

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

applications by:

Otematata Station, Bog Roy Station and Messrs RM, CJ & IA Munro for a water permits filed under **CRC012017** to take and use surface-water at Corbies Creek for spray irrigation of 210ha of pasture on Bog Roy Station, Otematata Station and Rostreiver Station

KJ, SR & DK Anderson for a discharge permit filed under **CRC012032** to discharge by-wash irrigation water and excess stockwater into Backyard Creek

**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 applications by **Otematata Station, Bog Roy Station, Messrs RM, CJ & IA Munro, and KJ, SR & DK Anderson** (the applicants). 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 The proposal is to divert and take water from Corbies Creek to irrigate an area of 210 hectares within Bog Roy, Otematata and Rostrevier Stations. Approximately 60ha is proposed to be irrigated on each of Bog Roy and Rostrevier Stations, with the remaining 90ha on Otematata Station. Water will be taken at a maximum rate of 100 litres per second with a maximum annual volume of 1,463,150 cubic metres (excluding stock water), plus 10% for race losses.
- 2.2 Water will be conveyed from the diversion point through a race system that serves all three properties. Subsequently water will be used for irrigation by the three property owners on a rotational basis using a combination of spray systems. No border dyke irrigation is proposed. Unused irrigation and stockwater diverted through the race system will be discharged into Backyard Stream at a rate of up to 110 litres per second.
- 2.3 Due to this water sharing arrangement between the three stations, there are different applications for different parts of the proposal. The application to take and use water is made by Otematata Station, Bog Roy Station, Messrs RM, CJ & IA Munro. However the discharge application is made by KJ, SR & DK Anderson. For ease of reference we have referred to these entities collectively as the applicants for the purpose of this decision, except where it is necessary to distinguish between them.
- 2.4 These applications are replacing consents for the diversion, take and use of water which expired on 1 October 2001 (WTK691221A, B and C). These consents authorised the taking and use of water from Corbies Creek for stockwater and irrigation at a rate of 110 litres per second and discharge back into Backyard Stream. However the consents do not specify a maximum annual volume or identify the area that may be irrigated.
- 2.5 Unfortunately we were provided with inconsistent information on the extent of existing irrigation under these consents. However based on Ms Johnston's evidence on behalf of the applicant, our understanding of the current situation as follows:
- (a) Approximately 30ha of Bog Roy Station is currently irrigated with water taken from Corbies Creek using k-line irrigator. This irrigation has been continuing since the consents expired in accordance with s124 of the RMA;
 - (b) Otematata Station and Rostrevier Station currently utilise the take for stock water only and are not irrigating any land with water from Corbies Creek.
- 2.6 Based on the above, the applicant is proposing to irrigate a total new area of 180ha on the three stations. This has important implications for our consideration of water quality, which we return to later in our evaluation of effects.
- 2.7 Figure 1 below illustrates the diversion and discharge locations and the proposed irrigation areas.

The applications

- 2.8 The proposal involves two separate applications:
- (a) CRC012017 – an application to divert, take and use surface water pursuant to s14 of the RMA; and
 - (b) CRC012032 – an application to discharge contaminants into the environment pursuant to s15 of the RMA.

- 2.9 Consent for these activities is required under the WCWARP and the NRRP respectively, as discussed below. Both applications were lodged with the Canterbury Regional Council (ECan) on 28 March 2001. The applications were publicly notified and there were a number of submissions that are referred to later in this decision.

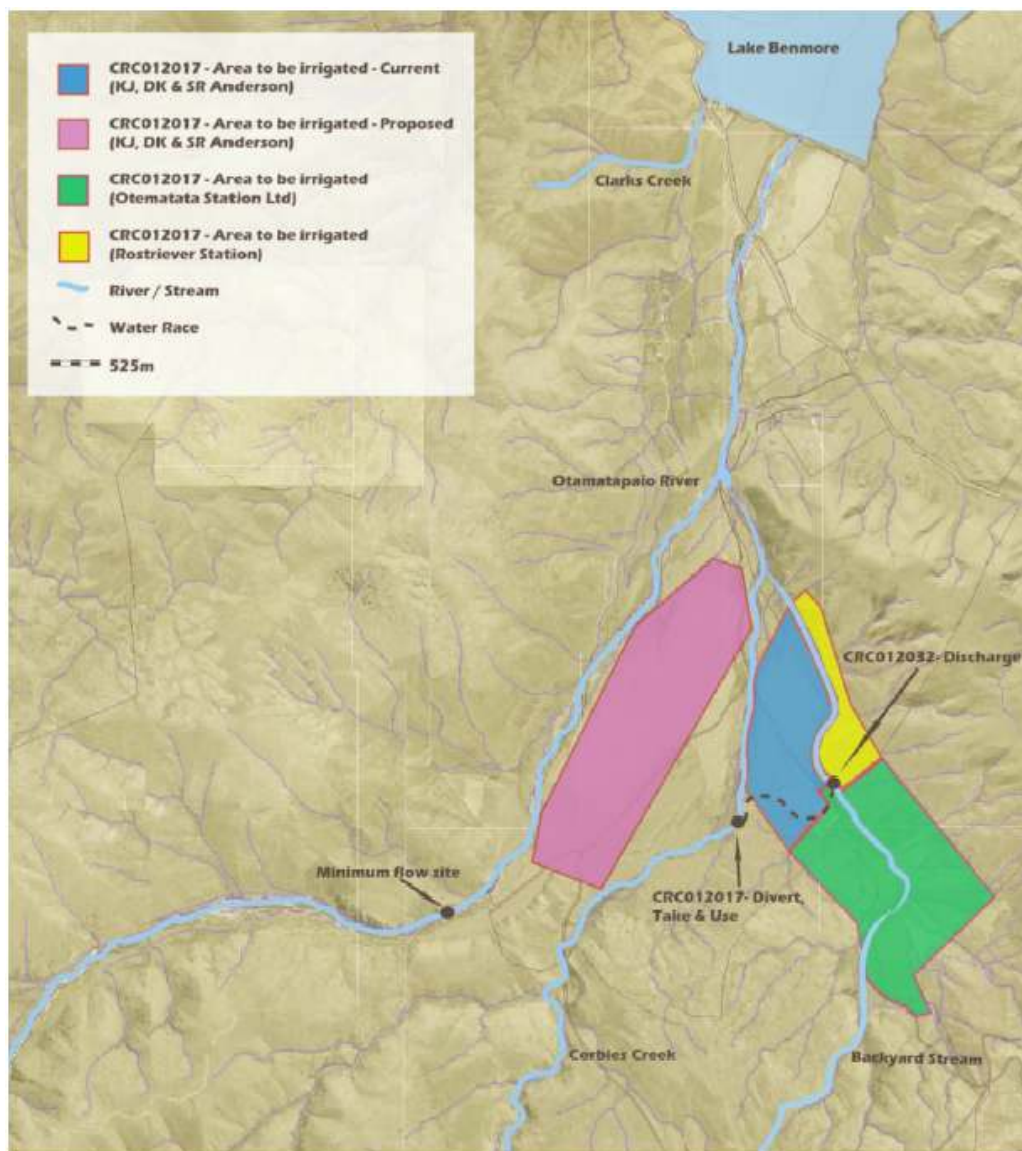


Figure 1: Indicative Location Map

Modifications after notification

- 2.10 At the time of notification, application CRC012017 was in the name of KJ, DK, and SR Anderson. However in September 2010 the application was transferred into the name of the current applicants, being Otematata Station, Bog Roy Station, and Messrs RM, CJ & IA Munro.
- 2.11 In December 2006, an annual volume of 2,987,848 cubic metres per year was proposed for irrigation and stock water purposes. However as a result of discussions with Meridian Energy Ltd regarding derogation approval, the annual volume was amended to 1,749,686 cubic metres per year. The irrigation annual volume was reduced again in August 2009 as a result of Irricalc to 1,463,150 cubic metres per year.
- 2.12 The general principle for modifications after notification is that amendments are allowed provided they do not increase the scale or intensity of the activity or significantly alter the character or effects of the proposal. The key consideration is prejudice to other parties by allowing the change. In this case, we are satisfied that the change does not significant alter the intensity or effects of the proposal and that no party would be adversely affected by allowing the change.

- 2.13 In addition to the above, there was a debate as to the size of the proposed irrigation area and whether the 210ha now being sought is an increase from that originally notified. We received submissions on this point from Ms Penman on behalf of the Council and Ms Johnston and Mr Chapman on behalf of the applicants.
- 2.14 In summary, Ms Penman considered that the notified application only sought irrigation of 105ha and to increase the irrigation area to 210ha was outside the scope of the application. In contrast, the applicant considered that the application was not limited in this way and that we were able to consider irrigation of the full 210ha now proposed. Evidence referred to in support of this position included the fact that derogation approval had been provided for the full area and that the description of the activity when notified did not specify a maximum area.
- 2.15 In the end we have preferred the view of the applicant that the application is not limited to 105ha and it is within scope for us to consider the irrigation of 210ha as now proposed. The key reason for this conclusion is that the notification wording did not specify the size of the irrigation area. As such, no member of the public would be prejudiced by this finding.
- 2.16 Finally, we note that the original application also sought to take water from Corbies Creek 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 discharge of excess water. Any discussion of appropriate take 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.

Related consents and applications

- 2.18 In addition to the above, KJ, DR & DK Anderson have lodged further diversion and discharge permits, also as replacements, for irrigation of additional land within a different part of Bog Roy Station (CRC012019, CRC012033). We have issued a separate decision on these applications.
- 2.19 Otematata Station has also lodged a separate application for irrigation of the same 150ha command area on Otematata Station (CRC041033). This application is considered in a separate decision, along with several other related applications by Otematata Station to divert, dam and discharge water and disturb the bed in association with this separate take and use.
- 2.20 The applicants have not lodged any application to undertake works in the bed or banks of Corbies Creek associated with the diversion structure as they consider that none was required for the existing structure. However, they note that the diversion structure may be upgraded in the future and at that time any required permits would be lodged.
- 2.21 There is one other user of water within the Otamatapaio River catchment seeking a replacement consent with higher priority (Otamatapaio Station 1993 Ltd – CRC012047) and one other applicant for a new consent with lower priority (Otematata Station Ltd – CRC041033).

3 DESCRIPTION OF THE ENVIRONMENT

- 3.1 Bog Roy Station covers an area of approximately 2,860 hectares and lies between the Lake Benmore and the Hawkdun Range, northwest of Otematata. It comprises two connected blocks – one covers the western half of the steep dissected hills lying between SH 83 and Lake Benmore, the other covers the alluvial plain and a portion of low hills on the east side of the Otamatapaio River at the base of the Hawkdun Range.
- 3.2 Rostriever consists of mainly (90%) rolling to semi steep Hills with an annual rainfall of 350mm per annum. It consists of five hill blocks, three separate flat areas and one small freehold block.
- 3.3 Otematata Station is farmed in conjunction with Aviemore Station, Awakino Downs and Little Awakino Station, with the total area extending from the shores of Lake Aviemore and Lake Waitaki to the Hawkdun Range to the south.
- 3.4 The vegetation of the proposed irrigation area being the Otamatapaio River flats has sparse grass cover, extensive sweet briar and an assortment of herbs and mat plants are present. Corbies

Creek winds through a large *carex* wetland and is lined with willows. A small area of flats and the airstrip paddock have been developed into irrigated paddocks; otherwise the area supports extensive grazing.

