

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

applications by **Otematata Station Ltd** to:

divert, take and use surface-water from Glen Bouie Creek and Backyard Stream at Otematata Station (**CRC041033**); and

discharge water from an open water race into Backyard Stream, and from an open water race into a storage dam (**CRC052739**); and

disturb the bed of Glen Bouie Creek (**CRC052740**) ; and

construct and maintain a compacted earth dam (**CRC052742**); and

dam up to 300,000 cubic metres of water (**CRC052741**); and

discharge water from the emergency spillway of a storage dam (**CRC052743**).

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

2 THE PROPOSAL

- 2.1 The proposal is a complex water proposal which is illustrated in Figure 1 below. The following description incorporates modifications that were made to the proposal since notification.
- 2.2 The applicant intends to divert water at a rate of up to 200 litres per second from Glen Bouie Creek into an existing water race (map reference NZMS 260 H40:792-084). The water will pass down the race and be discharged into Backyard Stream. Water will then flow down Backyard Stream and be diverted from Backyard Stream into another race, yet to be constructed (map reference NZMS 260 H40:799-157).
- 2.3 The new race will direct up to 180,000 cubic metres of water per year to a proposed dam, which will hold up to 300,000 cubic metres of water. The dam will be constructed in an ephemeral tributary of Backyard Stream which only takes runoff from the area in heavy rainfall. The proposed dam would have the following dimensions:
- (a) Length of waterbody behind dam = 380 metres
 - (b) Height of crest = 11 metres
 - (c) Depth of crest = 4 metres
 - (d) Freeboard = 1.5 metres
 - (e) Width of crest = 120 metres
 - (f) Spillway = 10 metres x 1.5 metres
- 2.4 A chimney drain or seepage blanket would be installed with a cut-off in the foundations and a grassed spillway over the face of the dam.
- 2.5 Works would be required in the bed to construct the dam, which will involve stripping of the dam footprint, stockpiling topsoil, removing weak or organic material, cutting keyway, placing and compacting selected fill, installing seepage blanket and or chimney drain, excavating spillway, placing topsoil over disturbed areas, and planting grass seed on the crest, bank and spillway.
- 2.6 In addition, there may be the requirement for emergency discharges from the dam in peak floods. Any discharge from the spillway would be onto grassed paddocks which would eventually result in water reaching Corbies Creek.
- 2.7 The discharge from the water race into Backyard Stream, and from Backyard Stream into the new water race to the dam, will be via a rock rip-rap apron to control flow velocity. Works will be required in the bed of Glen Bouie Creek and Backyard Stream to install and maintain the diversion structures.
- 2.8 In addition to the water diverted from Glen Bouie Creek via Backyard Stream, the dam will also be fed with water taken from Corbies Creek in accordance with a separate consent (CRC012017). We granted this consent by way of a separate decision, which authorises the irrigation of up to 90 ha on Otematata Station.
- 2.9 Water is proposed to be taken and used from the dam (map reference NZMS 260 H40:796-163.) at a rate not exceeding 75 litres per second, with an annual volume of 660,000 cubic metres. This water will be used for the spray irrigation of up to 120 hectares at Otematata Station within the area shown in Figure 1 below, in combination with consent CRC12017. As we have already

granted consent to irrigate 90 ha of Otematata Station, this decision is only considering the irrigation of a further 30 ha of land on Otematata Station.

- 2.10 The proposed annual volume does not take into consideration any stock water requirements. The applicant considers that the take and use of water for provision of stock water is covered by section 14(3)(b) of the RMA.
- 2.11 A minimum flow of 10 litres per second in Glen Bouie Creek and 200 litres per second in the Otamatapaio River is proposed, in accordance with the requirements of the WCWARP, as discussed further below. At these flows all diversions and abstractions must cease, other than the take of water from the storage dam.

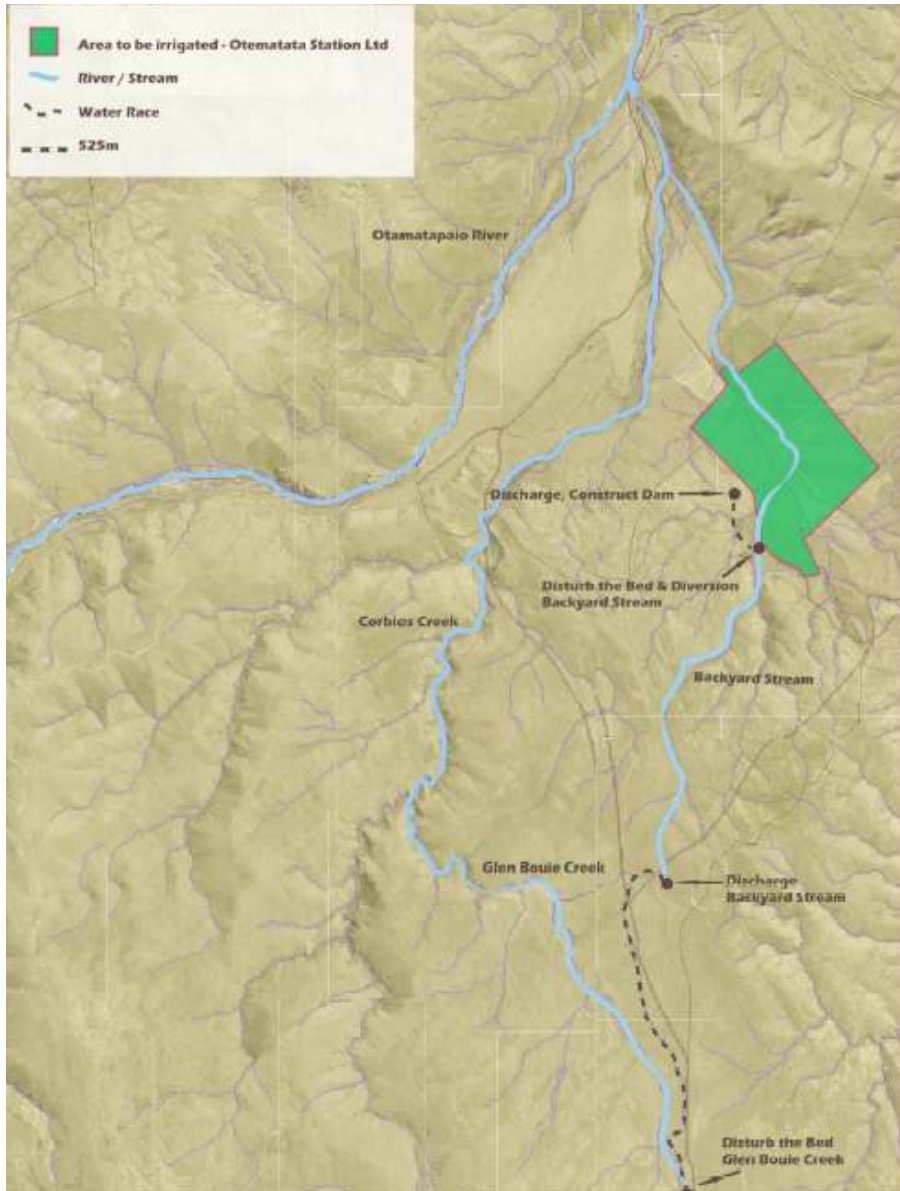


Figure 1: Indicative location map

The applications

- 2.12 When first lodged the applications were grouped under one consent number (CRC041033), but during the processing of these applications in 2005 it was identified that there needed to be separate consent numbers generated for each activity. There are now six separate applications that make up this proposal, the details of which are set out below (as modified since notification).
- 2.13 Applications to divert, dam, take and use water pursuant to section 14 RMA:

CRC041033 – seeks to:

- (a) divert up to 200 L/s of water per second from Glen Bouie Creek into an open water race, at or about map reference NZMS 260 H40:792-084;
- (b) divert up to 200 L/s of water per second from Backyard Stream into an open water race, at or about map reference NZMS 260 H40: 799-157;
- (c) take and use water from a storage dam, at or about map reference H40:796-163, at a maximum rate of 75 litres per second and a maximum annual volume of 660,000 cubic metres per year, for spray irrigation of 120 hectares of crops and pasture at Otematata Station.

CRC052742 – seeks to dam up to 300,000 cubic metres of water in an unnamed tributary of Corbies Creek, at or about map reference NZMS 260 H40: 796-163

2.14 Applications for an activity in the bed of a lake or river pursuant to section 13 RMA:

CRC052740 – seeks to:

- (a) disturb the bed of Glen Bouie Creek, at or about map reference NZMS 260 H40: 792-084 for the purposes of the construction and maintenance of an intake structure for an open water race;
- (b) disturb the bed of Backyard Stream, at or about map reference NZMS 260 H40: 799-157, for the purposes of the construction and maintenance of an intake structure for an open water race

CRC052741 - seeks to construct and maintain a compacted earth dam with a capacity of 300,000 cubic metres in an unnamed tributary of Corbies Creek, at or about map reference NZMS 260 H40:796-163.

2.15 Applications for the discharge of contaminants into the environment pursuant to section 15 RMA:

CRC052739 – seeks to:

- (a) discharge up to 200 L/s of water per second from an open water race into Backyard Stream, at or about map reference NZMS 260 H40:788-120;
- (b) discharge up 200 L/s of water per second from an open water race into a storage dam on an unnamed tributary of Corbies Creek, at or about map reference NZMS 260 H40:796-163

CRC052743 – seeks to discharge water from the emergency spillway of a storage dam in an unnamed tributary of Corbies Creek, at or about map reference NZMS 260 H40: 796-163.

2.16 All applications were lodged with the Canterbury Regional Council (the Council) on 14 January 2003. The applications were publicly notified and there were a number of submissions that are referred to later in this decision.

Modifications after notification

2.17 Since the applications were notified, the proposed irrigation area and associated annual volume for the take from the dam have been reduced from 162 ha and 972,000 cubic metres to the currently proposed 120 ha and 660,000 cubic metres (in combination with CRC012017). During the hearing, the rates of take and discharge were also modified by the applicant, reducing them from 1,000 L/s to a maximum of 200 L/s.

2.18 The general principle for modifications after notification is that amendments are allowed provided they do not increase the scale or intensity of the activity or significantly alter the character or effects of the proposal. The key consideration is prejudice to other parties by allowing the change. In this case, we are satisfied that the change does not significant alter the intensity or effects of the proposal and that no party would be adversely affected by allowing the change.

Related consents and applications

- 2.19 The applicant formerly held water rights which were issued in 1970 to divert up to 150 litres per second from Glen Bouie Creek into the existing water race. This water was then diverted into and discharged from various water bodies and man-made races through the property. The purpose of the diversion was to provide stock and domestic water for the property, and water for irrigation of up to 160 hectares.
- 2.20 However, it was noted when these water rights were renewed in 1980 (as WTK892400 to WTK892409) that the irrigation component had never been exercised due to difficulties in sealing the main delivery race. At that time they proposed to upgrade the race in order to convey enough water for irrigation purposes.
- 2.21 The section 42A reporter noted after her site visit that it was evident that the race system was still in poor condition with significant race losses and the diversion for stock water has continued despite the expiry of the aforementioned water rights in December 1990. The irrigation component of these water rights does not appear to have ever been exercised. This is an important point which we return to later in this decision.
- 2.22 As mentioned above, the applicant (in combination with Bog Roy Station and Messrs RM, CJ & IA Munro) has also lodged a separate application for the take and use of water from Corbies Creek (CRC012017). It is proposed that a portion of water per year taken under CRC012017 would be used to irrigate 90 ha of Otematata Station, creating a total irrigation area of 120 ha in combination with this application. We have considered application CRC012017 in a separate decision.
- 2.23 Application CRC020355 has also been lodged by the applicant for a separate proposal to abstract water from Lake Waitaki for irrigation of 37 hectares on the lake edge. We have considered this application in a separate decision.

