoring undertaken in accordance with condition 22 shows that the average sample result for the downstream Clarkes Creek monitoring site, over the period December to April is greater than 0.14 mg/l of DIN; or 0.006 mg/l DRP; or 90 mg chl *a*/ m² (early warning trigger) but does not exceed 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl *a*/ m² (environmental standard trigger), then a Remedial Action Plan shall be prepared.
- f. The Remedial Action Plan (referred to in Condition 28(e)) shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedence in the early warning trigger pertaining to the Clarkes Creek monitoring site, is returned as soon as practicable to and maintained below the average sample results of 0.14 mg/l of DIN; or 0.006 mg/l of DRP; or 90 mg chl *a*/ m² (early warning trigger) for the Clarkes Creek monitoring site, over the period December to April.
- g. The Remedial Action Plan (referred to in Condition 28(e)) 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;
 - i. If the Remedial Action Plan outlined in (referred to in Condition 28(e) and f) is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment the Remedial Action Plan shall be deemed to comply with this condition
 - i. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be implemented as soon as physically possible.
 - ii. The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
- h. If a required reduction in nutrient load is in effect under Condition 28(d) and monitoring for that period shows that the average sample results for the Otamatapaio River monitoring site over the period December to April is less than 0.14 mg/l of DIN; or 0.006 mg/l of DRP; or 90 mg chl *a*/ m² (early warning trigger), then for the subsequent season no property NDA reduction shall be required under this condition.

29.

- a. If the monitoring undertaken in accordance with condition 27 shows that the average sample result for the downstream Clarkes Creek monitoring site specified in condition 27 over the period December to April is greater than 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl *a*/ m² (environmental standard trigger), the consent holder shall

commission a report into the cause of the breach of the environmental standard trigger. The report shall be prepared by an expert review panel consisting of two qualified and experienced independent experts. One of the scientists is to be nominated by the Canterbury Regional Council, and the other appointed by the consent holder.

- b. The report shall:
- i. include the experts' conclusion on whether the exceedence(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
 - ii. include an assessment as to whether there is likely to be a continuation of the monitored results;
 - iii. be completed by 30 July following the sampling; and
 - iv. be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
- c. If both the authors of the report prepared in accordance with clauses (a) and (b) 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 under this condition, and no nutrient load reductions or Remedial Action Plan shall be required under this condition i.e., Conditions 28(d) and 28(e) shall not apply.
- d. If the monitoring undertaken in accordance with condition 27 shows that the average sample result for the downstream Clarkes Creek monitoring site over the period December to April is greater than 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl *a*/ m² (environmental standard trigger), then the property nutrient load, as specified in condition 20, 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 exceedence) under this resource consent divided by the total farm area (being 200 irrigated hectares on a total farm area of 6,732 hectares).
- e. If the report prepared in accordance with clauses (a) and (b) concludes that the environmental standard trigger has been exceeded because of farm land use practices, then the consent holder shall prepare a Remedial Action Plan.
- f. The Remedial Action Plan shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that Clarkes Creek is maintained below the average sample results of 0.14 mg/l of DIN; or 0.006 mg/l of DRP; or 90 mg chl *a*/ m² (early warning trigger) over the period December to April.
- g. The Remedial Action Plan shall be prepared by a suitably qualified and experienced person using approved methods, such as Overseer[®] to show that the actions to be undertaken will achieve the necessary nutrient reductions;
- i. If the Remedial Action Plan outlined in clause (e) is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment the Remedial Action Plan shall be deemed to comply with this condition
 - ii. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be immediately implemented.
 - iii. The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
- h. If a required reduction in nutrient load is in effect under clause (d) and monitoring for that period shows that the average sample results for the downstream Otamatapaio River monitoring site over the period December to April is less than 0.14 mg/l of DIN; or 0.006

mg/l of DRP; or 90 mg chl *a*/ m² (early warning trigger), then for the subsequent season no property nutrient load reduction shall be required under this condition, and the full NDA for the property, as specified in condition 20 shall be restored.

Lake water quality monitoring and response

30. The water quality of the Ahuriri Arm of Lake Benmore and Lower Lake Benmore shall be monitored from commencement of the 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: (a) total nitrogen; (d) ammonia; (e) nitrate; (f) nitrite; (g) total Kjeldahl nitrogen; (h) total phosphorus; (i) dissolved reactive phosphorus; (j) Secchi disc depth; (k) 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.

Advice Note: *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 will provide resources to facilitate that coordination and the costs of that facilitation will be recoverable 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.