- 3.5 Adjacent to the property to the north of State Highway 83 is the DoC-administered Otamatapaio Recreation Reserve which lies on the shores of Lake Benmore, between the property and Sailors Cutting. There are no Recommended Areas for Protection (RAP) on Bog Roy Station, nor any identified areas of landscape or ecological value within the proposed irrigation area.
- 3.6 Corbies Creek, which is the intake point for the proposal is a high country cobbled bed stream which is ephemeral for the later part of the summer near its confluence with the Otamatapaio River.
- 3.7 The Otamatapaio River, previously known as Maka tipua is of great significance to Maori, 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 & 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 refers to Ma Ka Tūpuna as one of a number of stopover sites for travellers heading inland to such places as Lake Hawea.
- 3.8 Total catchment area of the river is 184 km². The hydrology of the catchment is reasonably well understood with flow recording beginning in 1988.
- 3.9 Fish species identified in Corbies Creek, Otamatapaio River the water races and other small tributaries were predominantly brown trout, upland bully and common bully. These waterways provide suitable habitat for several invertebrate species. Otamatapaio River is an important spawning and juvenile rearing tributary of Lake Benmore for both brown and rainbow trout.
- 3.10 Backyard Stream, which is the discharge point for CRC012232, traverses the proposed irrigation areas. The stream has a rocky stable bed. It is also noted that the discharge has been occurring since the early 1950s. The stream is typical of many streams in the area, in that it is subject to long periods of low flow, but also experiences, at times, high flows. We were told the stream is capable of handling large flows and therefore the discharge does not affect stream capacity.
- 3.11 We detailed our site visits in Part A and we do not repeat this information here. We did not as a group conduct a site visit on the ground, however we did fly over the site to familiarise ourselves with the area involved in the proposal.

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.

CRC012017 – 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 proposes 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)) A minimum flow on Corbies Creek is not proposed given the proximity of the confluence with the Otamatapaio River downstream and the history of gaugings available on the Otamatapaio River. This minimum flow location is above all abstractions in the catchment.
 - (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 divert, take, and use of water is a **discretionary** activity under Rule 15 of the WCWARP.

CRC012032 – Discharge water (s15)

- 4.7 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.
- 4.8 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.
- 4.9 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.

Overall status of the proposal

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

5 NOTIFICATION AND SUBMISSIONS

- 5.1 Both 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.
- 5.1 In the 2007 public notification, 16 submissions in total were made on the take and use application (CRC012017). Of these 2 were in support, 12 in opposition, and 2 neither supported nor opposed this application. In the July 2003 notification, a total of 13 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.
- 5.2 None of the submissions made any reference to the discharge application or the effects of the proposed discharge.
- 5.3 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 CRC012017

| Submitter | Reasons | Position |
|--|--|----------|
| Otamatapaio Station 1993 Ltd ^{1,3} | Need to have flow sharing arrangements when river gets low | Oppose |
| Fish & Game NZ ^{1,2,3} | Important fish spawning tributary and abstraction may be affecting continuous flows to Lake Benmore | Oppose |
| Meridian Energy ^{1,2,3} | Concerned about water quality, metering and reasonable use | Oppose |
| D Saunders ² | Supports taking water from lakes and Waitaki River itself but not from smaller rivers/streams <i>(IO comment: from the submission itself it would appear that this submission may have been made on this application in error as this application seeks to take water from a smaller stream, whilst the submission opposes takes from smaller streams)</i> | Support |
| Department of Conservation ^{1,2,3} | Potential effects on instream ecosystems given high cumulative rate of take from catchment | Oppose |
| CJ Munro ³ | Water needed to stockwater and winter free crops | Support |
| Grays Hill Station ³ | Irrigation is sustainable use of water | Support |
| Waitaki River Users Liaison Group ³ | No catchment water allocation plan, over abstraction, inefficient use, consent duration and fish screening | Oppose |
| Haldon Station | Catchment water allocation and cumulative effects of abstraction on Meridian and other water users | Oppose |
| A Campbell | Reduction in flow of small streams, duration –suggest 5 years, would support water harvesting | Oppose |
| I Anderson | Water is needed for economic survival of property | Support |
| Waimate Rod & Gun Club | River used to support trout fishery before irrigation abstractions, fish screens, oppose border-dyke irrigation | Oppose |
| NZ Salmon Anglers Association | Use for irrigation has caused river to go dry and affect angling opportunities and spawning | Oppose |
| Te Runanga o Waihao and Ngāi Tahu | Cultural significance of area to Ngāi Tahu Whānui | Oppose |

1 August 2007

2 Call-in 2003

3 July 2003

- 5.4 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 were prepared on these applications by the Council's Consent Investigating Officer, Ms Clare Penman. One related to the water permit (Report 6A) and the other related to the discharge permit (Report 6C).
- 6.2 These primary reports were 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 The reports were pre-circulated in advance of the hearing. Specific points noted from the s42A report are summarised below.
- 6.4 In her s42A report on the water permit Ms Penman proposed 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 is 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 is 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.

$$\% \text{ of take rate allowed} = (\text{Observed flow} - 200) / 400$$

- (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.

6.5 Matters that were identified as outstanding and needed to be addressed at the hearing in Ms Penman's 42A report included the following:

- (a) Water quality – There was no impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it was premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality.
- (b) Efficient & reasonable use – There was a lack of conclusive information to support the annual volume requested in accordance with the directions provided by Policies 15-20 of the WCWARP.
- (c) Ecosystems – The applicant proposed a fish screen but had not included any details of what this would entail, and flow sharing had not been proposed.
- (d) Cultural values – The applicant had not provided any assessment on cultural values.
- (e) Other users – An appropriate flow sharing regime needed to be established and agreed on.

6.6 In his report, Mr Chris Glasson places the Bog Roy site and the Otematata Station along with Rostreiver within his Landscape Unit 8, which he calls "Aviemore".

6.7 He noted that the common characteristics of all takes in the Aviemore Landscape Unit were that all sites were small with discreet locations generally on fans or flats of existing modified landscape and located between SH83 and/or lakes and streams. All of the sites, due to the proximity to the roads, lakes and streams, were visible. At the time of the applications Mr Glasson noted that no mitigation measures were proposed. He recommended a buffer between the proposed irrigation area and Corbies Creek with riparian vegetation. He also considered irrigation on hills slopes should not occur.

6.8 In Ms Penman's report on the discharge application, Ms Penman considered that there were no outstanding adverse effects of the discharge that had not been addressed through appropriate mitigation measures and that the effects of the proposed discharge 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) Mr David Anderson - Applicant
- (b) Mr David Boraman – Hydrologist
- (c) Mrs Keri Johnston – Chartered Engineer
- (d) Mr Andrew Craig – Landscape architect

Opening submissions

7.1 The applicant is part of the Upper Waitaki Applicant Group (UWAG), as described in our Part A decision. Mr Ewan Chapman presented comprehensive opening legal submissions on behalf of all

UWAG applicants. He said that there may be matters of a specific legal nature relating to certain applications and those issues will be raised when the specifics of the applications were discussed in closing.

- 7.2 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 stock water and non-consumptive diverts) and 29% of the total irrigable area.
- 7.3 He also told us renewal consents applied for by the UWAG members represent some 88% of all renewal applications. For these renewal applications, Mr Chapman emphasised that they need not rely on modelled scenarios undertaken in the WQS. He contended their effects were known and form part of the existing environment. Thus he said we would need to evaluate these applications in a different scientific context than new irrigation development.
- 7.4 Mr Chapman emphasised that despite the collective approach adopted for these hearings, each application needs to be considered in isolation from others (allowing for priorities). However Mr Chapman noted that UWAG is not producing any other evidence to support its own assessments of cumulative effects and adopts the MWRL evidence to the extent that it defines nodal thresholds.
- 7.5 While raising some challenge to the outcomes of the mitigation measures proposed by MWRL resulting from the WQS study, Mr Chapman told us that the UWAG members were not presenting their case to say that they cannot or will not meet an area-based NDA threshold. To the contrary, he said that we would be shown that they have taken the model and applied it to all properties and will, with mitigation, meet the thresholds.
- 7.6 Mr Chapman then addressed us on the issue of allocation of assimilative capacity. Relevantly, for this application in terms of the Ahuriri, he told us the assimilative capacity is exceeded. He contended the approach taken by MWRL that essentially resulted in some farming units mitigating for the nutrient loss of other farming units, was inappropriate. He submitted a more appropriate method of allocation is on the basis of productive use of land. The productive use of the land he said represents the level of nutrient discharge of each farming unit and that should be used; and that the method of allocation based on dividing allocation on a per hectare basis should not be utilised.
- 7.7 He submitted that by assessing allocation of assimilative capacity on the basis of productive land use to reflect the NDA for each unit, these methods would be more representative and realistic of the nutrient discharge of each farming unit.
- 7.8 In terms of conditions concerning the nodal approach, he told us the essential issue lies with pinpointing who is exceeding their NDA if exceedances are detected at the nodal point. He told us the UWAG applicants' preference is for on-farm management of total nutrient discharge and annual auditing of individual FEMPs. He then referred us to a draft condition from the Rakaia Selwyn groundwater zone hearing, noting it was a very much site-specific condition.
- 7.9 He submitted that on-farm monitoring should be favoured over monitoring at nodal points. He said this did bring in the practicalities of the purpose of employing the FEMP with the result that if a breach of the FEMP occurs, the consent authority would have control to enforce the conditions of the consent against the individual applicant. It also reflects the reality that each farm will be different depending on the type of activity that is undertaken on that farm with their own tailored farming management practices.
- 7.10 Mr Chapman also said that UWAG had not tabled a final set of conditions or final farm management plans. These matters would 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 would mean that individual conditions would need to be worked through.

Mr Anderson

- 7.11 Mr David Anderson told us he lives at Bog Roy Station. He noted he was the fourth generation of Andersons farming Bog Roy.
- 7.12 He told us that Bog Roy Station shares its property boundary with Lake Benmore, being in close proximity to the Benmore Dam. He noted the farm originally included silt flats, which were flooded when Lake Benmore was raised in the 1960s.