3 DESCRIPTION OF THE ENVIRONMENT

- 3.1 Glen Bouie Stream is a high country stream with a boulder bed. It is approximately 1.5 metres wide, has a depth of 0.6 metres and water depth of 0.2 metres. Flows typically range from 20 to 300 litres per second, but around 50 litres per second in summer months. Native fish such as upland bullies torrent fish are expected but no trout. It is not a known food gathering site.
- 3.2 Backyard Stream runs through the proposed irrigation areas. The stream similar to Glen Bouie Creek but with a width of 0.8 metres, depth of 0.8 metres and water depth of 0.3 metres.
- 3.3 Otamatapaio River is an important spawning and juvenile rearing tributary of Lake Benmore for both brown and rainbow trout. It also provides some angling opportunity before flows are reduced. Total catchment area of the river is 184km². The hydrology of the catchment is reasonably well understood with flow recording beginning in 1988.
- 3.4 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 and Associates' "Cultural Impact Assessment" (CIA) refers in section 4.10 on 'trails' to a place named "Ma Ka Tupuna", and in brackets to a stream at Robertson Saddle. The CIA refers to Ma Ka Tupuna as one of a number of stopover sites for travellers heading inland to such places as Lake Hawea.
- 3.5 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 Hawkdon Range to the south.
- 3.6 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. There are no Recommended Areas for Protection (RAP) on Otematata Station within vicinity of the proposal, nor any identified areas of landscape or ecological value within the proposed irrigation area. The proposed irrigation area is predominantly flat land at the base of the valley hills, and is set well back from the road such that it is not visible to general traffic along State Highway 83.
- 3.1 Further description of the environment is provided in our Part A decision and our summary of the evidence received from the applicants and submitters below.

3.2 We did not carry out a ground site visit of this property but did carry out an aerial inspection. We detailed our site visits in Part A and we do not repeat this information here.

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) Transitional Regional Plan (TRP);
- (b) Waitaki Catchment Water Allocation Plan (WCWARP);
- (c) Natural Resources Regional Plan (NRRP);
- (d) Proposed and Operative Canterbury Regional Policy Statement (CRPS); and
- (e) 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.

CRC052733 – 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)(a) provides that the flow in the relevant river or stream or the level in the relevant lake is above the minimum flow or level in Table 3.
 - (i) The applicant proposed a minimum flow of the 5-year 7-day low flow of 10 litres per second in Glen Bouie Creek immediately below the intake. It was considered that flow sharing above the mean flow would be required in order to comply with row (xxii) as the proposed maximum rate of diversion of 200 litres per second exceeds the mean flow on Glen Bouie Creek of 90 litres per second.
 - (ii) In addition, as Glen Bouie Creek is a tributary of the Otamatapaio River, 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)). This minimum flow location is above all abstractions in the catchment. The 5-year 7-day low flow at the downstream end of the Otamatapaio River would technically be zero litres per second as the stream naturally goes to ground.
- (b) Rule 2, clause (1)(b) - There is no instantaneous allocation limit for this water body (Table 3, row (xxii)).
- (c) Rule 6 - The activity is within the allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam.
- (d) Rule 15 - Classifying rule – discretionary activity.

4.6 Overall, the proposed water permit is a **discretionary** activity under Rule 15 of the WCWARP and resource consent is required in accordance with section 14 of the RMA.

All other applications

- 4.7 All of the remaining applications are not listed in Schedule 2 of the Waitaki Act. As such, section 88A of the RMA applies and the relevant plan for determining the status of the activity is that existed at the date the application was lodged.
- 4.8 As mentioned above, all these applications were lodged in January 2003. The relevant plan at this time was the TRP, as this was before Variation 1 to the PNRRP was notified in July 2004. The TRP is therefore the relevant plan for determining the status of these activities, as discussed below.

CRC052740, CRC052741 - Disturb the bed (s13)

- 4.9 The TRP is silent on matters relating to works in the bed and banks of rivers and lakes in the Waitaki catchment. This activity therefore requires consent as a **discretionary** activity under the TRP

CRC052742 - Dam water (s14)

- 4.10 The damming of intermittently flowing streams is permitted under the provisions of the TRP, provided certain conditions are met. The provisions will not be met for this activity. Therefore it would be classified as a **discretionary** activity under the TRP.

CRC052739 and CRC052743 - Discharge water (s15)

- 4.11 There is no General Authorisation in the TRP for the discharge of water into water as described in the proposed activity. Resource consent is therefore required as a **discretionary** activity under the TRP.

Overall status of the proposal

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

5 NOTIFICATION AND SUBMISSIONS

- 5.1 Originally the whole proposal was given a single consent number and notified as such in December 2003 as part of the "ministerial call-in". In this notification a total of 314 submissions were received on all applications.
- 5.2 The proposal was subsequently split into six separate consent numbers and notified again in August 2007 with 200 other applications for similar activities in the Waitaki catchment.
- 5.3 In the 2007 public notification, 21 submissions in total were received, including
- (a) 3 in support;
 - (b) 16 in opposition; and
 - (c) 2 neither in support nor opposition.
- 5.1 Table 1 is based on the relevant s42A reports and summarises those submissions that directly referenced the application. In addition to those listed, there were other submitters that presented evidence at the hearing that was relevant to this application. The relevant evidence from submitters is discussed in more detail later in this decision. Please note that all submissions hold equal importance, even if not specifically listed below.
- 5.2 All of the submissions received were focused on the divert, take and use of water (CRC041033). 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.

Table 1: Summary of submissions CRC041033, CRC052739 & CRC052740

Submitter	Issues	Position
Fish & Game ^{1,2}	Important fish spawning tributary and abstraction may be affecting continuous flows to Lake Benmore	Oppose
Department of Conservation ^{1,2}	Potential effects on instream ecosystems given high cumulative rate of take from catchment	Oppose
Canterbury Aoraki Conservation Board ^{1,2}	Consent duration, runoff control in terms of water quality, potential effects on instream ecosystems, natural character of water bodies, and landscape	Oppose
Otamatapaio Station (1993) Ltd ²	Irrigation is essential and provides economic benefit to community. Only using a small proportion of water in the catchment	Support
R Fenwick ^{1,2}	Water storage & harvesting is a good option as it would increase production and compensate for loss of land with Lake Benmore's creation	Support
Meridian Energy Ltd ^{1,2}	Concerned about water quality, metering, duration and reasonable use	Oppose

¹ August 2007 submission

² Call-in 2003 submissions

6 THE SECTION 42A REPORTS

- 6.1 Two separate officer reports (30B and 30C) covering all six applications were prepared by the Council's Consents Investigating Officer (Ms Claire Penman).
- 6.2 The primary report was supported by a number of specialist 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 All reports were pre-circulated in advance of the hearing. We have read and considered the content of the reports and refer to them as relevant throughout this decision.

Ms Penman

- 6.4 At the time the primary report was prepared, there was insufficient information for Ms Penman to reach firm conclusions on the effects of the proposal. Matters that were identified as outstanding at that time are listed below. We discuss these issues further after summarising the applicant's case.
- (a) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from the proposal.
 - (b) *Efficient and reasonable use* - The soil water demand information was inconclusive to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (c) *Ecosystems* - The applicant had proposed a fish screen but had not included any details of what this would entail;
 - (d) *Cultural values* - The applicant had not provided any assessment on cultural values and there were outstanding submissions from runanga in opposition to the proposal.

- (e) *Other users* – An appropriate flow sharing regime had not yet been proposed by the applicant;
- (f) *Flood carrying capacity & erosion* – No mitigation for effects of erosion on Backyards Stream or during construction works. No assessment to ensure emergency discharge will not erode or damage downstream water bodies;
- (g) *Effects on other users/Dam break analysis* - No assessment had been provided to determine the potential effects on people below the dam;
- (h) *Scope* – Ms Penman was unsure as to the scale of works required including when works will occur and for how long. The applicant had only provided limited design details and no plan of the proposed dam;

6.5 Due to the above concerns, Ms Penman was not able to recommend that the applications be granted at the time of her original report.

Mr Glasson

- 6.6 In the context of Mr Glasson’s assessment, he placed this application within Unit 8 Aviemore. He told us there are a number of smaller irrigation sites proposed for this Aviemore Unit, being located adjacent to the lakes, rivers and streams of the Waitaki Valley. He described the landscape as narrow, with large waterbodies connected by a sinuous river.
- 6.7 He noted the generally modified landscape is a consequence of pastoral farming and the presence of farm buildings, pylons, State Highway 83 (SH83), shelterbelts and woodlots. He expressed the view that because spurs descend from the adjacent ranges down into the valley, they separate the broad landscape into smaller and more intimate areas from the rest of the valley. He told us it was within these smaller areas the vast majority of the proposals are located.
- 6.8 He did undertake a landscape assessment of what he described as CRC041033. He provided us with photographs of the same. Where the sites were close to the road, lake and streams, he did recommend buffers. The application site relevant to CRC041033 is not visible from SH83 and/or the lake. He expressed the view in terms of cumulative effects (if the applications were approved in their current form) there would be moderate to minor adverse cumulative effects on landscape. He was of the view if mitigation measures were included, then there would be less than minor adverse cumulative landscape effects for this particular landscape unit.
- 6.9 Given what we have said then as to the location of this particular site, the only mitigation measures relevant appear to be setbacks from streams.

7 THE APPLICANT’S CASE

- 7.1 Legal counsel for the applicant, Mr Ewan Chapman, presented opening submissions and called evidence from:
 - (a) Mr Boraman (Hydrologist);
 - (b) Ms Cathy Begley (Consultant);
 - (c) Mr Andrew Craig (Landscape);
 - (d) Mr Robert Batty (Planner);
 - (e) Mr Andrew Macfarlane (Farm management consultant).

Opening legal submissions

- 7.2 The applicant is part of the Upper Waitaki Applicant Group (UWAG), as described in our Part A decision. Mr Ewan Chapman presented comprehensive opening legal submissions on behalf of all UWAG applicants. He said that there may be matters of a specific legal nature relating to certain applications and those issues will be raised when the specifics of the applications were discussed in closing.

- 7.3 Mr Chapman told us that UWAG represents some 72% of all applicants for water takes. This equates to 31% of the total water volume applied for (excluding stockwater and non-consumptive diverts) and 29% of the total irrigable area.
- 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 individual 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 Boraman

- 7.11 Mr Boraman said that the Otamatapaio River had a catchment area above SH83 of 185km². The catchment altitude ranges from 360m up to 1850m, the upper catchment had snow on the shady faces for much of the winter months.
- 7.12 Large rainfall event in the catchment generally came from the easterly quarter, in the winter, this may fall as snow in the upper catchment. Occasional large westerlies may provide rainfall, but not usually in large quantities.
- 7.13 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. The WCWARP states the minimum flow should be set at the lower end of the catchment, however because the lower reach was ephemeral and historical measurements were carried out at the footbridge with a significant record of flow at that site, it was decided that the gorged area was the most practical for a minimum flow site. The site would act as a trigger site for the entire Otamatapaio / Corbies Creek Catchment.

- 7.14 Mr Boraman said that the Otamatapaio River was monitored regularly over the summer months from 1971 to 1978 with 33 gaugings carried out by the Waitaki Catchment commission. In 2001 and 2003 a series of profile gaugings were done down the Otamatapaio River by Environmental Consultancy services with another 3 measurements to add to the dataset.
- 7.15 A staff gauge and a Trutrack 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 plotted within the accepted 8% of the derived flow rating curve. The site proved to be stable, with only one rating change during the period of operation.