31. Trigger Response Condition:

- a. If the monitoring undertaken in accordance with condition 30 shows that the average TLI for the 1 - 10 m depth integrated samples for the Ahuriri Arm 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 the property nutrient loads, as specified in condition 20, shall be reduced temporarily by 5% x 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 divided by the total farm area (being 200 hectares on a total farm area of 6,732 ha).
- b. If the monitoring undertaken in accordance with condition 30 shows that the average TLI for the 1 - 10 m depth integrated samples for the Ahuriri Arm site over the period December to April is greater than 2.75 but does not exceed 3.0, then 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.
- c. If a reduction in nutrient loading is required under any part of this condition 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 continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further property nutrient load reduction of 5% x IPF for the subsequent irrigation season.
- d. The above nutrient load reductions and investigation 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 was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.
- e. If a required reduction in nutrient load is in effect under this condition and monitoring for that period shows that the average TLI for the 1 - 10 m depth integrated samples for the monitoring site over the period December to April is less than 2.75, then for the subsequent season the full NDA for the property, as specified in condition (17) shall be restored.
- f. If the monitoring undertaken in accordance with condition 30 shows that the average TLI for the 1 - 10 m depth integrated samples for the Ahuriri Arm monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then the property nutrient load, as specified in condition (17), 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 divided by the total farm area (being 200 hectares on a total farm area of 6,732 ha ..
- g. If the monitoring undertaken in accordance with condition 30 shows that the average TLI for the 1 - 10 m depth integrated samples over the period December to April is greater than 3.0 for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring sites, then 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.
- h. If a reduction in nutrient loading is required under any part of this condition and monitoring in the period that that reduction applies shows that the average TLI for the 1 - 10 m depth integrated samples for the Ahuriri Arm monitoring site over the period December to April continues to be greater than 3.0 then there shall be a further property nutrient load reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season

- i. The above nutrient load reductions and investigation shall not be required if a two person expert scientist panel with one expert nominated by the Canterbury Regional Council both agree that the cause of the breach of the environmental standard was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.
 - j. If a required reduction in nutrient load is in effect under this condition and monitoring for that period shows that the average TLI for the 1 – 10 m depth integrated samples for the Ahuriri Arm monitoring site over the period December to April is less than 3.0, then for the subsequent season no property nutrient load reduction shall be required under this condition.
32. The Canterbury Regional Council may, once per year, on any of the last 5 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
- a. any cumulative adverse effect on a waterway arising from abstractions; and
 - b. amending the flow in the Otamatapaio River and tributaries at which abstraction is required to be reduced or discontinued as set out in condition 2.
33. The lapsing date for the purposes of section 125 shall be 5 years.

APPENDIX B

Conditions of Consent: CRC012049 – Discharge

1.
 - a. Water shall only be discharged from the irrigation race to Clarks Creek at or about map reference NZMS 260 H40:783-233 labeled as "Discharge Location" on attached "Plan CRC012047, CRC012049 and CRC012727".
 - b. The water shall be irrigation bywash, excess stock and domestic water.
 - c. Water shall only be discharged at a rate not exceeding 200 litres per second.
2.
 - a. All practicable measures shall be undertaken to avoid erosion of the bed or banks of Clarks Creek occurring as a result of the discharge.
 - b. In the event of any erosion occurring to the bed or banks of the unnamed water channel, as a result of the discharge, the consent holder shall be responsible for rectifying the situation as soon as practicable.
3. The discharge shall not occur in a manner likely to cause erosion of, or instability to, the banks or bed of Clarks Creek; or reduce the flood-carrying capacity of the waterway.
4. The discharge, after reasonable mixing, shall not cause a change in the colour or a reduction of the clarity of the receiving water body.
5. 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 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.
6. The lapsing date for the purposes of section 125 shall be 5 years.

APPENDIX C

Conditions of Consent: CRC012727 – Land use

1. The works shall be limited to:
 - a. Maintain and reconstruct a twin pipe intake structure in the bed of Otamatapaio River, including excavation of gravel and sediments; and
 - b. Including to maintain adequate flow of water to irrigation intake.
2. The works carried out in accordance with condition (1) shall be located at the Otamatapaio River at or about map reference(s) NZMS 260 H40:774-195, as identified as "Intake Location" on the attached Plan CRC012047, CRC012049 and CRC012727.
3. Any gravel, sand and other natural material excavated as part of the works authorised by this consent during the disturbance of the bed of Otamatapaio River, 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.
4. Maintenance works shall be carried out as soon as practicable after a flood or fresh event when sediment levels in the Otamatapaio River are naturally high and shall take no more than one day to complete.
5. If complete replacement of the intake is required, the stream shall be diverted around the works site for a period of up to 3 days to minimise the work required in flowing water.
6. All practicable measures shall be undertaken to ensure that works do not deflect floodwaters into the berm.
7. Works shall not cause erosion of the banks and bed of the Otamatapaio River.
8. Erosion controls shall be installed on all earthworks to prevent sediment from flowing into any surface water body.
9. Works shall not be undertaken in any manner likely to cause erosion of or instability to, the banks or bed of Otamatapaio River; or reduce the flood-carrying capacity of the waterway.
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.
 - a. 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.
 - b. For the purposes of this condition, birds are defined as those bird species listed below:
 - 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

13. All practical measures shall be taken to minimise the disturbance of the bed of the Otamatapaio River.
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 Otamatapaio River.
- 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. In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall immediately:
 - a. Advise the Canterbury Regional Council of the disturbance;
 - b. Advise the Upoko Runanga of [Runanga], or their representative, and the New Zealand Historic Places Trust, of the disturbance; and
 - c. Cease earthmoving operations in the affected area until an area has been marked off around the site, and Kaumatua and archaeologists have given approval for the earthmoving to recommence. Note: This condition is in addition to any agreements that are in place between the consent holder and the Upoko Runanga (Cultural Site Accidental Discovery Protocol) or the New Zealand Historic Places Trust.
- 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. 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 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.
- 25. The lapsing date for the purposes of section 125 shall be 5 years.

Plan CRC012047, CRC012049 and CRC012727