- 7.13 Mr Anderson noted that the climate in the district was extreme, ranging from harsh dry summers to sub-zero temperatures in the winter. He told us about drought conditions and the difficulty they caused; thus the importance of irrigation. He also told us that irrigation ensures against the volatility of the store market. Mr Anderson told us that irrigable land provides the stability to the overall farm. It is, as he said, the heart of the farm. It compensates for harsh weather conditions and allows farming to occur through dry years.
- 7.14 He did contrast the water takes for Bog Roy with others, noting that the irrigable area of Bog Roy covers less than 5% of the total property and compared to some other properties seeking irrigation water, it was very small. He was concerned to see that Bog Roy was included within the Ahuriri node for assessment purposes. He was concerned that his activities may be affected by what he described as "discharges from corporate dairying operations" because all applicants may need to take responsibility for deterioration of water quality at certain nodes. He found this outcome to be unacceptable. He was of the view that these very large applications before us at the hearing should be treated as almost totally separate from irrigation being used for purposes such as his own, which is on a smaller scale and is used as an integral part of the property to strive for future viability.

Mr Boraman

- 7.15 Boraman Consultants Limited was engaged to investigate the hydrology and check the validity of the statistics of Otamatapaio River proposed by Environment Canterbury. 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.

Otamatapaio River

- 7.16 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 Omarama. The Otamatapaio River drains directly into the southern side of the Ahuriri arm of Lake Benmore.
- 7.17 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.
- 7.18 Large rainfall events in the catchment generally come from the easterly quarter; in winter, this may fall as snow in the upper catchment. Occasional large westerlies may provide rainfall, but not usually in large quantities.
- 7.19 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, because the lower reach was ephemeral, and historical measurements were carried out at the footbridge at which there was a significant flow record, 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.
- 7.20 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 three measurements to add to the dataset.
- 7.21 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 Creek

- 7.22 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, which made it very difficult to ascertain the 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.
- 7.23 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, which these waterways confirmed that even without abstraction it would not be possible to maintain continuous flow in the Otamatapaio River.
- 7.24 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 Johnston

- 7.25 Mrs Johnston described the proposal and the existing environment, covering many of the matters summarised in the preceding sections of this decision. We do not repeat those matters here. The following is a summary of the evidence she provided on the potential effects of the proposed activity.

Effects on flows and other water users

- 7.26 As mentioned above, Boraman Consulting Ltd installed a telemetered water level recorder on the Otamatapaio River in 2004. This information had been used to determine the required minimum flow on the Otamatapaio River and will also be used to develop a flow sharing arrangement between the water users in the catchment, including the applicants and Otamatapaio Station.
- 7.27 Mrs Johnston said that work was undertaken to determine appropriate minimum flows and ECan was advised in April 2009 that the proposed minimum flow was 200 L/s as measured at the footbridge on the Otamatapaio River, with flow-sharing to occur between 450 L/s and 200 L/s with Otamatapaio Station.
- 7.28 The applicants and Otamatapaio Station had a long history with the Otamatapaio River main stem and how the resource had been used, and each submitted on the opposing applications. Mrs Johnston said that considerable work had gone into improving relations between the two properties and all water users have agreed to work together to manage the Otamatapaio River flows in the range of 450 L/s to 200 L/s (the range when reductions would need to be implemented to maintain flows above the minimum flow for as long as possible). This had been formalised with a Memorandum of Understanding (MOU) which had been signed off by all Otamatapaio River catchment abstractors. Furthermore the opposing submissions between the applicant and Otamatapaio Station have been removed.
- 7.29 Based on the above, Mrs Johnston regarded the effects on other users as minor.

Effects on ecosystems

- 7.30 The applicant was proposing to upgrade the existing irrigation system within a 5 year time frame, at which point, a fish screen would be installed in accordance with recommended guidelines. This was supported by Fish and Game and the Department of Conservation.
- 7.31 The applicant had accepted the minimum flow required under the WCWARP for the Otamatapaio River which for "all other rivers and streams" was the 1 in 5-year, 7-day low-flow. Mrs Johnston believed that the minimum flow was specified in the WCWARP to ensure that the aquatic values of the stream are protected.

- 7.32 The minimum flow had been agreed with ECan and Fish and Game. From verbal communications with the Department of Conservation, it was understood that they also accept this minimum flow.
- 7.33 Mrs Johnston said that at present, the applicant used a surface intake structure to take water and the current intake would not allow an easy "retro-fit" of a fish screen. A separate structure would need to be installed in the race immediately downstream of the intake, at a cost of between \$3000 and \$5000. The new intake would be designed to incorporate a fish screen that meets the requirements of the NIWA Report.
- 7.34 Mrs Johnston considered the effects on in-stream values to be minor.

Effects of inefficient water use

- 7.35 Mrs Johnston said that the irrigation volume had been determined using Irricalc.
- 7.36 Policy 19 of the WCWARP encouraged the piping or otherwise sealing of water distribution systems to minimise water losses. The applicant considered that 10% conveyance loss was very small and this was partly due to the fact that the system had been in existence since the early 1950s and had sealed over time.
- 7.37 Policy 21 of the WCWARP required all water takes to be metered. To ensure that this application was consistent with this policy, the applicant proposed to meter their take.
- 7.38 Policy 28 of the WCWARP provides for recognition of the value of investment when an application for replacement was considered, and also whether all reasonable attempts have been made to meet the efficiency expectation of the plan. Mrs Johnston said that it was because of the efficiency expectations that the applicant had made a commitment to up-grade their intake and irrigation system, but financially, this cannot happen straight away. However, the applicant proposed a five year time frame, which was considered to be reasonable, to allow the upgrade to occur, with full support from Fish and Game and the Department of Conservation.
- 7.39 Mrs Johnston's view was the effects of inefficient water use were minor.

Effects of the use of water on water quality

- 7.40 The calculated nutrient mitigation requirement of the receiving environments determined in the Mackenzie Water Research Limited (MWRL) Study had identified an N and P threshold for each property.
- 7.41 OVERSEER® had been run by a qualified person to model the N and P outputs from the proposed farming system. Mrs Johnston said that the results of the model have been incorporated in the table below. The table showed that the applicant could meet the property thresholds proposed by the MWRL study.

Bog Roy

| | Nitrogen Threshold (kg/farm) | Phosphorus Threshold (kg/farm) |
|--|---|---|
| MWRL Water Quality Study Property Thresholds | 8,834 | 237 |
| OVERSEER® outputs | 8,511 | 96 |

Rostriever

| | Nitrogen Threshold (kg/farm) | Phosphorus Threshold (kg/farm) |
|--|---|---|
| MWRL Water Quality Study Property Thresholds | 5,226 | 169 |
| OVERSEER® outputs | 5,243 | 42 |

- 7.42 We note that the applicant did not present the results of the OVERSEER modelling for Otematata Station for this application, preferring instead to present it in CRC041033, which was the related application to irrigate up to 30 ha within the same command area as this application. Given this application encompasses 90 ha we do not understand the logic of this approach. We have however considered the nutrient contribution from Otematata (along with their latest OVERSEER modelling output) in our evaluation of effects.

- 7.43 Mrs Johnston said that the applicant was committed to implementing the "Mandatory Good Agricultural Practices" set out within the FEMP. Implementing those practices was necessary for the OVERSEER® results to be valid. That along with ensuring that the property thresholds of the WQS (set out in the table above) are not exceeded would ensure that the cumulative effects of the use of water for irrigation on water quality are no more than minor.
- 7.44 She said however that whilst the applicant was within their property thresholds, the MWRL Study also identified that the applicant still had to consider specific on farm effects and the impacts these activities could have on the local receiving environment. This requires a specifically developed Farm Environmental Management Plan (FEMP).
- 7.45 At a workshop held in Twizel in August 2009, the applicants met with Dr Melissa Robson of GHD Limited. A "desk top" on farm risk assessment was undertaken. This was considered to be the "starting point" of the FEMP.
- 7.46 The workshop identified potential on farm risks specific to each farm along with possible mitigation measures. The on farm risks identified during the desktop risk assessment need to be verified by an appropriately qualified person who had carried out a site visit. It was anticipated that this will occur should the applications be granted.
- 7.47 We note that the FEMPs and FERAs have now been completed and were lodged with ECan on 22 November 2010. As the finalised FEMPs represent the commitments on the part of the applicants we have utilised this information in our evaluation of effects.
- 7.48 Mrs Johnston said that as the N and P thresholds from the MWRL Study could be met, and the applicant was committed to addressing on farm risks with the implementation of the FEMP, in her view the effects of the use of water on water quality for both the local receiving environment and cumulative effects would be minor.

Landscape

- 7.49 Mrs Johnston said that this was an application to renew existing water rights. Irrigation had been occurring on this property since the 1960s. The property was part of an already substantially modified rural environment, whereby cultivation and fencing occur regularly, and where power lines and many buildings exist and are highly visible also.
- 7.50 Mrs Johnston referred to the evidence of Mr Andrew Craig (landscape architect), which is discussed further below.

People, communities and recreational values

- 7.51 Mrs Johnston said that the applicant had proposed an appropriate minimum flow condition in accordance with the WCWARP for the water body from which they had applied to take and use water. The minimum flow was considered by Mrs Johnston to adequately protect people, community and amenity values within the rivers specific to each applicant.
- 7.52 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.
- 7.53 Mrs Johnston believed because of the applicant's commitment to ensuring efficient use of water on their properties, and the take was within allocation limits set to protect in-stream values and other users, the effects on people and communities would be minor.

Tangata Whenua

- 7.54 Te Runanga O Ngāi Tahu submitted on all applications in the catchment, seeking that all applications be declined.
- 7.55 Mrs Johnston believed that 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. She said that this application was entirely within the limits defined by the WCWARP.
- 7.56 However, Mrs Johnston acknowledged that Te Runanga O Ngāi Tahu have a significant relationship with the Waitaki Catchment, and as such, appropriate minimum flow conditions, and

management of water quality effects, was proposed by the applicant to ensure that the potential effects on the environment, including tangata whenua values were minor.

Effects of discharge

Effects on flood carrying capacity and erosion

- 7.57 Backyard Creek had a rocky, stable bed, meaning it was unlikely to be subject to erosion. It was also noted that the discharge had been occurring since the early 1950s and there was no evidence of any erosion having occurred.
- 7.58 The creek was typical of many streams in the area in that it was subject to long periods of low flow, but also experiences really high flows. The creek was capable of handling large flows, and therefore, the discharge flow does not affect capacity.
- 7.59 Given this, flood carrying capacity and erosion from the discharge of water will continue to be minor.

Effects on water quality and ecosystems

- 7.60 Mrs Johnston said that the water that was discharged into Backyard Creek was excess water that was diverted as well as irrigation by-wash water from the border dyke system.
- 7.61 As part of the Farm Environmental Risk Assessment carried out for this property, it was identified that because the discharge could be irrigation by-wash water, mitigation would be required. The applicant proposed to establish a filter strip where the discharge occurs in order to "polish" the water before it enters the creek.
- 7.62 Mrs Johnston said that effects on water quality and ecosystems would continue to be minor.

Effects on other water users and amenity values

- 7.63 Mrs Johnston said that the receiving water body was Backyard Creek. The volume discharged was very small however the flow in the creek was not always high.
- 7.64 Water would be polished prior to its discharge and this would ensure that any nutrients and sediment were removed so the effects on other users and amenity values will continue to be minor.