Corbies Stream

- 7.16 Mr Boraman said that historic gaugings that were carried out concurrently on both Otamatapaio River and Corbies Stream by the Waitaki Catchment Commission were analysed. There was a very poor relationship between Otamatapaio Footbridge and Corbies 'Old Gorge' bridge particularly at low flows, this makes it very difficult to ascertain Corbies contribution, it can vary between 15 to 40% of the flow, an assumption was made that it was approximately 25% of the flow at Footbridge.
- 7.17 On 21 February 2007 Mr Boraman carried out a comprehensive flow loss survey in the Otamatapaio and Corbies Catchment. This showed significant losses particularly in the lower Otamatapaio. A similar survey was carried out by Environmental Consultancy Services on 15 January 2003. The flows on that day were much higher and continuous to the lake. The measurements indicated that in the lower reaches of the Otamatapaio (below Bog Roy intake) there was more than 300 litres per second loss. Confirming that even without abstraction it would not be possible to maintain continuous flow in the Otamatapaio River.
- 7.18 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.
- 7.19 There have been 24 flow measurements made on the Corbies at Old Gorge Bridge. These have been correlated with concurrent flow measurements at the footbridge. Mr Boraman said the correlation indicated that Corbies Stream supplied approximately 25% of the flow to the Otamatapaio Main stem. However, at times of very low flow, the contribution of Corbies Stream to the Otamatapaio River was nil.

Glen Bouie Stream

- 7.20 A water level recorder was installed in February 2002 by Environmental Consultancy Services, it was operated until September 2004, during this period there were 17 flow measurements, the lowest instantaneous flow being an estimated flow of 4 Litres per second. The 5 year seven day low flow was estimated to be 10 litres per second.
- 7.21 A flow record was derived by correlating a recession period between 20 February 2003 and 29 March 2003 of the daily mean Manuherikia flows against the daily mean Glen Bouie flows. This record covers the lowest flow on record for Glen Bouie Creek.
- 7.22 Mr Boraman recommended that the abstractions from the tributaries should be reduced by the same percentage as abstractions in the main stem of the Otamatapaio River at low flows and that the minimum flow site on the mainstem should be used as a trigger.

Ms Begley

- 7.23 Ms Begley said that Otematata Station was farmed in conjunction with Aviemore Station (which also had water permit applications subject to this hearing) Awakino Downs and Little Awakino Station. The latter two areas had been used to grow out the young stock and as the hogget wintering blocks. The properties farmed by the applications extend from the shores of Lake Aviemore and Lake Waitaki to the Hawkdun Range to the south.
- 7.24 Ms Begley said that in the 2008 year the properties carried 30,457 sheep, consisting of 10,798 wethers, 11,625 ewes, 7186 hoggets, 286 rams and 562 "others" and 399 cattle, consisting of

269 cows, 40 heifers, 14 bulls, 61 R1 heifers and 15 "others". The applicant saw irrigation as an important step in being able to continue to farm the area as a viable long-term farming operation. Having irrigation would also provide the applicant with options before entering tenure review. While the outcome of the tenure review process was unknown, it was possible that as a result of this process the area able to be farmed could be reduced (potentially even halved). Irrigation would allow them to maintain their current stocking rates, even with a reduced farmable area. The irrigation would also provide the applicant with increased flexibility within their existing farming operation.

- 7.25 The greatest value, Ms Begley told us, was in the fact that the irrigation addressed the high variability in seasons. The variability led to significant risks when taking on contracts (i.e. to grow lambs to a specific weight/condition etc.) as the quality of the end product could be compromised. Irrigation would also allow sufficient winter feed to be grown at a lower cost.

CRC014033 – to divert, take and use surface-water

Effects on other water users

- 7.26 Ms Begley said that there were no other surface water abstractors either up or downstream of the proposed take from either Glen Bouie Stream or Backyard Stream. The land through which the Glen Bouie Stream flows (from its source to its confluence with Corbies Creek) and Backyard Stream was controlled by the applicant.
- 7.27 Ms Begley believed therefore that the take from the stream would not impact upon any other water user or person that relies upon the stream for other purpose such as domestic and stock water.
- 7.28 The Glen Bouie Creek was a tributary of Corbies Creek which the applicant and two other stations rely upon for irrigation water. Even though there was some distance between the two points of take, there was the possibility that the taking of water from Glen Bouie Creek could impact upon the reliability of supply enjoyed by these other users. To address this aspect, Ms Begley said that a water users group would be formed to ensure that the taking of water from Glen Bouie Creek does not impact upon the reliability of supply to downstream users. The applicant was one of the downstream abstractors and therefore, it was not in his interest to affect the reliability of supply. A MOU was in place to ensure that the various users do not impact upon each other.

Effects on instream values

- 7.29 Ms Begley said that Table 3 of the WCWARP did not set a specific minimum flow regime for Glen Bouie Stream rather it provided a formula by which a minimum flow was to be determined. This formula required the minimum flow to be the 5-year 7-day low flow and should be set at the downstream end of the catchment.
- 7.30 As outlined in Mr Boraman's evidence, it had been calculated that the 5-year 7-day low flow for Glen Bouie Stream was 10 L/s. Ms Begley understood that both Mr Stewart (the CRC hydrologist) and Mr Scarf (F & G and DoC's hydrologist) agree that 10 L/s was acceptable. As the proposed take would be located downstream of the minimum flow point, the applicant would need to start reducing their rate of take whenever the flow in the stream reaches 40 L/s. Further, the applicant proposed to limit the rate at which water was taken from the stream to 200 L/s. As outlined in Mr Boraman's evidence to enable the applicant to take the full 200 L/s the flow in the stream (Glen Bouie) would need to be in excess of 410 L/s.
- 7.31 Ms Begley said that the applicant was located within the sensitive Otamatapaio River catchment, and proposed to abide by the Otamatapaio River minimum flow regime as well as the specific Glen Bouie minimum flow regime. This would see the applicant only taking up to 30 L/s whenever the flow in the Otamatapaio River was between 200 – 450 L/s. Whenever the flow in the Otamatapaio River was in excess of 600 L/s the applicant proposed to take up to 200 L/s provided the flows within Glen Bouie stream also allow that volume of water to be taken.
- 7.32 Ms Begley believed that because the proposed minimum flow was consistent with the formula set out within Table 3 of the WCWARP, the effects of the diversion and taking of water on the instream values of Glen Bouie Creek would be minor.
- 7.33 Ms Begley said that the existing diversion structure on Glen Bouie Stream did not have a fish screen in place. The applicant proposed a mitigation measure which would require them to "as far as was practicable" exclude fish from entering the intake. To this end, prior to the exercising of

this consent, the applicant would have their intakes either audited and/or designed and certified by a suitably qualified person to ensure that their fish screen as far as was practicable excludes fish and was in accordance with the report Fish Screening: good practice guidelines for Canterbury, NIWA Client Report: CHC2007.092, October 2007.

Effects of inefficient water use

- 7.34 Ms Begley said that the applicant also proposed that the water taken from the dam would be used conjunction with CRC012017 to irrigate no more than 120 ha of land. To ensure that the use of water was efficient, the applicant had proposed a cumulative annual volume of 1,179,820 m³/year. This annual volume was based upon the annual volume to irrigation 30 ha (180,000 m³) and the applicants "share" of CRC012017 which was 999,820 m³/year. Ms Johnston in her evidence had outlined that the annual volume proposed under CRC012017 was an efficient use of water using Irricalc methodology which was consistent with Policy 16(c)(i). Further as outlined above, an annual volume of 180,000 m³/year proposed for the 30 ha was not covered by CRC012017.
- 7.35 Ms Begley said that the annual volume for the 30 ha not covered by CRC012017 was based upon the applicants MIC shares. It was recognised that the MIC shares were based upon 600 mm/ha/year being applied. To ensure that the annual volume associate with the 30 ha of "new" water was efficient, Irricalc had been used. Ms Begley considered this methodology was considered to be consistent with Policy16(c)(i). Using this methodology an annual volume of 175,413 m³/year was appropriate. The latter annual volume was very slightly less than that proposed by the applicant, even so the use of water (both new and cumulatively) was considered to be appropriate.
- 7.36 Ms Begley noted that Ms Penman (paragraph 55 of Report 30B) had determined that an annual volume of 660,000 m³/year would be appropriate for the entire 120 ha. This was based upon the soils requiring 750 mm/ha/year and an effective rainfall of 210 mm/ha/year. This annual volume was based upon the methodology set out within Policy 16(c)(ii). However, Ms Begley considered that Ms Penman's assessment failed to take into account the fact that the applicant proposes to use their "share" of CRC012017 to irrigate the 120 ha, and as such the annual volume attached to this consent should reflect this. As outlined above, 90 ha of the 120 ha can be irrigated using CRC012017 with an associated annual volume of 999,820 m³/year. The additional 30 ha (giving a total of 120 ha) was to be irrigated using "new water" for which the applicant has gained sufficient MIC shares.
- 7.37 Ms Begley said that in Ms Penman's report (30B) she stated that the existing race connecting Glen Bouie Stream to Backyard Stream may not meet Policy 19. This policy "encourages" the piping or otherwise sealing of water distribution systems. This policy goes on to state that *"...where appropriate, requiring their progressive upgrade and piping, where there was an environmental and/or economic net benefit for so doing, but recognising that some may provide significant habitat."*
- 7.38 Ms Begley said that the applicant recognised that the current race would need to be upgraded to minimise leakage. Upgrading this race would occur at same time as the building of the dam. Further, given the proposed rates of take, Ms Begley said that it was in the applicant's interest to ensure that as much water as was possible reaches the dam from Glen Bouie Stream. Although the necessary upgrades were proposed, the specifics (i.e. exactly what needs to be done and when this would be done) were highly dependent upon whether this application was granted.
- 7.39 Policy 21 of the WCWARP requires all water takes to be metered. To ensure that this application was consistent with this policy, the applicant proposes to meter their take.

Effects of the use of water on water quality

- 7.40 Ms Begley said that the MWRL Water Quality Study states that the areas to be irrigated were located within the Lake Benmore Catchment. This study goes on to calculate N and P thresholds for the property.
- 7.41 The calculated nutrient mitigation requirement of the receiving environments determined in the MWRL Study had identified the N and P thresholds for the property. These were shown in the table below.