Andrew Craig

- 7.65 Andrew Craig, a landscape architect of significant experience, provided his overall assessment of all of the UWAG applications. In doing so he assessed the water takes. He also assessed the activities of placing structures in the beds of rivers. His approach was to consider only those proposed irrigation activities that were located on visually sensitive sites. He determined what was a visually sensitive site primarily by the location of public accessible vantage points and the views that can be had from them in relation to the applied for irrigation areas. He also considered the relevant statutory planning documents in relation to the applications, noting that for all of the districts involved that farming activity is generally permitted and irrigation is not specifically ruled out, other than in the outstanding landscape areas identified within the Waitaki District.
- 7.66 Thus, in this case, we infer from Mr Craig's evidence, given the location of the subject site, particularly having regard to its location in relation to publicly accessible vantage points, that he concluded it was not located on a visually sensitive site. Also, the other point emerging from his evidence, made frequently on behalf of UWAG applicants, was to point out to us the modifications due to farming activity that had already occurred on site. We note in relation to this application those modifications also include existing irrigation.

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.

Fish & Game

- 8.2 Mr Frank Scarf (Hydrologist - Fish and Game) supported this management regime for the applications proposed by Ms Penman in her report (as earlier discussed). Under these conditions, all consents would be reduced to half their consented take when flow at the Footbridge fell below 400 L/s.
- 8.3 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 Corbies Stream.

Meridian Energy Ltd

- 8.4 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.
- 8.5 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.
- 8.6 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.

Mackenzie Guardians – Ms Di Lucas

- 8.7 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.
- 8.8 In terms of this particular "take" application, she identified it as being within the Ahuriri System. Within her written evidence the application did not receive any attention. In her graphic materials she identified the site as Site #43 and #44.
- 8.9 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.
- 8.10 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. We note from her Attachment 17 she had identified sites #43 and #44, the subject site, as not being visible from highways nor, in terms of her Attachment 19, was the subject site visible from public land and public access and/or public viewpoints.

Mackenzie Guardians – Dr Susan Walker (ecologist)

- 8.11 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.
- 8.12 In terms of her assessment as per Attachment 15, Dr Walker assessed Bog Roy Station as a whole as being approximately 33% converted. She considered that the potential effects of

irrigation on terrestrial biodiversity were moderate. Dr Walker had also assessed Rostriever. She noted that the potential effects on terrestrial biodiversity of allowing irrigation were "least". Meaning irrigation would have very limited effect. She noted that approximately 66% of Rostriever had been converted to farm activities. She noted the tenure review had been completed and that in terms of existing biodiversity information and reasons for concern that the Rostriever Station had been partly developed and did not appear to overlap significant inherent values identified within the tenure review. In relation to Otematata Station, Dr Walker noted that the potential effects of irrigation on terrestrial biodiversity were, in her opinion, moderate. She estimated some 54% of the station had been converted to some form of farm or pastoral use. She noted the tenure review had not occurred. She made the comment in terms of existing biodiversity information that the site was partially developed but there was little current information on terrestrial biodiversity, which in her opinion resulted in further assessment being required.

Tangata Whenua

- 8.13 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 their 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.
- 8.14 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.
- 8.15 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.

Ms Mandy Waaka-Homes (Ngāi Tahu)

- 8.16 Ms Waaka-Homes told us she had inherited the role of a kaitiaki to the Upper Waitaki system. She told us her focus was on the new and large scale irrigation proposals involving dairying and the effect this would have on the surrounding waters especially the Ahuriri Delta. She told us that the cultural health of the Ahuriri Delta was already under significant strain.

Ngāi Tahu-Mamoe Fisher People

- 8.17 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.

9 UPDATES TO THE SECTION 42A REPORTS

- 9.1 Ms Penman said that Mrs Johnston considered the proposed increase in command area was within the scope of the original application. Ms Penman considered the application was an increase in scope and her view remained unchanged.
- 9.2 Ms Penman also said a draft Farm Environmental Management Plan (FEMP) for Bog Roy Station and Rostriever Station and assessment of cumulative water quality effects was included with Mrs Johnston's evidence. Ms Penman pointed out there were discrepancies in relation to the OVERSEER input parameters and the application. The total irrigation area in the FEMP was 228ha, but only 165ha had been applied for under these applications (under this application and CRC012019).
- 9.3 A flow sharing regime for all users in the Otamatapaio River catchment had been put forward by Mr Boraman and Ms Penman was satisfied with the proposed flow sharing regime.
- 9.4 In paragraph 51, of her evidence, Ms Johnston said that the proposal was to include a fish screen in the race downstream of the intake, and that has been agreed to by DoC and Fish & Game via email. This had been reflected in the proposed condition which provided for the fish screen to be installed within 5 years.

Water quality

- 9.5 Dr Freeman and other experts (as outlined in Reports 4A-F) said that because of a significant level of uncertainties involved in, and technical concerns with, critical aspects of the MWRL/GHD assessment of the adverse effects, together with the lack of mitigation measures yet proposed by resource consent applicants meant that it was premature before hearing the applicants evidence at the hearing to make adequate conclusions about the potential adverse cumulative effects.
- 9.6 On the basis that it was a replacement consent, Dr Freeman (addendum report) classified this application as 'amber' meaning that while there were significant uncertainties about potential adverse effects on cumulative water quality it could be granted, provided that either more information is obtained to reduce the uncertainties and/or subject to strict comprehensive monitoring and response conditions. However, we note that this entry in Dr Freeman's Table 5 relates to the replacement components of CRC012017 and CRC012019. In addition, he listed the "new" irrigation components (Rostriever and Otematata) as having a high level of uncertainty about potential cumulative adverse effects, with a consequent recommendation that these water permit applications should not be granted.

Ecosystems

- 9.7 Ms Penman was satisfied with the applicant's proposal to upgrade the intake to a gallery or include a fish screen once the system is converted to spray.

Landscape

- 9.8 Mr Glasson produced an addendum report, which he styled as a clarification. He had tables attached to the report and the issues highlighted and bold were those that remained unresolved.
- 9.9 In terms of the Aviemore Landscape Unit (Unit 8) he wrote that there were no major issues with Anderson and other sites within the Aviemore Unit given the overall modified landscape and the small-scale irrigation schemes.

10 APPLICANT'S RIGHT OF REPLY

- 10.1 As for his opening, Mr Chapman's right of reply was presented on behalf of all UWAG members. However he also provided some specific comment on individual proposals.
- 10.2 In relation to this particular application, Mr Ewan Chapman commented on the issue of the "expansion" of the irrigation area now being sought in contrast with the point that under the original consent there was no reference to an area to be irrigated. We have already reached a finding on this issue at the start of this decision and do not repeat that discussion here.
- 10.3 Turning to more general comments, Mr Chapman challenged Dr Freeman's Table 5, contained within his first addendum report dated 12 January 2010. Mr Chapman contended the list was flawed because applications are placed in the red category solely by virtue of their location within the Ahuriri Catchment. Mr Chapman considered the correct approach for the ranking of the applications was to determine where they sit in relation to the existing environment.
- 10.4 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.
- 10.5 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.
- 10.6 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.
- 10.7 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.

- 10.8 We did subsequently receive from Mr Chapman generic conditions and revised FEMPs applicable to all the UWAG applicants.

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 are:

- (a) Flows and ecological values
- (b) Effects of inefficient take and use
- (c) Water quality effects
- (d) Adverse effect on Tangata Whenua values

Flows and ecological values

- 12.2 There were a number of submissions concerned with minimum flows and protecting fisheries values in all rivers and tributaries in the Upper Waitaki catchment. Several submissions specific to these applications were received when CRC012017 was first notified in July 2003 before the call-in and before the WCWARP was prepared.
- 12.3 Fish and Game NZ lodged several submissions on this application and described in detail the Otamatapaio catchment, its importance for fisheries values and the pressure that existing and proposed water abstraction is placing on instream values.
- 12.4 ECan have assessed the minimum flow on the Otamatapaio River (not Corbies Creek) as being 200 litres per second at the Footbridge, which was equivalent to the 5-year 7-day low flow, in line with Table 3, row xii of the WCWARP. The applicant proposed this minimum flow. However, the location of the minimum flow site is not at the "downstream end of the catchment". Instead the proposed minimum flow site was a well established recorder site located approximately 5 kilometres upstream of the Otamatapaio River and Corbies Creek confluence, and 3 kilometres upstream of the nearest downstream abstraction.
- 12.5 The summer flows typically become groundwater flow approximately 200 metres downstream of the Corbies Creek confluence (below all abstractions).
- 12.6 Fish & Game initially had concerns with the location of the minimum flow site but discussions with representatives of Fish & Game (Frank Scarf), resolved the matter and Fish & Game were now satisfied with the proposed minimum flow and monitoring location. Mr David Stewart considered the minimum flow assessed at this point best represented the 5-year 7-day low flow for the Otamatapaio River.
- 12.7 Dr Adrian Meredith 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 is 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.

- 12.8 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. The Otamatapaio River is not considered to be a "small stream" (one that has a mean annual low flow of less than 100 litres per second), and therefore should not be restricted via Policy 7.
- 12.9 The year-round flow is retained in the Otamatapaio River upstream of the Footbridge and that will continue to provide instream habitat for native fauna.
- 12.10 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 was 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 because it would be dry even in the absence of abstraction
- 12.11 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.
- 12.12 The applicant proposed to install a fish screen on the existing intake. The fish screen would have to be in accordance with "Fish Screening: good practice guidelines for Canterbury", NIWA Client Report: CHC2007.092, October 2007 for us to be satisfied that effects on fishery values would be minor.
- 12.13 We consider that in setting minimum flows for the WCWARP, protection of instream ecological values has been taken into account. The applicant would be required to install a suitable fish screen as detailed in the conditions, and given 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 consider the effects of the proposed diversion and take on flows and ecological values would be minor.

Efficient take and use

Annual volume

- 12.14 The applicant proposes to take water at a rate not exceeding 100 litres per second, and use up to 1,434,326 cubic metres of water per year for irrigation of 210 hectares. This volume has been calculated using Irricalc.
- 12.15 As a comparison to the applicant's annual volume calculation, Ms Penman used the Council's GIS system and the method outlined in Report U05/15 to determine an appropriate annual volume for irrigation of the proposed area in accordance with Policy 16(c). She based this calculation on arable land use with 100% light soil (PAW <75mm), and Effective Summer Rainfall of 195mm.
- 12.16 Using the above figures, Ms Penman annual volume 651,000 cubic metres would be a more appropriate and efficient volume of water for spray irrigation of this area using one of the methods outlined in Policy 16(c). However she based this volume on only 105 ha, so for comparative purposes the volume for 210ha would be 1,302,000 cubic metres.
- 12.17 Under Policy 16 of the WCWARP there are two acceptable methods for calculating and efficient annual volume. The first is using a soil water balance approach. The applicant contends that Irricalc is such an approach. The second alternative is the WQN9v2 approach used by Ms Penman.
- 12.18 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.

- 12.19 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 1,302,000 cubic metres calculated using the WQN9v2 approach and adopt this as the appropriate volume of water for spray irrigation of the proposed area.
- 12.20 Overall, we consider that provided a maximum annual volume of 1,302,000 cubic metres is adopted, the effects of inefficient water use are minor. We discuss the issue of efficiency further below in our evaluation of the relevant planning instruments.

Conveyance / distribution efficiency

- 12.21 In addition to annual volumes, the other issue relevant to efficiency in this case is potential water lost through conveyance of the water through the race network.
- 12.22 The applicant has allowed for race losses of 10% for the conveyance system. They note that the race system has been in existence prior to the Waitaki Power Scheme was established and is part of the landscape and has naturally sealed itself over time. The majority of the water now lost is via evaporation and the cost of piping such a scheme is considered too expensive, given the losses are considered to be very minimal. They also consider that the imposition of an annual volume will mean the applicant will operate the scheme as efficiently as possible given the importance of every cubic metre of water.
- 12.23 Ms Penman considered that the applicant's analysis of the conveyance efficiency is appropriate and that the race network appeared to be well maintained during her site visit. We accept that allowing for 10% loss of water from the race network is acceptable in the circumstances and still represents an efficient use of water.

Efficiency conclusions

- 12.24 Based on the above, we consider that the appropriate annual volumes for the activity, taking into account irrigation needs and race losses, is **1,446,666 m³/yr**. This includes 1,302,000 m³/yr for irrigation and 144,666 m³/yr for race losses (being 10% of the total). If this annual volumes is imposed, we consider that this represents an efficient and effective use of water.

Water quality effects

- 12.25 The applicant has been involved with the study by MWRL on cumulative effects within the catchment. Within Part A of this decision we have reviewed the MWRL study and our findings have been taken into account in our consideration of this decision.
- 12.26 In Part A we rejected the MWRL proposition that all consents sought in this hearing could be granted (with conditions) and without causing cumulative water quality effects. It is incumbent upon us, therefore, to consider (as far as is possible) whether granting this application, in combination with other water permits we grant, will lead to unacceptable water quality effects. In this case it means considering the potential effects of granting this application (in combination with others we grant) on:
- (a) The Ahuriri Arm of Lake Benmore;
 - (b) Groundwater chemistry and in particular the proposed threshold of 1 mg/L NO₃-N; and,
 - (c) Periphyton and other ecological effects in Corbies Creek, Backyard Creek and the Otamatapaio River.
- 12.27 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.
- 12.28 A starting point for the consideration of effects on points (a)-(c) above is the FEMP. Final FEMPs were provided to ECan on 22 November 2010. Evidence on the draft FEMP was given by Ms Johnston (and Ms Begley for Otematata), but for consistency with other decisions we have

undertaken an independent audit. Key points arising from our audit and additional to their evidence are summarised below:

Bog Roy

- 12.29 The FEMP notes that 30 ha is currently irrigated from water taken from Corbies Creek, using K-line, and that this will be developed to enable up to 60 ha to be spray irrigated. Soils are given as "Eweburn 45mm, Grampians 90mm, and Streamlands 90 mm and 100 mm." We assume this relates to PAW. There is no information of the distribution of the soils, particularly in relation to existing or proposed irrigation areas.
- 12.30 The FEMP recognises the Ahuriri Arm of Lake Benmore as requiring the most severe nutrient mitigations for Bog Roy, i.e., an additional 10.7 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.
- 12.31 The modelled OVERSEER outputs for Bog Roy were 8505 kg N/y and 106 kg P/y.
- 12.32 The mitigations proposed in addition to those assumed in OVERSEER are listed as:
- (a) No winter application of fertiliser on the irrigation area.
 - (b) N fertiliser applications split to under 50 kg N/application.
 - (c) No P fertiliser within three weeks of irrigation.
 - (d) Olsen P of below 30 maintained.
- 12.33 Mitigation measures proposed to ameliorate site specific environmental risks are:
- (a) Fence off the streams that are located within a paddock that is used by stock regularly, if the paddock is not used regularly a temporary waratah fence would be acceptable, leave drinking bays for stock water
 - (b) Redevelopment of existing irrigation to spray
 - (c) 20 metre layback from any permanent waterway while applying fertiliser by land based application
 - (d) Fence (permanent or temporary while stock present) a 5-11 metre irrigation buffer zone back from any waterway (Lake Benmore).
- 12.34 The mitigations proposed in the FEMP are not sufficiently specific to give us confidence that the very significant nutrient mitigation required in excess of Good Agricultural Practice is likely to be achieved and appears to rely on the assurances from the WQS that the predicted loads are within the threshold proposed. They are however significant initiatives and we recognise that the proposed irrigation area is small compared with the total area of the station. We have considered nutrient export in conjunction with, and in relation to, the other properties that form part of this application.

Rostreiver

- 12.35 The FEMP does not contain important information such as the total area of the property and the area to be irrigated.
- 12.36 The same soil information is given as for Bog Roy.
- 12.37 The FEMP recognises the Ahuriri Arm of Lake Benmore as requiring the most severe nutrient mitigations for Bog Roy, i.e., an additional 10.7 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.
- 12.38 The modelled OVERSEER outputs for Rostreiver were 5384 kg N/y and 47 kg P/y.

- 12.39 The mitigations proposed in addition to those assumed in OVERSEER were the same as for Bog Roy.
- 12.40 The mitigations proposed for site specific environmental risks are:
- (a) Fence along the stream that flows at the base of the paddocks where the irrigation is proposed, allow for drinking bays for stock water
 - (b) Temporarily fence off the small area of swamp in the middle of the paddock
 - (c) Culvert the various tracks that pass through the stream at the base of the paddock
 - (d) 20 metre layback from any water way when applying fertiliser by land based application e.g. bulk spreader
 - (e) Maintain a 5-11m setback from irrigation to a permanently flowing waterway
 - (f) Create an adequate track for moving of stock across the stream
- 12.41 The mitigations proposed in the FEMP contain inconsistencies (e.g. c and f), and are not sufficiently specific to give us confidence that the very significant nutrient mitigation required in excess of Good Agricultural Practice is likely to be achieved and appears to rely on the assurances from the WQS that the predicted loads are within the threshold proposed. They are, however, significant initiatives and we recognise that the proposed irrigated area is small compared with total area of the station. We have considered nutrient export in conjunction with, and in relation to, the other properties that form part of this application.

Otematata

- 12.42 Otematata Station is farmed in conjunction with Aviemore Station (which have water permit applications subject to this hearing) Awakino Downs and Little Awakino Station. The FEMP relates to Aviemore and Otematata as one entity.
- 12.43 The FEMP notes that allowing irrigation will not significantly change the farming system [by for example increasing stock numbers]; rather it will strengthen the existing operation. Strengthening the operation relates to improving profitability through improving quality of the end product, reducing impacts of droughts, finishing lambs, and improved self-sufficiency for winter feed.
- 12.44 Little soil information is provided. Soils are described simply as "Light to medium depth of topsoil on hills, some stone with a mixture of soil types on both developed and undeveloped flat land."
- 12.45 Modelled Overseer outputs for Otematata were 81,239 kg N/y and 793 kg P/y. The total areas of the properties that this modelled output represents is not given explicitly (nor in evidence) but from discussion of fertiliser usage (4.3.17) we glean that it is of the order of 15,000 -20,000 ha.
- 12.46 The mitigations proposed in addition to those assumed in OVERSEER were the same as for Bog Roy and Rostreiver.
- 12.47 The mitigations proposed to address site specific environmental risks relevant to this application (excluding those relating to Lakes Waitaki and Aviemore) are:
- (a) Either plant a riparian margin, a filtration zone, or look at putting in a stilling basin as detailed in the map provided,
 - (b) Maintain a 5-11 metre irrigation setback from any waterways
 - (c) 20 metre layback from any water way when applying fertiliser by land based application e.g. bulk spreader,
 - (d) Fence along the waterways as best as possible. These may be fenced with an adequate 2 wire waratah fence. Drinking bays may be made along this fence, and the fence only has

to be erected during times that stock are in the area. In the case of the Otematata River stock numbers should be kept relatively low as fencing this could be difficult

- (e) Footrot [treatment] and dip must be contained within the yards and allowed to evaporate, also a small filter strip planted alongside the small stream that flows near the yards.

12.48 The mitigation measures proposed in the FEMP represent, in our view, a significant initiative to minimise the effects of the proposed irrigation, in what is a very large and difficult environment. Moreover the proposed irrigated area is small compared with total area of the station. We have considered nutrient export in conjunction with, and in relation to, the other properties that form part of this application.

12.49 The critical issues for us for are:

- (a) Is the predicted nutrient load realistic?
- (b) What effect will the predicted nutrient load (alone and in combination with other applications before us) have on surface waters making reasonable assumptions about flow paths?
- (c) Can the effects be avoided, remedied or mitigated?

Predicted load realistic

12.50 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 point, but our interpretation of Dr Snow's evidence (Part A) was that she advocated use of the highly developed setting on shallow soils, not because they were likely to reach that status, but rather as a pragmatic response to reflect that OVERSEER would significantly underestimate nitrogen losses on shallow soils. We have paid particular attention to the soil types on each proposed irrigation area and for those that we consider 'shallow' we considered the developed setting on OVERSEER was likely to underestimate actual loads. For the above properties we do not have the information of soil type distribution and therefore we have erred on the side of caution and assumed the soils are shallow.

12.51 However any underestimate of nutrient load due to shallow soils needs to be offset by the area being irrigated, its effects on total farm production, and hence on the increase in the nutrient load brought about by the irrigation.

Effects on water bodies

Ahuriri Arm of Benmore

12.52 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.

12.53 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. From Dr Freeman's (Table 7) figures (based on modelling using the developed setting only) provides an estimate of the total predicted nitrogen lost from the three properties prorated by catchment (~36,000 kg/y – priority 3 in Table 7).

12.54 However, this represents an estimate of nitrogen load from the entire area of the properties within the Ahuriri catchment and includes the 30 ha currently irrigated. The total new area irrigated is only 180 ha. There is no readily accessible data on the total area farmed within the catchment by the three properties but based on what we can glean from Table 7 in Dr Freeman's addendum, we estimate that the new irrigated area represents ~2% of the farmed area.