	Nitrogen Threshold	Phosphorus Threshold
MWRL Water Quality Study Property Thresholds	97,622	2,206
OVERSEER® outputs	80,466	788

- 7.34 Ms Begley told us that OVERSEER® was been run by a qualified person to model the N and P outputs from the proposed farming system. The results of the model have been incorporated in to the above table. Ms Begley said that this table showed that the applicant can meet the property thresholds which were the most restrictive.
- 7.35 We note that the above OVERSEER outputs are different to those included in the final FEMP, which are 81,239 for N and 793 for P. However in both cases (the above table and the table in the FEMP), the OVERSEER outputs are below the relevant thresholds. We refer to these outputs again in our evaluation of water quality effects later in this decision and have used the figures from the FEMP as the most up to date position.
- 7.34 The applicant was committed to implementing the "Mandatory Good Agricultural Practices" set out within the Farm Environmental Management Plan (FEMP). Implementing these practices ensure that the OVERSEER® results were validated. This along with ensuring that the property thresholds of the WQS (set out in the table above) were not exceeded would ensure that the cumulative effects of the use of water for irrigation on water quality were no more than minor.
- 7.35 Ms Begley said that whilst the applicant was able to comply with the thresholds outlined within the MWRL Water Quality Study, this 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 required a specifically developed Farm Environmental Management Plan (FEMP) to identify and implement appropriate mitigation measures set out in the plan.
- 7.36 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.
- 7.37 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 has carried out a site visit. It was anticipated that this would occur should the application be granted.
- 7.38 For Aviemore & Otematata Station, the desktop risk assessment identified the following potential risks:
- (a) The large number of surface water bodies that flow through the property
 - (b) Extensive tracking
 - (c) Use of full cultivation
- 7.39 Ms Begley said that the applicant has committed to implementing the FEMP including an on farm environmental risk assessment (FERA), appropriate mitigation, monitoring and auditing before the first exercise of this consent. The FEMP has been proposed as condition of consent and the draft FEMP was submitted.
- 7.40 We note that a final FEMP including the FERA was lodged with ECan on 22 November 2010. We refer to this FEMP in our evaluation of effects.
- 7.41 Given that the N and P thresholds from the MWRL Study can be met, and the applicant's commitment to addressing on farm risks with the implementation of the FEMP, the effects of the use of water on water quality for both the local receiving environment and cumulative effects were considered by Ms Begley to be minor.

Effects on landscape values

- 7.42 Ms Begley noted that the area to be irrigated was located adjacent to Backyard Road. This road was used primarily to provide access to parts of Bog Roy, Rostreiver and Otematata Station. The area was located some 10 km up Backyard Road from its intersection with Omarama-Otematata Road (SH 83).

Effects on Tangata Whenua Values

- 7.43 Ms Begley told us that Te Runanga O Ngai Tahu submitted on all applications in the catchment, seeking that all applications be declined. The primary reasons for this were that the applications were considered to be inconsistent with the policies and objectives of the WCWARP, and also at odds with the cultural objectives of the RMA.
- 7.44 It was acknowledged that Te Runanga O Ngai 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 on People, Communities and Amenity Values

- 7.45 The applicant has proposed an appropriate minimum flow condition for the water body from which they have applied to take and use water. A minimum flow was considered to adequately protect people, community and amenity values within the rivers specific to each applicant.
- 7.46 The activities all occur within a rural setting, where the dominant land use was pastoral farming. And, given that the proposed activities all occur on private farmland the use of water was unlikely to adversely affect amenity values.
- 7.47 The WCWARP sets an annual allocation "cap" for agricultural and horticultural activities within defined areas (Table 5). The applicant has proposed an annual allocation limit, as well as implementing Farm Management Plans, which require that water is used wisely.
- 7.48 The applicant has proposed an annual volume that was considered to reflect reasonable and actual use and this was within the allocation limit defined by Table 5.
- 7.49 Therefore, given the applicant's commitment to ensuring efficient use of water on their properties, and that the take was within allocation limits set to protect in-stream values and other users, Ms Begley considered that effects on people and communities would be minor.

CRC052739 - discharge water into Backyard Stream and into a storage dam

- 7.50 This application sought the ability to discharge water into Backyard Stream that has been taken from Glen Bouie Creek and to discharge water from Backyard Stream into the new water race to the dam. Ms Begley said that the discharges will be via a rock rip-rap apron to control flow velocity.
- 7.51 Ms Begley told us when water is discharged from one waterbody into another the flow and potential velocity of the receiving waterbodies increased. When this occurred there was the potential for increased erosion on the bed and banks of the receiving waterbody. She told us that the discharge from Glen Bouie Creek into Backyard Stream had occurred pre-1999, when the necessary consents expired, and for some time without any erosion of the bed or banks of the Backyard Stream.

CRC052740 – disturb the bed

- 7.52 Ms Begley told us that the applicant proposes to carry out works in the bed of Glen Bouie Creek and Backyard Stream in association with the diversion of water. The details of the activity have been summarised in the description of the proposal at the start of this decision.

Effects of the works on flood-carrying capacity and flooding patterns of the river

- 7.53 Ms Begley said that this application sought the ability to maintain an existing intake and diversion structure within the bed of Glen Bouie Stream. The intake and irrigation race has been in place for a number of years, and this application simply seeks the ability to maintain the intake. Given

this, Ms Begley said it is unlikely that the proposed works would result in a reduction in the flood carrying capacity of the waterway.

- 7.54 Ms Begley also said that the works within the bed of Backyard Stream would involve the construction of a diversion weir/intake structure. This application sought the ability to use Backyard Stream as a method of conveying water from the end of the irrigation race and as such this diversion/intake structure needs to have the ability to “pick up” the flow of Backyard Stream. The works within the bed of Backyard Stream will involve the placement of an intake structure, which will include a radial gate to control the volume of water being diverted into the new race. Further she indicated that these works may also involve the placement of a small gravel weir in the bed of the stream.
- 7.55 Ms Begley explained that when structures are inappropriately placed within the bed of waterways, these structures can result in the waterway reacting differently during a flood event. In this particular situation, the only structure that could impact upon the floodwater carrying capacity of these waterways is the small gravel weir being placed in the bed of the stream. The gravel weir would be constructed from unconsolidated cobbles found within the bed of these streams. Should the stream flood or experience high flows, the weir would erode (or blow out), thereby ensuring that the floodwater carrying capacity of these streams is maintained.

Effects of the works on water quality

- 7.56 Ms Begley said that when works are undertaken within flowing water, the works may cause a temporary discoloration of the water. This discoloration was the result of the water within the waterway containing higher than “normal” suspended sediments. Higher than normal suspended sediments can have a number negative impacts upon the aquatic ecosystem of the waterway, such as “cementing” spawning gravels downstream of where the works are occurring, and also can have a negative physical impact upon fish (in that high levels of suspended solids can irreparably damage fish gills).
- 7.57 Ms Begley said that the most common approach used is to avoid undertaking works within flowing water. Thereby avoiding the possibility of increasing levels of suspended sediment contained within the waterway. In this particular instance, it is simply not practicable for the construction of the bund to occur “in the dry” or outside the flowing water.
- 7.58 During the summer months, that Backyard Stream is ephemeral, Ms Begley said that should this application be granted, the discharge of water into Backyard Stream from Glen Bouie Creek would be Backyard Streams only source of water. Further, works can be timed to ensure that, as far as is practicable, the works to construct the intake occur when there is no flow within the stream. . Backyard Stream was likely to have very limited aquatic values and Ms Begley believed the effects of the proposed works on water quality to be minor.

Effects on bank erosion and stability

- 7.59 Ms Begley said that works in the bed of rivers or the incorrect placement of structures could lead to bank erosion and decreased bank stability if water is directed towards a bank thereby increasing the erosion of that bank resulting in less stability.
- 7.60 But she said in this particular situation the purpose of the weir was to divert water from both Glen Bouie Stream and Backyard Creek into the irrigation race and as such will not extend across the full width of the stream. This also means that it’s designed and installed to ensure that water is directed into the intake not directed towards an adjacent bank.
- 7.61 Further, Ms Begley said that the rock weir consists of unconsolidated gravels, which means that during a flood event it will be “blown out” or removed. She considered it unlikely that the proposed works will result in bank erosion or instability.

Effects on other artificial structures

- 7.62 Ms Begley also said that works occur in the beds of rivers within a close proximity of an existing artificial structure, the proposed structure can have a negative impact upon the existing structure. She was unaware of any artificial structures, which were not either owned or maintained by the applicant within a 2 km radius of the proposed weir. Ms Begley’s opinion was that the effects of the placement of the weir within the bed of the either Glen Bouie Stream or Backyard Stream would be minor.

CRC052741 -42 – construction of dam and damming of water

- 7.63 Ms Begley described the applicant's proposal to construct a compact earth dam in an ephemeral tributary of Backyard Stream. These details have been summarised in our description of the proposal at the start of the decision.
- 7.64 The purpose of the proposed dam was to enable the applicant to store up to 300,000 m³ of water within a purpose built on farm storage pond. The pond was to be located in a grassed depression within the applicant's property. This depression only carries water following a major rainstorm event, or snowmelt, which typically occurs once or twice a year. The maximum catchment area for the dam was approximately 50-60 ha in area, which was a very small catchment area.
- 7.65 Ms Begley said that as the storage pond would be located out of stream, the primary effect to address was the effect of the dam failure. To assess this effect, a dam breach analysis had been undertaken by GHD.
- 7.66 This breach analysis showed that should the dam fail the peak discharge would be 300 m³/s and it would take 11 minutes to fail with an average breach width of 13.5m. The water from the dam was more than likely to flow in a north-easterly direction (down the valley) and be intercepted by Corbies Creek. GHD has estimated that at this point, (where the water enters Corbies Creek) the water depth would be less than 25cm and as such was unlikely to result in a significant increase in water flowing in the stream.
- 7.67 Ms Begley said that if the dam failed, water from the dam would flow over land owned and operated by an adjoining neighbour (Boy Roy Station). To this end, the dam breach analysis had been provided to Mr & Mrs Anderson of Bog Roy. They had stated that they did not have any concerns with water flowing over their property as a result of the dam failing. The applicant was also in the process of consulting with the other adjoining landowner (Mr Munro).
- 7.68 Further, a copy of the dam breach analysis had been provided to Mr Anthony Boyle (CRC) who had verbally confirmed that he agrees with the dam breach analysis. Given this, the effects of the dam were considered by Ms Begley to be no more than minor.
- 7.69 Ms Begley said that Ms Penman (page 7 of Report 30C) stated that no assessment of the water quality contained within the dam itself had been provided. Therefore the effects of the dam may be more than minor. She noted that Ms Penman had not provided any assessment as to why she was concerned about the water quality within the dam. Therefore, Ms Begley assumed that Ms Penman was alluding to the possibility that the water quality within the dam could deteriorate to a point where it was unable to be used for irrigation. Ms Begley understood that when the Opuha Dam was first commissioned, the water quality within Lake Opuha deteriorated and impacted upon the aquatic values of the river downstream of the dam. One reason given for this was because the topsoil from the intensively farmed land, which formed the bed of the lake, was not removed prior to the lake being formed. This resulted in nutrients leaching from the topsoil and contaminating the lake.
- 7.70 Ms Begley said that in this particular situation, the soil that would form the bed of the storage pond had not been intensively farmed, nor had large amounts of fertilizer been applied to the area which could leach out and contaminate the water within the pond. When the dam was being constructed, it may be necessary to strip what topsoil there was from the base of the dam, to enable the face of the dam to be covered with soil to enable grass to be established on the face of the dam. Such vegetation cover was very important to ensure that the face does not erode.
- 7.71 Further, the water quality of the dam would be a direct reflection of the quality of the water being put into the dam from Glen Bouie Stream and/or Backyard Stream. Ms Begley said that she was confused as to why Ms Penman was concerned about the quality of water contained within the storage pond unless Ms Penman was concerned that the water quality of either or both Glen Bouie and/or Backyard Stream may not be of suitable quality for irrigation.

CRC052743 – discharge water from emergency spillway

- 7.72 This application seeks the ability to discharge water from the storage pond via the spillway. The discharge would occur from the storage pond in emergency situations into a grassed depression that does not contain any aquatic values, Ms Begley told us.
- 7.73 Ms Begley was of the view that because these grassed depressions do not contain any water there would be minimal to no effects of the proposed emergency discharges on the quality of

water contained within these depressions. She suggested that these emergency discharges may have a positive effect on water quality as the water contained within these grassed depressions would be sourced from sheet flow or overland flow, and would contain contaminants such as sheep and cow faeces. The increase in water from the emergency discharge would increase the dilution of these contaminants when entering any downstream receiving environment, she said. She concluded that the effect of the spillway and the proposed discharges will be minor.

7.74 We observe here we do not agree with this assessment. In our view the emergency discharge would mobilise faecal material more so and have a greater propensity to discharge to the stream. However overall we do not see this potential effect as significant.

Mr Robert Batty, planner

7.75 Mr Batty addressed us in relation to planning issues on behalf of all UWAG applicants. He set out his broad view as being:

- (a) whether or not granting any of the applications before us, including this application, would undermine the operational integrity of the WCWARP, regional plans and district plans;
- (b) whether cumulative effects would arise from a grant;
- (c) whether grants would promote reasonable efficiencies and sustainable management of the natural and physical resources concerned; and
- (d) whether the grant of consent would derogate from any other consent.

7.76 He was critical of the section 42A officers' collective approach and suggested each application needs to be considered on its own merits. A move away from the generic approach of the reporting officers was required, he said, to enable a proper analysis of each application to occur.

7.77 He supported Mr Kyle's planning analysis on behalf of MWRL and he set out for us relevant policies and objectives in the district and regional plans. In conclusion, he was of the view that granting this consent and all other UWAG consents was appropriate.

Mr Andrew Macfarlane, farm management consultant

7.78 Mr Macfarlane is a farm management consultant with 29 years experience. He provided us evidence on behalf of all of the UWAG applicants.

7.79 He assessed the viability of the farm management plans and practicality and robustness of the mitigation measures and the ability to monitor progress.

7.80 He discussed a range of mitigation measures that had been examined and/or adopted by the UWAG farmers to deal with discharges from their properties consequent upon irrigation.

7.81 Mr Macfarlane also discussed with us the costing of various typical irrigation developments.

7.82 He considered on-farm monitoring, noting that on-farm monitoring had lifted in its intensity and in detail over the last 10 years, being driven by economic returns and a need to prove environmentally sustainable methods were being utilised. Overall, he held a high degree of confidence in progress concerning the ability to monitor and interpret interfaces between environmental science and management.

7.83 He raised with us the advantages of reliable availability of water and pointed out for us the benefits of irrigation, noting that while generally irrigation typically only represents a small part of the total farm area, but it does result in high productivity increases with a resultant favourable impact on economic viability of farming operations. He concluded with the correct planning, management and monitoring any negative environmental impact of intensification of a small area would lead to positive environmental outcomes on the balance of the property. It was his view a net positive balance was certainly possible.

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.

Central South Island Fish & Game

- 8.2 Mr Mark Webb holds a Bachelor of Science from the University of Canterbury and has worked in freshwater fisheries for the Ministry of Agriculture & Fisheries, the former South Canterbury Acclimatisation Society, and subsequently Central South Island Fish & Game.
- 8.3 Mr Webb said Glen Bouie Creek and Backyard Stream are tributaries to Corbies Stream which joins the Otamatapaio River about 4 km upstream from Lake Benmore. Irrigation water was to be applied by spray. This was a new application and had lowest priority of the three applications in the catchment.
- 8.4 Mr Webb said that all the applicants proposed a minimum flow of the 1 in 5 year 7-day minimum flow at the footbridge of 200 L/s for the Otamatapaio River. In addition Otamatapaio Station proposed to take up to 140 L/s when the Otamatapaio River flow was between 200 L/s and 600 L/s and the take would be 200 L/s when the Otamatapaio River was more than 600 L/s. A 10 L/s minimum flow had been proposed by Otamatata Station for Glen Bouie Creek.
- 8.5 Mr Webb understood that Otamatapaio Station and the Andersons have agreed between them that the total of their takes from the mainstem of the Otamatapaio River will not exceed 250 L/s when the river is less than 600 L/s and they will actively manage their takes when river flows at the footbridge are in the range of 450 L/s to 200 L/s. A telemetered water level recorder at the footbridge will be operated by the water users.

Otamatapaio River Fish and Game Values

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

Otamatapaio River Fish and Game Issues

- 8.10 Mr Webb said that Glen Bouie Creek and Backyard Stream are unlikely to contain sports fish populations. However the contributions these streams make to surface flows in Corbies Stream and the Otamatapaio River which did sustain trout, required that there be sensitive management of the irrigation take. Restriction on abstraction from Glen Bouie Creek when Otamatapaio River flows are between 200 L/s and 600 L/s would provide for natural flow recession in receiving waters downstream and rejuvenation of habitat from natural flushes.
- 8.11 The Plan required a minimum flow of the 5-year, 7-day low flow set at the downstream end of the catchment. For the Otamatapaio River any flow monitoring site in the lower 2 km of river was likely to have a mean annual 7-day low flow of zero. The applicants had based their minimum flow on the footbridge flow monitoring site which was about 3 km upstream from the most upstream intake from the Otamatapaio River. This was a viable alternative to a monitoring site in the lower catchment provided there was real-time monitoring of all takes to ensure compliance with minimum flow conditions.
- 8.12 Mr Scarf (Fish & Game) supported the flow management regime for the Otamatapaio catchment proposed by Ms Penman in her s42A report, including a minimum flow of the 1 in 5 year 7-day

minimum flow at the footbridge of 200 L/s for the Otamatapaio River and a 10 L/s minimum flow for Glen Bouie Creek. The minimum flow regime proposed would ensure that some flow in this section was retained for much of the time so enabling fish passage from Lake Benmore to the upper reaches of both Corbies Stream and the Otamatapaio.

Remedy Sought By Fish & Game

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

Ngai Tahu

- 8.16 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.
- 8.17 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.
- 8.18 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.

Meridian Energy

- 8.19 Mr Turner in his evidence drew to our attention that this particular applicant in terms of the application made was not proposing conditions which were consistent with the common consent condition developed by Meridian and MIC. Mr Turner pointed out that failure to do so means the irrigation approval will either not be provided or the irrigation approval would be revoked by Meridian if the applicant's do not amend their evidence to confirm the common consent conditions form part of the conditions they are seeking.
- 8.20 The other point that Mr Turner made related to compliance with sub-catchment nutrient thresholds.
- 8.21 He took issue with Mr Batty and Mr Chapman's approach that suggested that monitoring at the sub-catchment node should occur but those nodes should not be used to assess compliance. He explained to us that Meridian did not accept this approach. It was the Meridian view that potential cumulative water quality effects required that the sub-catchment nodes should be used for both monitoring and they need be complied with. This was because the potential cumulative adverse effects associated with intensification and land use make it imperative that the consent holder is required to comply with their on farm nutrient discharge allowance and also the threshold limits at the catchment nodes.

Mackenzie Guardians – Ms Di Lucas

- 8.22 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.

- 8.23 In terms of this particular “take” application, she identified it as being within her Ahuriri System. Within her written evidence the application did not receive any attention. In her graphic materials she identified the site as Site 44 or 43.
- 8.24 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.
- 8.25 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. In terms of her Attachment 17 detailing views from state highways she detailed that the site was not visible from highways nor was it visible from public land nor did it have public access or public viewpoints available.

Mackenzie Guardians – Dr Susan Walker (ecologist)

- 8.26 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.
- 8.27 In terms of her assessment as per Attachment 15, Dr Walker assessed Otematata Station as a whole as being approximately 44% converted. She considered that the potential effects of irrigation on terrestrial biodiversity were moderate.

9 UPDATES TO THE SECTION 42A REPORTS

Ms Penman

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

CRC041033

- 9.2 Ms Penman was satisfied with the proposed reduction and flow sharing regime.
- 9.3 Ms Begley had amended condition (7) in relation to fish screen. Ms Penman proposed that the fish screen condition be retained.
- 9.4 Ms Penman did not agree that the proposed volume represents an efficient volume of water for irrigation for the 120 hectare block under CRC041033 and CRC012017. However, she noted that provided a favourable comparison of the Irricalc input parameters against field measurements were undertaken prior to the granting of consent for CRC020355 then she would be satisfied the proposed volume is reasonable for the property.
- 9.5 Ms Penman also identified some discrepancies with the OVERSEER input parameters used by the applicant and noted that the rainfall used was 350 mm. However, the map included in the FEMP indicates that the area was within the 550 to 650 mm band of isohyets.
- 9.6 Ms Penman did not support the metering changes proposed by Ms Begley and recommended that the metering conditions proposed in the original s42A report be retained.
- 9.7 Ms Penman did not support the deletion of condition 14 (water meter in Glen Bouie Creek to record flows) and concluded that the condition needs to be retained to demonstrate compliance with the proposed minimum flow.
- 9.8 From the audit by ECan’s technical experts (see Dr Freeman’s addendum) for CRC041033, they considered that there is a high level of uncertainty about potential adverse cumulative water quality effects, and given the scale of the development and potential consequences of those adverse effects, suggest that the applications should not be granted.

CRC052742

- 9.9 Ms Penman was satisfied with Ms Begley's assessment in terms of water quality and the dam and also the dam breach assessment. She was also satisfied that the conditions proposed for the dam permit were suitable to mitigate any effects.

CRC052740

- 9.10 Ms Penman agreed with Ms Begley's assessment of effects on water quality for the installation of the new intake. She agreed that Backyard Stream is predominantly ephemeral and during the summer months when construction would occur there would be no or very low flows. Therefore, effects on water quality would be minor.

CRC052741

- 9.11 Ms Penman accepted Ms Begley's assessment of effects that the construction of the proposed dam, given it would be constructed in a grassed depression that contained only sheet flow run-off approximately twice a year, would be minor.

CRC052739 and CRC052743

- 9.12 Ms Penman agreed with Ms Begley's assessment on water quality, other users, and erosion issues for both applications that the effects are minor.
- 9.13 She noted that given the location of the discharge for CRC052743 is into an ephemeral waterway, she agreed with the assessment provided by Ms Begley.
- 9.14 Ms Penman also agreed in terms of CRC05239 that with the recommended conditions and reduced rate of discharge, the effect would be minor. She also agreed with Ms Begley that Condition 5 as proposed for the discharges be deleted, as it is not necessary to meter the rate of discharge.
- 9.15 In his addendum report Mr Glasson noted that this application had been assessed by Mr Andrew Craig in his evidence 1 and Part 2. Mr Glasson considered the proposal was acceptable provided a buffer of 100m of Lake Benmore and 50m to any streams was included as a mitigation measure.
- 9.16 We note that in Mr Glasson's addendum he reviewed Otematata Station CRC041033 and CRC020355. This made sense for us of his recommendation contained in his addendum report, which was a buffer distance of 100 m to Lake Benmore and 50 m to any streams. We say this because CRC020355 (which is another application by Otematata Station Limited) is located close to Aviemore Dam and the lake. Any recommendation of a buffer distance of 100 m from Lake Benmore simply does not fit in terms of the location of the proposal we are considering in this decision.
- 9.17 Thus, in interpreting his evidence given the location of this particular proposal (which was well-identified and described by Ms Begley in her evidence that we have already referred to), the only issue we considered relevant in terms of landscape was the issue of buffer distances from streams. In any event, buffer distance from streams is a matter we concerned ourselves with in terms of water quality issues.
- 9.18 Thus we took it that in terms of his concerns in relation to this particular proposal they related only to buffer distances from streams.

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.
- 10.4 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.