- 12.55 The estimated nutrient load without the proposed new irrigation forms, in effect, the permitted baseline. It would have been very useful, in our view, to have had this estimate, but in the absence of it, we draw upon Dr Snow's evidence for MWRL in which she estimated N load from dryland farming at a number of stocking rates (her Figure 6). At 2 SU/ha (the approximate stocking rate on dryland farms), Dr Snow (Figure 6) estimated an N loss of ~2 kg N/ha/y.
- 12.56 Dr Snow estimated that for partially irrigated sheep and beef properties irrigating up to 35% of their property, the N losses were up to 5 kg N/ha/y. As the total irrigated area in this case represents only ~2% of the contributing area, the overall N losses are likely to be only slightly higher than the overall dryland figure. We do not have the information necessary to quantify this increase.
- 12.57 Put another way, considering that all properties do not propose a change in farming operations (i.e. overall stock numbers will stay within normal annual and seasonal parameters) we can consider losses from the irrigated area alone. If we use the average figure (between the highly developed and developed settings) for irrigated pasture given by Dr Ryan (for Meridian) of ~20 kg N/ha/y, then the maximum additional N load would be 3,600 kg N/y or 10% of the OVERSEER- predicted N load for these 3 properties in the Ahuriri catchment.
- 12.58 This load represents only a small proportion of the new N nitrogen load proposed in the Ahuriri catchment and is below the 5% threshold we identified as being significant in our Part A decision. While this could contribute to (cumulative effects) the Ahuriri Arm becoming mesotrophic, it is a relatively minor contribution and needs to be considered in relation to the mitigation set out in the FEMPS.
- 12.59 We are aware that the sum of relatively minor contributions may result in a cumulative effect on the lake and we have been cognisant of this possibility in arriving at our final decision. We have also taken priority issues into account and note that in the Ahuriri catchment, this application ranks 3rd behind Dunstan Peaks and Otamatapaio Stations.

Groundwater

- 12.60 We agree with Dr Bright that effects on groundwater in this case are manifest by interaction with surface waters and that groundwater is largely a matter for policy considerations. We do not accept the assertion in the WQS that Bog Roy does not have a groundwater catchment but we do accept it is small compared with other groundwater catchments and unimportant in terms of our considerations.

Periphyton Growths in Corbies, Backyard Creeks and Otamatapaio River

- 12.61 As noted above there has been no evidence presented on periphyton in any of the above waterbodies. However we do not accept that there is no issue to consider.
- 12.62 In Part A we rejected the MWRL proposal that the threshold for periphyton growth should be a 25% increase in maximum annual biomass calculated from modelled 'current' nutrient concentrations. We found instead, that MfE periphyton guidelines are applicable and should be used to protect streams from nuisance periphyton growths.
- 12.63 There are two important elements that will determine whether the MfE guidelines are likely to be breached:
- (a) The flow path of drainage water/groundwater with respect to Corbies, Backyard Creeks and Otamatapaio River; and
 - (b) The amount of dilution as the drainage water mixes with these waterbodies, particularly under summer low-flow conditions.
- 12.64 Superimposed on both of these elements is the groundwater travel time. However, for our purposes, that only affects the timing of any effect, rather than the effect itself. In any case considering the topography and location of the proposed irrigation areas in relation to the above water bodies it is likely that travel time will be short and that any effects will be manifest relatively quickly.
- 12.65 We do not have sufficient information to calculate whether the mass flow of nutrients from the respective irrigation areas is likely to raise the concentration of nutrient in Corbies, Backyard Creeks or Otamatapaio River. However, we think that without mitigation it could be, particularly

in the smaller creeks. We note that the Otamatapaio River is often dry below the confluence with Corbies Creek (i.e. it goes underground) which in itself would prevent periphyton growths. In the event that we granted this application it would be incumbent on the applicant to adhere to stream periphyton monitoring conditions, and to remedy any breaches.

- 12.66 We conclude that while leachate from this joint application may result in nuisance periphyton growths in Corbies, Backyard Creeks or Otamatapaio Rivers, through mitigation proposed by the applicants and conditions it should be possible to avoid adverse effects.

Avoided, remedied or mitigated

- 12.67 We acknowledge that the applicants have proposed mitigation measures in the FEMP to minimise the effects of their activities. It is difficult to assess the effectiveness of these mitigation measures as so much depends on how they are implemented. However based on the relatively small area of irrigation proposed (<2% of the total area within the properties contributing to the Ahuriri Arm) and Dr Robson's evidence (for MWRL) on the range of mitigation effectiveness they could be significant. The amount of nutrient prevented from entering watercourses by the mitigations proposed is difficult to estimate but we note that the setbacks from waterbodies will reduce phosphorus loads relatively more than nitrogen, which will be beneficial considering the Ahuriri Arm may be more sensitive to phosphorus (Dr Romero's evidence for MWRL). Fencing streams from stock within irrigated areas will be another important mitigation measure to implement.

- 12.68 In his closing legal submissions, Mr Chapman stated that while some of his applicants may choose to participate in the lock-step approach, many of his clients could not. In any case, we have considered the lock-step approach and found it to be inappropriate to grant applications to take and use water on this basis. The lock-step approach is an extension of adaptive management, about which we gave our views in Part A. In summary, we are of the view that adaptive management (and the lock-step approach) should not be a substitute for a robust AEE in which the state of the existing environment is adequately described and reasonable efforts are made to address reasonably foreseeable environmental effects. As discussed in Part A, we are of the view that the MWRL WQS falls short of the standard expected for a proposal (the total consents for irrigation before us) of this magnitude.

Summary on water quality effects

- 12.69 In summary, our view is that the effects on water quality from the proposed activity will be relatively minor and that effects can be managed through mitigation and consent conditions.

Discharge effects

- 12.70 All the evidence we received confirmed that the given the nature and scale of the discharge and the mitigation measures proposed, there would be no significant adverse effects on the environment. In addition there were no submissions raising any concerns with the proposed discharge. We are therefore satisfied that the effects of the proposed discharge are acceptable.

Landscape effects

- 12.71 The subject site is not, we think, a visually sensitive site. We accept Mr Craig's approach that visual sensitivity is determined primarily by location of publicly accessible vantage points and the views that can be had from them in relation to the applied for irrigation areas. While access to this site is available along a gravelled access road. It is not the circumstance where it is located adjacent to the State Highway or abutting Lake Benmore. We also accept the applicant's evidence about the degree of modification on the subject site as a result of farming activity occurring over many years, along with irrigation. This to a level is supported by the assessment undertaken by Ms Lucas.
- 12.72 In respect to Mr Glasson's view that a buffer between the irrigation area and Corbies Creek and riparian vegetation is required to offset landscape effects, we note that there will be a 5m buffer from streams, primarily for water quality purposes. Over time riparian vegetation will establish itself within that setback area. So we conclude Mr Glasson's recommendation will be met in that manner.
- 12.73 In terms of Mr Glasson's concerns about hill irrigation, we infer his concern links to visibility of the activity. We have already concluded that the site is not highly visible as it is located well away from readily available viewing points. We conclude that this point is not of concern.

12.74 Overall, we do not think that the grant of consent could give rise to landscape effects of concern.

Terrestrial effects

12.75 As we understand the evidence of Dr Walker, we are of the view that the grant of consent in relation to the application sites would not give rise to adverse effects on terrestrial ecology. We accept the view as her own assessment bears out that these farms are largely modified already and there are not issues in terms of preservation of terrestrial ecology.

Adverse effect on Tangata Whenua values

12.76 The applicant was a contributor to the MWRL Water Quality Study of the effects of the irrigation proposals in the Mackenzie Basin and consequent development of mitigation measures, a Cultural Impact Assessment (CIA) was produced as a part of this exercise. MWRL engaged Mr Mikaere, an independent expert on tangata whenua matters, to peer review the CIA and assess whether applicants have addressed the matters of concern identified in the CIA.

12.77 Ngāi Tahu witnesses did not identify any specific cultural issues with this application. The generally ephemeral nature of the lower reaches of the Otamatapaio River imposes a limitation on its potential as a mahinga kai resource or nursery. However a cultural interest remains in ensuring that small aquatic habitats such as tarns, lagoons and small streams are not adversely affected by irrigation activity and cumulative effects on water quality are minimised.

12.78 The proposed activity includes an increase by 50% of new irrigation and brings with it the potential for a proportionate increase in nutrient discharges to local surface and groundwater. A major thrust of this decision has been determining the effects that the additional irrigation might have on the trophic status of the Ahuriri Arm and instream ecosystems.

12.79 Without repeating our overall evaluation, our finding supports the position Paul Horgan (Te Runanga o Ngāi Tahu) expressed that the many of the smaller scale proposals and those for renewal consents, do not pose a risk to cultural values.

12.80 We consider that subject to mitigation measures and appropriate conditions the proposed activity will have no more than a minor effect on cultural values.

Key conclusions on effects

12.81 In relation to the actual and potential effects of the proposal, our key conclusions are as follows.

12.82 The applicant proposes to cease abstraction when the environmental flow and allocation limits established for the Otamatapaio catchment as set out in the WCWARP are reached. We therefore consider the effects of the proposed diversion and take on flows and ecological values would be minor.

12.83 In relation to water quality, we consider that potential nutrient loading in the Ahuriri Arm and periphyton growth in streams will be relatively minor and that effects can be managed through mitigation and consent conditions.

12.84 Provided that the reduced annual volumes is imposed, we consider that this represents an efficient and effective use of water.

12.85 Given the relatively low visibility of the site and the degree of existing modification, we consider that the grant of consent could give rise to landscape effects of concern.

12.86 We conclude that the activity will not have any significant effect on tangata whenua values.

12.87 We agree that the effects of the proposed discharge are acceptable.

12.88 We accept that allowing the proposal to occur will provide positive economic benefits for the applicant and provide stability to the overall farm.

13 EVALUATION OF RELEVANT PLANNING INSTRUMENTS

13.1 Under s 104(1)(b) of the Act, 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 Waitaki District Plan 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) 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 acknowledge that irrigating 180ha of additional land will increase the nitrogen load from the properties. However we are satisfied that the size of this contribution is minor and will not have a significant impact on the trophic state of the Ahuriri Arm of Lake Benmore, taking into account the applicant's mitigation measures. In making this determination we have also taken into account the mitigation measures proposed by Bog Roy Station for CRC012019, which we believe will significantly offset any increase in load associated with this application.
- 13.7 In terms of potential periphyton growths in Otamatapaio River and its tributaries, we received no data on the current state of streams or likely future change. Although we recognise the potential for nuisance periphyton growth as a consequence of additional irrigation, we consider that this effect should be able to be avoided through appropriate periphyton monitoring conditions.
- 13.8 Overall, we can conclude that given the scale of the proposed irrigation and taking into account the mitigation measures proposed 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 the Otamatapaio River and its tributaries 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 2 – 8 deal with minimum flows for the Corbies Creek and Otamatapaio River. In particular, Policies 3 and 4 outline the values that must be maintained in the water bodies, and a number of matters that must be considered when setting an environmental flow and level regime, and are particularly relevant to this application. Policy 4 has been discussed in more detail in the assessment of effects section.
- 13.16 As the applicant is proposing to adopt the minimum flow required by the WCWARP (equivalent to the 5-year 7-daylow flow), we are satisfied that the proposal is consistent with these policies.