- 10.5 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.
- 10.6 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.
- 10.7 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.
- 10.8 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. In his reply, Mr Chapman identified for us that this particular application was one that he classified as a renewal where the original consent was never fully exercised. He told us the purpose of these recategorisations was to direct our focus to the actual and potential effects on the environment and to recognise that in many circumstances enhancement of the environment will occur as a result of conversion processes for more efficient irrigation being undertaken.
- 10.9 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 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) Effects of take and use
 - (i) Flows, ecosystems and other water users
 - (ii) Inefficient take and use
 - (iii) Conveyance/distribution efficiency
 - (iv) Water quality
 - (v) Landscape
 - (vi) Tangata whenua values
 - (vii) Positive effects
 - (b) Effects of discharges, land use permits and damming

- (i) Effects of discharges
- (ii) Effects of works in bed
- (iii) Effects of damming

Effects of take and use (CRC041033)

Flows, ecosystems and other water users

- 12.2 The applicant has proposed the minimum flow as set out in Table 3 which takes into consideration protection of ecosystems. This includes minimum flows for both Glen Bouie Stream (10 L/s) and Otamatapaio River (200 L/s), below which the take of water must cease, and a staged increase to the maximum rate of take based on available flows. Based on the evidence presented, we are satisfied that the proposed minimum flow regime is appropriate.
- 12.3 For Glen Bouie Stream, flow sharing above the mean flow of 90 L/s is important to protect the natural character of the Stream. For the applicant to be able to abstract at the maximum rate of 200 litres per second the flow in the Glen Bouie Stream would need to be in excess of 410 per second. With a fish screen installed in accordance with the recommended conditions, then we consider effects would be minor.
- 12.4 This applicant has the lowest priority for takes within this catchment. The minimum flow site on Otamatapaio River is upstream of Glen Bouie Creek confluence but could affect the availability of supply to abstractors on Corbies Creek. However Ms Begley said that a water users group would be formed to ensure that the taking of water from Glen Bouie Creek did not impact upon the reliability of supply to downstream users. The applicant is one of the downstream abstractors and therefore, it is not in its interest to affect the reliability of supply. A MOU is in place to ensure that the various users do not impact upon each other.
- 12.5 Also the applicant will be required to install a water meters to monitor all abstractions and diversions.

Inefficient take and use

Annual volume

- 12.6 The taking of water in excess of that required for the intended use could contribute to water levels being unnecessarily reduced and less water available for other users. A number of submitters identified this as an issue. In addition, inefficient application of water for irrigation could lead to increased runoff and leaching of nutrients into surface and groundwater resources in the vicinity.
- 12.7 The proposed annual volume has undergone several changes since the application was first lodged. We understand that the latest position of the applicants is that contained in the final condition set provided, which seeks an annual volume of 660,000 cubic metres per year to irrigate the entire 120ha. This volume of water will be taken from the proposed storage dam, which is fed by water diverted from Glen Bouie Creek and Backyard Stream under this application and water from Corbies Creek diverted in accordance with CRC012017.
- 12.8 This annual volume is consistent with the recommendations of Ms Penman and has been calculated using Canterbury Regional Council's GIS system and the method outlined in Report U05/15. We are satisfied that this annual volume is appropriate and represents an efficient use of water.

Conveyance / distribution efficiency

- 12.9 The current race system that water flows through for stock water supply is significantly affected by losses along its length. This was particularly evident during the site visit of the section 42A reporter where compared with the flow at the intake very little flow remained in the channel at the lower end. This system would need significant upgrading to be able to convey the volumes of water proposed without considerable losses. The imposition of an annual volume will require the applicant to operate the scheme as efficiently as possible. But there is urgent need for the race system to be upgraded.

- 12.10 Ms Begley said that the applicant recognised that the current race would need to be upgraded to minimise leakage. Upgrading of the race would occur at same time as the building of the dam.
- 12.11 It is our opinion that before this race could be considered consistent with Policy 19 of the WCWARP it would require upgrading to limit the losses. This may involve lining or piping of some sections. Should we grant consent it would be our intention to require the race losses to be assessed by a suitably qualified person who would also prepare a report on the work needed to be upgraded to a standard consistent with Policy 19. That work would need to be carried out before the first exercise of this consent.

Water quality

- 12.12 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.
- 12.13 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 Backyard Stream, Corbies Creek, and the Otamatapaio River.
- 12.14 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.
- 12.15 For the avoidance of doubt, our consideration of water quality effects is based on the irrigation of 30 ha of additional land as proposed under these applications. Although the annual volume as discussed above is to irrigate 120ha, we have already considered and granted consent to irrigate 90 ha on Otamatata Station under CRC012017.
- 12.16 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 Otamatata), 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:
- 12.17 Otamatata 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 Otamatata as one entity.
- 12.18 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.
- 12.19 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."
- 12.20 Modelled Overseer outputs for Otamatata 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.
- 12.21 The mitigations proposed in addition to those assumed in OVERSEER were:
- (a) No winter application of fertiliser on the irrigation area.

- (b) N fertiliser applications split to less than 50 kg N/application.
- (c) No P fertiliser within three weeks of irrigation.
- (d) Olsen P of below 30 maintained.

12.22 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.

12.23 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 (30ha) is very 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.

12.24 The critical issues for us 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

12.25 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.

12.26 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

12.27 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.

- 12.28 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 due to this application of 7,762 kg N/y and a priority ranking of 11 (in the Ahuriri catchment).
- 12.29 However, Dr Freeman's estimate is for the total property load simply prorated by the area of this application compared with the total area under irrigation within Otematata and Aviemore Ltd. The proposed irrigation area represents only ~1.5% of the total farmed area.
- 12.30 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.
- 12.31 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 ~1.5% 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.
- 12.32 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 600 kg N/y or 0.73% of the OVERSEER- predicted N load from Otematata and Aviemore Stations. Thus we consider the additional N load arising from this application to be minor.
- 12.33 This load represents only a very small proportion of the new N nitrogen load proposed in the Ahuriri catchment and is well 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 minor contribution and needs to be considered in relation to the mitigation set out in the FEMPS.
- 12.34 We are aware that the sum of relatively minor contributions may result in a cumulative effect on the lake and we have been cognisant of this possibility in arriving at our final decision.

Groundwater

- 12.35 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.

Periphyton Growths in Corbies, Backyard Creeks and Otamatapaio River

- 12.36 As noted above there has been no evidence presented on periphyton in any of the above waterbodies. This not mean necessarily, that there is no issue to consider, but given the small area of irrigation and dilution from the water bodies involved our view is that only Backyard Creek (flowing through the irrigation area) is susceptible to nuisance periphyton growths and that any effects can be managed by conditions. We note that CRC012017, which includes the other 90 ha irrigated by Otematata Station, includes a periphyton monitoring condition, which will also include the effects of this application.

Avoided, remedied or mitigated

- 12.37 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 (1.5% of the total farmed area) 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.

- 12.38 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

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

Landscape

- 12.40 Insofar as landscape is concerned, we read Mr Glasson's materials on this application to the effect that he does not consider landscape issues to be of any great moment. His major concern seemed to be buffer distances from streams and waterways.
- 12.41 In terms of Mr Andrew Craig's assessment included within Part 1 of his evidence, which was a general assessment of all UWAG applications, we have in our assessment accepted his overall methodology to assessing effects. In short, we accepted his approach in assessing effects where he noted the greatest effects are going to be those where the highest degree of change will be apparent to the viewing public. He set out in detail for us a range of factors that impact on visual and landscape effects. We agree that those factors are relevant and when applied to this particular site, we think the landscape effects can properly be described as no more than minor.
- 12.42 We also note Ms Begley's evidence in terms of the location of the subject site. The subject site is located adjacent to Backyard Road which is a road used primarily for access to parts of Bog Roy, Ross Trevor and Otematata Stations. The proposal site is located some 10kms away from the Omarama, Otematata intersection with State Highway 83 and is thus well away from public view. This is confirmed by the evidence of Ms Lucas.
- 12.43 For our part we have concluded that taking into account the modified farming landscape and its remote location we have concluded that the landscape effects caused by the proposal, such as they are, are acceptable and can properly be described as less than minor.
- 12.44 In terms of terrestrial bio-diversity we note that Dr Walker concluded that the site was modified. Farming activity has been occurring on the site for some time and we accept her assessment that threats to terrestrial bio-diversity are not of significance.

Tangata whenua values

- 12.45 There were no property specific issues raised in the evidence of Ngai Tahu relating to this proposal. The nutrient loading from this proposed activity will drain to the Ahuriri Arm of Lake Benmore and will not directly impact on the Ahuriri Delta waterways which Ngai Tahu have identified as a priority area for mahinga kai restoration.
- 12.46 While there appears to be no active Ngai Tahu mahinga kai activity in the Otamatapaio Stream or its tributaries, the interconnected nature of waterways in the Waitaki system and the potential for cumulative effects on the receiving waters of the Waitaki system is a matter of cultural importance.

12.47 This proposal sits within the category of the smaller applicant who is proposing to irrigate a small proportion of their total property (1.5%). We are guided by our findings on the water quality effects section of this decision to the view that with the proposed mitigation measures and conditions that the effects on tangata whenua values will be minor.

12.48 For the land use permit, we are satisfied that effects on Tangata Whenua values will be minor.

Positive effects

12.49 The use of water for irrigation will result in improved productivity of the land and positive economic benefits for the wider community. In particular, we accept that irrigation will help to address the high variability in seasons, minimise risks, and provide increased flexibility for farming operations on Otematata Station.

Discharge, land use permits and damming – CRC052739-43

Effects of discharges

12.50 The proposed rate of discharge of 200 litres per second is relatively high in comparison to the typical flows in a water course the size of Backyard Stream however the discharge from the water race into Backyard Stream, and from Backyard Stream into the new water race to the dam, will be via a rock rip-rap apron to control flow velocity. The discharge has operated for a number of years without problems arising and we are satisfied that it will not create adverse effects in terms of flood carrying capacity and erosion.

12.51 For the discharge permit, because the discharge would only be natural water from Glen Bouie Creek, the effects on water quality will be minor. In addition, there are no downstream users on Backyard Stream that may be affected by the discharge of water.

Effects of works in bed

12.52 For the land use permits, we agree with the applicant's general conclusion that works of this nature would not likely have an impact on flood-carrying capacity or erosion. We are satisfied effects on flood-carrying capacity and erosion will be minor.

12.53 We agree that the repair and maintenance works are not likely to have an adverse effect on water quality, provided the works will be undertaken outside the spawning season. The short term nature of the work involved in installation of the new diversion/discharge structure also means that effects on water quality from that activity will also be minor. Therefore, we consider water quality effects to be minor.

12.54 We do not consider that the works will lead to any effects on man-made structures. Using CRC's GIS system no man-made structures are located within vicinity of the proposal. Given the distance to the nearest structure, relatively infrequent requirement for works, and mitigation of any erosion or flood-carrying capacity effects, potential effects of the maintenance and installation of the intakes on man-made structures would likely be minor.

Effects of damming

12.55 In relation to the proposed damming of water, we are satisfied with Ms Begley's assessment in terms of water quality and the dam and also the dam breach assessment. We note that this assessment was also supported by Ms Penman. Overall, we consider that any potential effects of the proposed damming can be adequately mitigated by conditions of consent.

Key conclusions on effects

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

12.57 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.

12.58 In relation to water quality, given the relatively small area of new irrigation proposed under these applications (30ha), our view is that the effects on water quality from the proposed activity will be minor and that effects can be managed through mitigation and consent conditions.