Efficient and effective use

- 13.17 Objective (4) of the WCWARP seeks to promote "*the achievement of a high level of technical efficiency in the use of allocated water*". The technical efficiency of the application is consistent with the provisions of the WCWARP. 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.
- 13.18 Policies 15 – 20 deal with efficient and effective use of water and are applicable to this application. The Policies provide for an efficient use of water so that net benefits are derived from its use and are maximised and waste minimised. As discussed in our evaluation of effects, we are not satisfied that the rates and annual volumes sought by the applicant reflect an efficient and effective use of water or that the reasonable use test can be met. However this inconsistency can be remedied by reducing the annual volume as proposed by Ms Penman.
- 13.19 Overall, we consider that, provided the annual volume is reduced, the proposed irrigation will comply with the reasonable use and efficiency provisions of the WCWARP.

Landscape

- 13.20 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.
- 13.21 Given our conclusion on the effects above, we consider that granting consent to this proposal will be consistent with the relevant objectives and policies relating to landscape.

Discharge

- 13.22 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.

Tangata whenua

- 13.23 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.
- 13.24 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.
- 13.25 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.

Key conclusions on planning instruments

- 13.26 For all of the above reasons we consider that, with the imposition of appropriate conditions granting consent would be consistent with the objectives and policies of the relevant plans. We have reached this conclusion taking into account the relevant planning provisions in respect of water quality, efficiency, environmental flows, landscape, tangata whenua values and 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 Part of the proposed activity is an existing activity and as such there is an inbuilt investment made by the applicant to complement the farming operation. We were advised that irrigation had taken place on Bog Roy for a number of years and provides the stability to the overall farm. Mr Anderson described it as the heart of the farm compensating for harsh weather conditions and allowed farming to occur through dry years. We do not have specific figures, but accept the overall driver for the farm is to invest in existing and new irrigation to maintain and increase farm production.

15 PART 2 RMA

- 15.1 Section 104(1) RMA 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.
- 15.2 We refer to all of the matters we consider relevant from sections 6 to 8 below, acknowledging that the three sections represent factors contributing to our evaluation under section 5 RMA.

Section 6 – Matters of National Importance

- 15.3 Sections 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 Maori with the environment (s6(e)).
- 15.4 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.

- 15.5 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.
- 15.6 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.
- 15.7 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 in this catchment that is of importance to Ngāi Tahu.
- 15.8 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

- 15.9 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.
- 15.10 Sub-section (a) refers to kaitiakitanga. We consider that the proposed activity with the proposed mitigation and conditions sits within the acceptable environmental parameters outlined by Ngāi Tahu such that that it will not cause distress to the function of kaitiakitanga.
- 15.11 Sub-sections (b), (c), and (f) are specifically relevant to this application. Sub-section (b) relates to the efficient use and development of natural and physical resources. Relevantly in this case is water. We have determined that the volumes of water we are prepared to grant and the methodology of its conveyance and distribution, results in the efficient use and development of the water resource.
- 15.12 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.
- 15.13 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.
- 15.14 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.
- 15.15 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

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

- 15.19 Turning now to the overall purpose of the RMA, that is, “*to promote the sustainable management of natural and physical resources*”.
- 15.20 The proposal will allow the development of land to occur, which may provide for the economic and social well-being of the community. The applicant has proposed measures to “safeguard the life-supporting capacity of water” and “avoid, remedy or mitigate” the potential impacts on water quality and landscape values as required in Section 5(2)(c). By restricting the annual volumes to that which we consider consistent with the objectives of Section 5(2)(a), the proposal will also provide for the needs of future generations.

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 other applications on the same property (CRC012019). Taking all factors into account our view is that the net change in nutrient load to the Ahuriri Arm arising from the applicants’ properties will be minor. Taking into account priority issues (this application being third after in the Ahuriri catchment after Dunstan Peaks and Otamatapaio Station) and the safeguards provided by consents monitoring conditions we are comfortable with allowing the proposal to proceed.
- 16.3 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 to the proposal.

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. This has been confirmed by Council investigating officers and 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. In addition, we make the following comments on conditions.
- 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 the Council 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, 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 TLI is very close to the agreed trigger point, and the TLI may increase even without the grant of new consents (due to groundwater lag effects). We are reasonably confident however that this will not occur because by and large

these activities have been 'on foot' for a long period of time and we think this is reflected in the current TLI. However, we cannot be completely certain and it seemed to us rather than leave the matter we should do something about it to at least provide a mechanism to respond to groundwater lag effects, if they occurred.

- 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 discharge consent, we have decided to grant this 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 activity 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:
- (a) **GRANT** application **CRC012017** by Otematata Station, Bog Roy Station, and Messrs RM, CJ & IA Munro to divert, take and use water from Corbies Creek for the spray irrigation of 210 ha of pasture on Bog Roy Station, Otematata Station and Rostreiver Station; and
 - (b) **GRANT** application **CRC012032** by KJ, SR & DK Anderson to discharge by-wash irrigation water and excess stockwater into Backyard Creek.
- 19.3 Pursuant to section 108 RMA, the grant of consent is subject to the conditions specified at **Appendix A**, which conditions form part of this decision and consent
- 19.4 The duration of CRC012017 shall be until the 30th April 2025. The duration of CRC012032 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 (CRC012017) – Take and Use

1. Water shall only be diverted from the Corbies Creek, at or about map reference NZMS 260 H40: 7874-1781 at a rate not exceeding 100 litres per second, with a volume not exceeding 8,640 cubic metres per day 1,446,666 cubic metres between 1 July and the following 30 June.
2.
 - a. Water shall be used for the spray irrigation of 210 hectares per irrigation season (being 90ha on Otematata Station, 60ha on BogRoy Station and 60ha on Rostriever Station) of crops and pasture and storage on Otematata Station, within the areas of land shown in attached "Plan CRC012017 and CRC012032", which forms part of this consent.
 - b. There shall be a minimum 5 metre setback where there is no irrigation from any permanently flowing waterways within the irrigation areas shown on "Plan CRC0120217 and CRC012032".
3. 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.
4.
 - a. The consent holder shall, prior to exercising this consent, install a water meter measuring device 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.
5. Whenever the flow (expressed in litres per second) in Otamatapaio River, as estimated by the Canterbury Regional Council calculated as the mean flow for the previous 24 hour period (midnight to midnight) at map reference H40:759-168:
- a. Is equal or greater than 450 litres per second the maximum rate of take must not exceed 100 litres per second, and;
 - b. Falls below the flow shown for irrigation on the horizontal axis of the Minimum Flow Graph attached to these conditions, then the rate of abstraction permitted in terms of this permit shall not exceed those shown as corresponding flows on the vertical axis.
 - c. 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.

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 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.

- 6. The consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.
- 7. The consent holder shall, within six months of the commencement date of this consent at the point of take for Otematata Station, BogRoy Station and Rostriever Station :
 - a.
 - i. install water meters that have 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 Corbies Creek 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%.
- 8.
- a. The water meter installed in accordance with Condition 7 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.
9. Within one month of the installation of the measuring or recording device(s), specified in conditions 7 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) of condition 7.
10. 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 7; and
 - b. the tamper-proof electronic recording device is operating as specified in condition 7.
- 11.
- a. Water shall only be taken when a fish screen with a maximum mesh width and height size of 3 millimetres or slot width and height of 2 millimetres is operated and maintained across the intake to ensure that fish and fish fry are prevented from passing through the intake screen.
 - b. The fish screen shall be positioned to ensure that there is unimpeded fish passage to and from the waterway and to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the screen face.
 - c. The fish screen shall be designed and installed to ensure that:
 - i. the majority of the screen surface is oriented parallel to the direction of water flow.
 - ii. where practicable, the screen is positioned in the water column a minimum of 300 millimetres above the bed of the waterway and a minimum of one screen radius from the surface of the water.

- d. the approach velocity perpendicular to the face of the screen shall not exceed 0.06 metres per second if no self-cleaning mechanism exists, or 0.12 metres per second if a self-cleaning mechanism is operational.
- e. the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.
- f. The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Condition (11)(a) –(c)(iv) of this consent is achieved. Prior to the installation of the fish screen, a report containing final design plans and illustrating how the fish screen will meet the required design criteria, and an operation and maintenance plan for the fish screen shall be provided to Environment Canterbury, Attention: RMA Compliance and Enforcement Manager.
- g. A certificate shall be provided to Environment Canterbury by the designer or supplier of the fish screen to certify that the fish screen has been installed in accordance with the details provided to Environment Canterbury in accordance with Condition 11)(a) of this consent.
- h. 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 Environment Canterbury upon request.

Nutrient Loading

12.

- a. For the purposes of interpretation of the following conditions Rostriever Station shall be defined as the areas in certificates of title and Pastoral Lease numbers OT161/62,OT3A/182,OT3A/183,OT 3A/513 which total 3,565 hectares.
- b. For the purposes of interpretation of the following conditions Otematata Station shall be defined as the areas in Section 1 Block VIII Gala SD, Sections 1/3 12/13 Block IV Section 24 Part 17 Block V Section 2 Block VII Kurow SD, Sections 15 22 24 25 31 Parts 8 16 & Closed Road through Section 8 Block VI Kurow SD, Sections 34/35 Block VI Kurow SD, P 304 Sections 36-37 40-42 49-51 Block VIII Gala SD Section 8 Part RUNS 742 743 Gala & Turn Again SDS, Section 7 Block V Kurow SD for Otematata Station, which total 26,580 hectares.
- c. For the purposes of interpretation of the following conditions Bog Roy Station shall be defined as the areas in certificates of title and Pastoral Lease numbers OT2D/450 which total 2,862 hectares.

13. The consent holder shall prepare once per year and not less than one month prior to the commencement of the irrigation season, an Overseer nutrient budgeting model report, and shall prepare, at least once per year, a report of the annual farm nutrient loading for the Bog Roy, Rostriever and Otematata Stations, using the model Overseer® (AgResearch model version number 5.4.3 or later).

14. A copy of the report prepared in accordance with condition 13 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, upon request.

15. The consent holder shall not commence 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 13 shall not exceed:

- a. Bog Roy Station – 9313 kg Nitrogen and 116 kg Phosphorus;
- b. Rostriever Station – 5895 kg Nitrogen and 51 kg Phosphorus;
- c. Otematata Station – 97622 kg Nitrogen and 2206 kg 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.

16. 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 undertaken by an independent person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification.
- 17.
- 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 Bog Roy Station, Rostrevier Station and Otematata Station, as provided to Environment Canterbury in November 2010.
 - b. Subject to condition 17(a), the consent holder shall implement, and update annually the FEMPs for Bog Roy Station Rostriever Station and Otematata Station. The FEMPs 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 13, 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 Bog Roy Station Overseer[®] model inputs.
 - iv. The Overseer parameter inputs report which shall be supplied to the Canterbury Regional Council.
 - 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 16 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 the Bog Roy Station, Rostriever Station or Otematata 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

18.

- 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 fertiliser shall be applied within 20 m of a watercourse.

Irrigation Infrastructure

19.