- 12.59 Based on the reduced annual volume proposed by the applicant (660,000 cubic metres per year) and provided that the distribution races are upgraded to reduce losses, we consider that the proposal represents an efficient and effective use of water.
- 12.60 Insofar as landscape is concerned, we have concluded that taking into account the modified farming landscape and the location of the irrigation site in relation to views from the state highway, the effects caused by the proposal, such as they are, are acceptable.
- 12.61 We conclude that the activity coupled with the proposed mitigation will not have any significant effect on tangata whenua values.
- 12.62 We accept that allowing the proposal to occur will provide positive economic benefits for the applicant and provide stability to the overall farm.
- 12.63 In relation to the proposed works in the bed, discharges and damming we are of the view the actual and potential effects of the proposed activities are acceptable.

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 (incorporating mitigations set out in the FEMP) will help to minimise nutrient loss from the irrigated area. The nutrient load to the Ahuriri Arm of Lake Benmore could increase minimally in relation to the permitted baseline but we are satisfied that with the mitigations volunteered by the application, which includes the non-irrigated area, there may be no net increase.
- 13.7 We received no information about periphyton growth in Backyard Creek or the Otamatapaio River because of the small area covered by this application, our view that risks of nuisance growths are low, and will, in any case, be managed through the monitoring programme in CRC0212017.
- 13.8 Overall, we can conclude that with the mitigation measures proposed the activity will have, at worst, a minor effect on Lake Benmore. Thus we are able to conclude that a grant of consent, with conditions, 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 is classified as hill-fed lower, which in terms of periphyton has maximum biomass indicator of 200 mg/m². As mentioned above, we received very little evidence on this issue. However we are nonetheless satisfied that with appropriate periphyton monitoring and conditions requiring the ratcheting back of irrigation in the event of exceedance of trigger values, granting this consent (in combination with others we grant) should not result in breaching of the periphyton guidelines and would remain consistent with this objective.
- 13.13 Under the condition set provided by the applicant, no river monitoring conditions were proposed on the basis that this issue was already adequately covered by the conditions in CRC012017, which also relates to Otamatata Station. This was opposed by Council on the basis that it is not appropriate to rely on another consent. We agree with this Council on this point and have imposed river monitoring and response conditions on this consent for the Otamatapaio River. These conditions are consistent with those for CRC012017. The key reason for this is that without such conditions, there would be no means by which to ratchet back the irrigation under this consent in the event that the water quality of Otamatapaio River is degraded.
- 13.14 Lake Benmore (including the Ahuriri Arm) is classified as an "Artificial On-River Lake" under the NRRP. Objective WQL1.2 of the NRRP seeks to ensure that the water quality of the lake is managed to at least achieve the outcomes specified in Table 6, including a maximum Trophic Level Index ("TLI") of 3 (i.e. oligotrophic-mesotrophic boundary). For the reasons discussed above, we consider that granting consent to the proposal would be consistent with this objective and would not (in combination with others we grant) cause the TLI maximum to be breached.
- 13.15 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 is consistent with the key objectives and policies of both of these plans relating to water quality.

Environmental flow and level regimes

- 13.16 Policies 2 – 8 deal with minimum flows for Glen Bouie Creek. Policies 3 and 4 outline the values that must be maintained in the water bodies, and a number of matters that must be considered when setting an environmental flow and level regime, and are particularly relevant to this application. As the applicant is proposing to adopt the minimum flow required by the WCWARP, we are satisfied that the proposal is consistent with these policies and a flow sharing regime above the mean flow is proposed in accordance with Table 3 of the WCWARP.

Efficient and effective use

- 13.17 Policies 15 – 20 provide for an efficient use of water so that net benefits are derived from its use and are maximised and waste minimised. In particular, Policy 16 requires us to consider whether the exercise of these consents would meet a reasonable use test in relation to both the instantaneous rate of abstraction and the annual volume for take, use, dam or divert. As discussed in our evaluation of effects, we are satisfied that the rates and annual volumes reflect an efficient and effective use of water and that the reasonable use test can be met.
- 13.18 Objective 4 of the WCWARP requires us to promote the achievement of a high level of technical efficiency in the use of allocated water. That can be achieved in this instance by upgrading the distribution system to avoid race losses and adopting a spray system as proposed by the applicant. 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.

Landscape

- 13.19 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.
- 13.20 In considering these provisions we are informed by the provisions of the Waitaki District Plan which identifies the applicant's property as Rural Scenic Zone. The objectives and policies of that zone are consistent with farming activities including irrigation at 319. Indeed, Mr Craig made it plain that the Waitaki District Plan specifically mentions irrigation is within the scope of permitted activities in the district. In the Rural Scenic zone, farming is a permitted activity except for the irrigation of land for pastoral or crop production within areas identified as an Outstanding Natural Landscape shown on the planning maps. Thus, Mr Craig said "*there is an explicit expectation within Waitaki District that irrigation and its effects are going to be expressed as part of the rural landscape outside of the Outstanding Natural Landscape areas.*" We agree with that.
- 13.21 Also, we recognise the linkage between the proposed and operative CRPS and the district plans, in particular, with the district plans being the vehicle through which the outcomes sought by the proposed and operative CRPS are to be given effect to. Thus, in this particular circumstance, the Waitaki District Plan has determined that the activity here described is provided for within the Rural Scenic zone.
- 13.22 For the reasons already advanced, primarily modification of the landscape by farming and its remote location, granting of consent to this proposal will, we conclude, be consistent with the relevant objectives and policies of both the district and regional plans relating to landscape.

Tangata whenua

- 13.23 Objective 1(a) of the WCWARP relates to the integrity of mauri and is closely linked to Objective 1(b). If we are not satisfied that the health of a particular water body is being safeguarded then the mauri is not being safeguarded either. We have found that through the proposed mitigation measures and consent conditions sustainable water quality outcomes will be achieved. We consider that granting the take and use consent will be consistent with maintaining the integrity of the mauri and meeting the spiritual and cultural needs of tangata whenua.
- 13.24 Objective WQN1 from Chapter 5 of the NRRP seeks to enable present and future generations to access the regions surface water and groundwater resources to gain cultural, social, recreational, economic and other benefits, while (c) safeguarding 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 the principal Ngāi Tahu philosophy "Ki Uta, Ki Tai" or recognising the interconnected nature of the Waitaki catchment and safeguarding the associated cultural values. In our assessment of effects for this application we consider that it is consistent with this objective.
- 13.25 Objective WTL1(a)& (d), from Chapter 7 NRRP includes provisions that seek 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. No specific wetlands of significance to Ngai Tahu have been identified as likely to be adversely affected by this application; as such, we find that this proposal is consistent with this Objective.

Activities in beds of lakes and rivers

- 13.26 The key objectives and policies that are relevant to the land use applications can be found in Chapter 6 of the NRRP, which relates to activities in the beds of lakes and rivers. The chapter contains one objective and two related policies.
- 13.27 Objective BLR1 aims to ensure that works in the beds and banks of lake, rivers and streams can be undertaken while minimising effects, including flood-carrying capacity, natural character, ecosystems, other structures, erosion, Ngai Tahu values. Given the conclusions we have reached on these matters above, we consider that, subject to appropriate conditions, the proposed works in the bed are consistent with this objective.
- 13.28 Policies BLR1 and BLR2 aim to control activities associated with the erection, placement, use and maintenance of structures within the bed of rivers to ensure that Objective BLR1 is achieved. This

may include restricting activities so that they do not affect flood-carrying capacity, erosion or create plant infestations. For the reasons discussed above, with the imposition of appropriate conditions, we consider that the proposed works in the bed are consistent with these policies.

Discharge of water

- 13.29 In relation to the proposed discharges, 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.
- 13.30 Given our conclusion on the effects of the discharge above, we are satisfied that the proposed activity is consistent with these provisions. In particular, the proposed discharge is in the most appropriate location for the system and will be within the same catchment it originates from. The discharge into Backyard Stream will meet the relevant water quality standards.

Key conclusions on planning instruments

- 13.31 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, discharges, works in the bed, and tangata whenua values.

14 EVALUATION OF OTHER RELEVANT S104 MATTERS

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

15 PART 2 RMA

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

Section 6 – Matters of National Importance

- 15.2 Section 6 identifies matters of national importance that we must "recognise and provide for" when making our decision, including in particular preserving the natural character of lakes and rivers (s6(a)), protecting outstanding natural features and landscapes (s6(b)) and the relationship of Maori with the environment (s6(e)).
- 15.3 In respect of s6(a) we recognise that preservation of the natural character of lakes and rivers is the imperative. We think that because of our finding in terms of the water quality issues, which takes into account mitigation measures, the grant of consent recognises and provides for the preservation of the natural character of lakes and rivers.
- 15.4 In terms of s6(b), we have evaluated the natural features and landscape, primarily by reference to the relevant planning instruments and also our assessment of effects on landscape and terrestrial ecology if consent were to be granted. We reach the view that the grant of consent in this case is not inappropriate because it will not, in our view, diminish the natural features and landscapes such as they are in any significant way.
- 15.5 In terms of section 6(c), it is our view, taking into account the evidence received, that there are not areas of significant indigenous vegetation and significant habitats of indigenous fauna that are at risk thus requiring protection as a consequence of the grant of consent.
- 15.6 In relation to section 6(e) we are cognisant of the relationship that Ngai Tahu hold with the natural resources of this area, and while no specific values were specified by Ngai Tahu in relation to this application, we believe that the mitigation measures and conditions provide for the cultural relationship to this catchment that is of importance to Ngai Tahu.
- 15.7 For the above reasons, we consider that granting consent to the proposal would recognise and provide for s6 matters, as we are required to do under the RMA.

Section 7 – Other Matters

- 15.8 Section 7 lists “*other*” matters that we shall “*have particular regard to*”. We make the following observations in relation to each of those matters as they are relevant to this application, referring to the sub paragraph numbers of s7:
- 15.9 Sub-section (a) refers to kaitiakitangā. We have taken particular regard of the views of Ngai Tahu in determining this decision, and recognise the kaitiaki role that Ngai Tahu who are manawhenua in the Waitaki catchment duly exercise. The kaitiaki duty imposes on manawhenua a responsibility to be active in their advocacy for the recognition and protection of the cultural and spiritual values that may be affected by the proposal.
- 15.10 Sub-sections (b), (c), and (f) are specifically relevant to this application. Sub-section (b) relates to the efficient use and development of natural and physical resources. Relevantly in this case is water. We have determined that the volumes of water we are prepared to grant and the methodology of its conveyance and distribution results in the efficient use and development of the water resource.
- 15.11 Sub-section (c) refers to the maintenance and enhancement of amenity values. Maintenance and enhancement of amenity values will be achieved in this instance through utilising mitigation measures such as those provided in the FEMP. These steps will ensure the maintenance and enhancement of amenity values.
- 15.12 In terms of sub-section (d), because of the assessments we have made in relation to ecosystems, we have had particular regard to the intrinsic values of ecosystems and we consider that through the grant of consent with the conditions imposed such values will be safeguarded.
- 15.13 Sub-section (f) refers to the maintenance and enhancement of the quality of the environment. The applicant has proposed mitigation measures to ensure that this objective is achieved.
- 15.14 Having particular regard to the above matters in the context of section 7, we conclude that the grant of consent can be supported.

Section 8 – Treaty of Waitangi

- 15.15 Finally, section 8 requires that we shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).
- 15.16 The cultural values of tangata whenua are appropriately recognised in the relevant planning documents applicable to the Mackenzie Basin sufficient to alert applicants to the need to address such values. We are satisfied that the notification of the appropriate Runangā and tribal authority has been followed and that the applicant was a contributor to the general assessment of the impact of irrigation activities on cultural values.
- 15.17 We are satisfied that the consultation procedures provided Ngāi Tahu 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

- 15.18 Turning now to the overall purpose of the RMA, that is, “*to promote the sustainable management of natural and physical resources*”. We make the following comments:
- (a) We consider the development and use of land consistent with the purposes of sustainable management;
 - (b) Irrigation will make a contribution to the overall regional (Waitaki) well-being; and
 - (c) The natural and physical resources of the Basin water and land resources will be sustained.
- 15.19 This leaves s5(2)(c) RMA and the obligation to avoid, remedy or mitigate adverse effects of activities on the environment. This will occur we conclude through conditions which will address any possible impacts particularly those relating to water quality issues.