- 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 independent expert holding National Certificate in Irrigation Evaluation Level 4, 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

- 20. The NDAs shall be recalculated if there is a sale or transfer of any part, but not the whole, of the total farm area specified in condition 12. The recalculated NDAs shall replace the NDAs specified in condition 15. 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

- 21.
 - 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

- 22. The water quality of the Otamatapaio River shall be monitored within 6 months of first exercise of consent as follows:
 - a. Location:
 - i. Map reference: NZMS 260 H40: 786-173 immediately upstream of all irrigation takes on Crobies Stream;
 - ii. Map reference: NZMS 260 H40: 787-212 downstream of the irrigation areas

Advice Note: The coordinates for Stream/River monitoring shall be as specified unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of all irrigation areas to appropriately monitor the localised river effects arising from the exercise of this take consent.
 - b. Water quality variables monitored shall include: (a) dissolved inorganic nitrogen (b) dissolved reactive phosphorous (c) Dissolved oxygen (d) conductivity (e) turbidity; (f) periphyton biomass as chlorophyll *a* per square metre; (g) 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.

23.

- a. If the monitoring undertaken in accordance with condition 22 shows that the average sample result for the downstream Otamatapaio River monitoring site in Condition 22 over the monitoring period (December to April test results as above) 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 ,(OR if the initial monitoring shows that the DIN or DRP levels are higher than 0.14 mg/l or 0.006 mg/L, respectively; then initial actual annual average sample results shall be substituted for the trigger levels) 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 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 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 downstream Otamatapaio River monitoring site, then no further action needs to be undertaken by the consent holder, and no nutrient load reductions or Remedial Action Plan shall be required.
- d. If the monitoring undertaken in accordance with condition 22 shows that the average sample result for the downstream Otamatapaio River monitoring site, specified in

condition 22, 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 15 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.

- e. If the monitoring undertaken in accordance with condition 22 shows that the average sample result for the downstream Otamatapaio River 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 that sets 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 Otamatapaio River 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 Otamatapaio River monitoring site, over the period December to April.
- f. The Remedial Action Plan (referred to in Condition 23(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 Otamatapaio River 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 Otamatapaio River monitoring site, over the period December to April.
- g. The Remedial Action Plan 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 physically possible:
 - v. If the Remedial Action Plan outlined in clauses (e) and (f) is prepared in collaboration with other consent holders who are required to prepare a common Remedial Action Plan for this sub catchment the Remedial Action Plan shall be deemed to comply with this condition.
 - vi. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be immediately implemented.
 - vii. 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 23(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.

24.

- a. If the monitoring undertaken in accordance with condition 22 shows that the average sample result for the downstream Otamatapaio River monitoring site specified in condition 22 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 24(d) and 23(e) shall not apply.
- d. If the monitoring undertaken in accordance with condition 22 shows that the average sample result for the downstream Otamatapaio River monitoring site specified in condition 22 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 15, 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.
- 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 the Otamatapaio River 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 15 shall be restored.

Lake water quality monitoring and response

25. The water quality of the Ahuriri Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:

- a. Locations:
 - i. Ahuriri Arm, Map reference: NZMS 260 H39:8027-2667;

- ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371.
- b. Depths: depth integrated 0-10m, 25m, 50m.
 - c. Water quality variables: (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 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.

26.

- a. If the monitoring undertaken in accordance with condition 25 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 15, 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.

- b. If the monitoring undertaken in accordance with condition 25 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 15 shall be restored.
- f. If the monitoring undertaken in accordance with condition 25 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 15, 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.
- g. If the monitoring undertaken in accordance with condition 25 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.

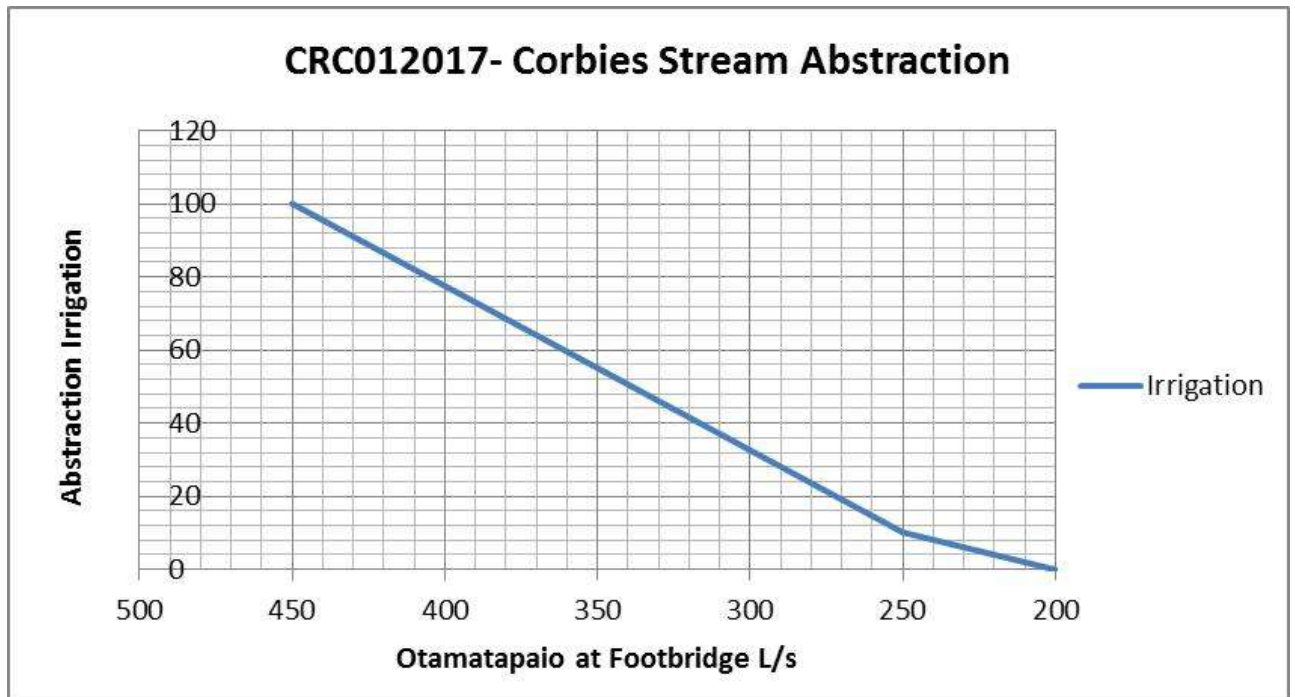
27. The Canterbury Regional Council may, once per year, on any of the last 5 working days of March or July serve notice of its intention to review the conditions of this resource consent for the

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

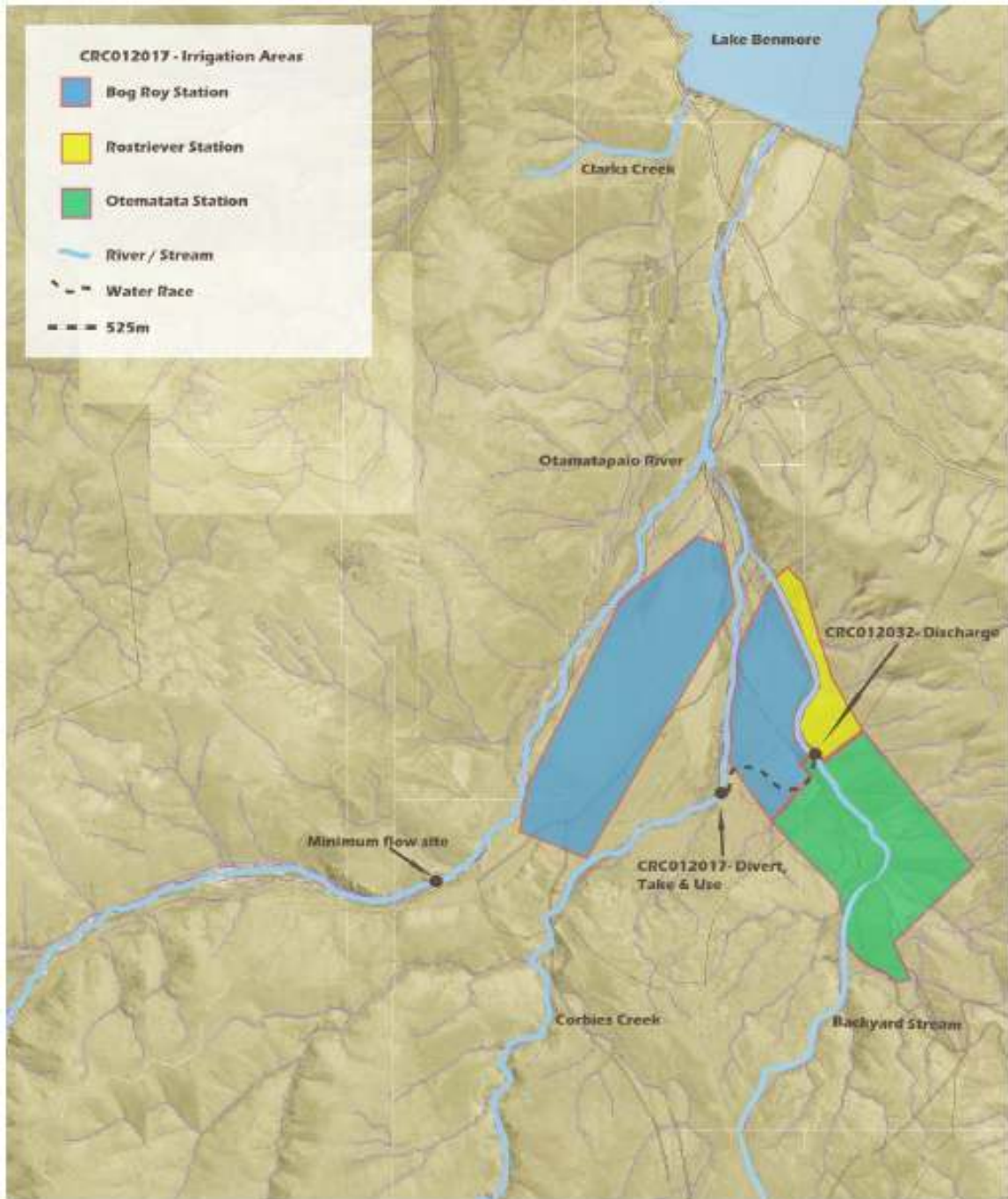
- a. dealing with any adverse effect on the environment which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage; and
- b. amending the flow in the Otamatapaio River and tributaries at which abstraction is required to be reduced or discontinued as set out in condition 5.

28. The lapsing date for the purposes of section 125 of the Resource Management Act shall be 5 years.

Minimum Flow Graph



Plan CRC012017 and CRC012032



APPENDIX B

Conditions of Consent (CRC012032) – Discharge

1.
 - a. Water shall only be discharged to Backyard Stream at or about map reference NZMS H40: 7984-1768 as shown on the attached "Plan CRC012017 and CRC012032".
 - b. The discharge shall only be unused conveyance water and shall contain no contaminants.
 - c. Water shall only be discharged at a rate not exceeding 110 litres per second.
2.
 - a. All practicable measures shall be undertaken to avoid erosion of the bed or banks of the Backyard Stream 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 the Backyard Stream; 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.