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 We are satisfied that the use of water for irrigation will not result in more than minor effects on water quality and that any such effects can be managed through conditions.
- 16.3 The Section 42A report was satisfied that the potential adverse effects of the discharges, bed disturbance, damming and dam construction within this proposal are minor and that with appropriate conditions consent could be granted. For all of the above reasons we concur with her opinion.
- 16.4 Having reviewed the application documents, all the submissions, taking into account the evidence to the hearing and taking into account all relevant provisions of the RMA and other relevant statutory instruments we have concluded that the outcome which best achieves the purpose of the Act is to grant consent.

17 CONDITIONS

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

Nutrients and thresholds

- 17.5 In Part A we rejected the MWRL proposition that we could grant all the applications before us with conditions.
- 17.6 Much of the evidence on conditions presented by all parties to this hearing centred on the issue of determining whether grantees in a particular subcatchment had breached the nutrient allowance at a particular node, and if they had, how ECan could determine either which consent holder had caused the breach and whether one or all consent holders needed to take corrective action.

- 17.7 In rejecting the MWRL case, which relied upon existing irrigators lessening their nutrient load so that there would be assimilative capacity for new irrigators, we need to record our approach to ensuring that consents we grant do not cumulatively result in the trophic level index (TLI) of the Ahuriri Arm of Lake Benmore exceeding 2.75, or the TLI of the Wairepo Arm of Lake Ruataniwha exceeding 4.00. As we recorded in Part A our view is that the difference between current nutrient load, and the load resulting in unacceptable increases in the TLI of these waterbodies is so small that it would be risky to try and allocate that new load.
- 17.8 For those applications that we are inclined to grant, we have assessed their 'cumulative effects' in priority order, taking careful note of the complete package of mitigation measures they propose on their property. These mitigation measures may be in relation to a separate application before us but on the same property and therefore 'captured' in the FEMP.
- 17.9 We have kept a check on new irrigation resulting in additional nitrogen and phosphorus loads proposed by applicants in relation to those mitigation measures and not granted consents that would, in our view, lead to a significant net increase.
- 17.10 This approach will, in our view, ensure that the TLI of the critical lake ecosystems does not rise as a result of our granting these applications, and may even decline. This approach is, we believe, consistent with the NRRP, which has as an objective and maintenance or improvement of water quality. It also has the advantage, in our view, of taking the pressure off cumulative effects monitoring with all the ensuing uncertainties and difficulties discussed in Part A,
- 17.11 Recognising that streams and rivers in the catchment are nutrient limited by nitrogen and/or phosphorus, and that the NZ (MfE) Periphyton Guidelines provide appropriate thresholds for managing nuisance periphyton growths, 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 where leachate enters groundwater that does not discharge to streams or rivers prior to entering Lake Benmore, periphyton monitoring is not appropriate. However for the majority of the applications before us, there is a stream or river downstream that provides a logical focus for offsite monitoring efforts. In cases where this is not the case we have imposed other monitoring requirements such as lysimeter or piezometer networks, and/or contributing to lake monitoring.
- 17.13 The advantage of stream water quality and periphyton monitoring is that it puts more emphasis on local monitoring and less emphasis on uncertain (given our findings on the WQS) modelling. We are of the view that as far as possible, consent monitoring should be related directly to the applicant's activities.
- 17.14 We did consider deleting the agreed conditions relating to lake TLI monitoring on the grounds that it was marginal whether trigger response conditions were relevant to replacement consents. The critical issue for us was whether the effects of replacement consents could be considered less than minor (with respect to lake water quality).
- 17.15 However upon reflection we have decided that (in the case of the Ahuriri Arm of Lake Benmore, and the Wairepo Arm of Lake Ruataniwha) the existing TTLI is very close to the agreed trigger point, and the TLI may increase even without the grant of new consents (due to groundwater lag effects). We are reasonably confident however that this will not occur because by and large these activities have been 'on foot' for a long period of time and we think this is reflected in the current TLI. However, we cannot be completely certain and it seemed to us rather than leave the matter we should do something about it to at least provide a mechanism to respond to groundwater lag effects, if they occurred.
- 17.16 Thus, if TLI were to increase above the agreed trigger points then the lake monitoring conditions would serve a resource management purpose; particularly in conjunction with the condition to ratchet back existing irrigation. On balance, we have decided to retain the agreed lake monitoring conditions for Lake Benmore and the Wairepo Arm of Lake Ruataniwha.

18 DECISION

- 18.1 Pursuant to the powers delegated to us by the Canterbury Regional Council; and

18.2 For all of the above reasons and pursuant to sections 104 and 104B of the Resource Management Act 1991 we **GRANT** the following applications by Otematata Station Limited:

CRC041033 – to divert up to 200 L/s of water per second from Glen Bouie Creek into an open water race; divert up to 200 L/s of water per second from Backyard Stream into an open water race; and take and use water from a storage dam at a maximum rate of 75 litres per second and a maximum annual volume of 660,000 cubic metres per year for spray irrigation of 120 hectares of crops and pasture at Otematata Station.

CRC052739 - discharge up to 200 L/s of water per second from an open water race into Backyard Stream and into a storage dam on an unnamed tributary of Corbies Creek.

CRC052740 – to disturb the bed of Glen Bouie Creek and Backyard Stream for the purposes of the construction and maintenance of intake structures for an open water race.

CRC052741 - to construct and maintain a compacted earth dam with a capacity of 300,000 cubic metres in an unnamed tributary of Corbies Creek.

CRC052742 - to dam up to 300,000 cubic metres of water in an unnamed tributary of Corbies Creek.

CRC052743 - to discharge water from the emergency spillway of a storage dam in an unnamed tributary of Corbies Creek.

18.3 Pursuant to section 108 RMA, the grant of consents are subject to the conditions specified at **Appendices A to F**, which conditions form part of this decision and consents.

18.4 The duration of all of the above consents shall be until the 30th April 2025.

DECISION DATED AT CHRISTCHURCH THIS 16TH DAY OF FEBRUARY 2012

Signed by:

Paul Rogers



Dr James Cooke



Michael Bowden



Edward Ellison

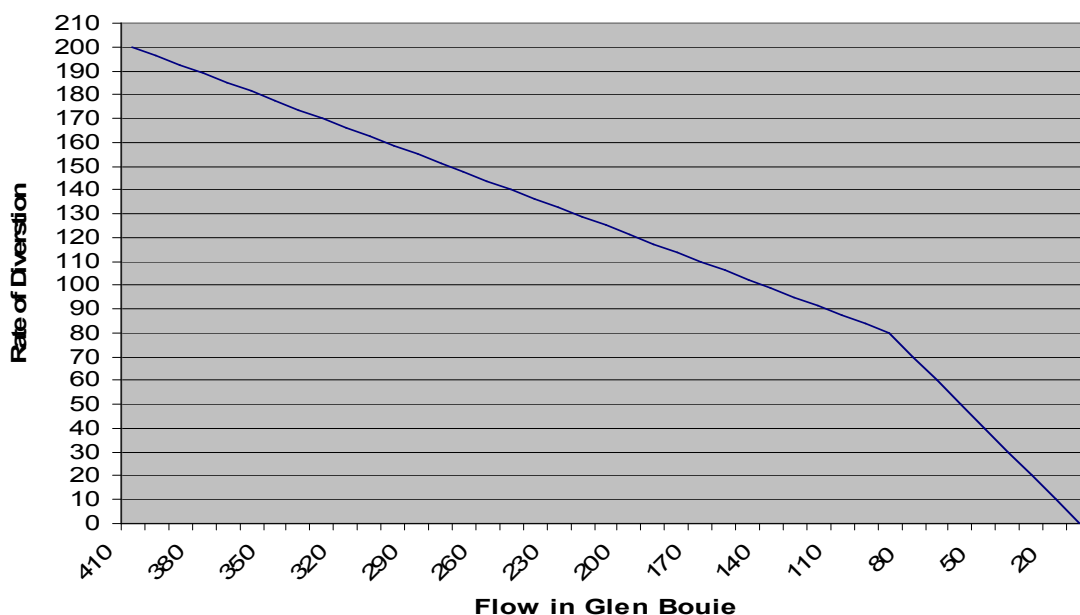


Race upgrades

1. Prior to the exercise of this consent, the applicant shall:
 - (a) Obtain a report from an independent and suitably qualified and experienced person detailing the action steps and works that would be required to reduce and limit losses from the current race system that is to be used to convey water under this consent, including but not limited to:
 - i. piping or sealing the race system or any other option so as to minimise water losses and maintain the quality of water; and
 - ii. specifying the relevant timeframes when works should be undertaken and completed.
 - (b) Provide a copy of that report to the Compliance and Enforcement Manager of the Canterbury Regional Council for consideration and comment before the report is finalised; and
 - (c) Finalise and implement the recommendations of the report within the timeframes specified in that report.

Diversion and take of water

2. Water shall only be diverted from the Glen Bouie Stream, at or about map reference NZMS 260 H40:7920-0840 at a rate not exceeding 200 litres per second into an open water race to Backyard Stream
3. Water shall only be diverted from the Backyard Stream, at or about map reference NZMS 260 H40: 7990-1570 into a water race to a storage dam at a rate not exceeding 200 litres per second.
4. The combined annual volume from the diversions specified in Condition 2 and 3 shall not exceed 180,000 cubic metres per year between 1 July and the following 30 June.
5. Water for irrigation shall be taken from a storage dam constructed in accordance with CRC052742 located at or about map reference H40:7960-1630.
6. Water shall only be taken from the dam between 1 September and the following 30 April at a rate not exceeding 75 litres per second with a volume not exceeding 660,000 cubic metres per year (measured between 1 September and the following 30 April).
7. Subject to Condition 9, whenever the flow in Glen Bouie Stream, as estimated by the Canterbury Regional Council calculated as the mean flow for the previous 24 hour period (midnight to midnight) at map reference NZMS 260 H40: 7590-1680:
 - (a) is equal or greater than 410 litres per second, the maximum rate at which water is diverted from Glen Bouie Stream and Backyard Stream shall not exceed 200 litres per second;
 - (b) falls below the flow shown for irrigation on the horizontal axis of the following graph, then the rate of diversion from Glen Bouie Stream and Backyard Stream shall not exceed those shown as corresponding flows on the vertical axis.
 - (c) is equal to or less than 10 litres per second the diversion of water from Glen Bouie Stream and Backyard Stream under this consent for irrigation purposes shall cease.



8. In addition to Condition 7 and subject to Condition 9, whenever the flow in the Otamatapaio River Stream, as estimated by the Canterbury Regional Council calculated as the mean flow for the previous 24 hour period (midnight to midnight) at map reference NZMS 260 H40: 7590-1680:
- (d) is equal or greater than 450 litres per second, the maximum rate at which water is diverted from Glen Bouie Stream and Backyard Stream shall not exceed 200 litres per second;
 - (e) is less than 450 litres per second but greater than 200 litres per second then the rate of diversion from Glen Bouie Stream and Backyard Stream shall not exceed those shown in the table below;
 - (f) is equal to or less than 200 litres per second the diversion of water from Glen Bouie Stream and Backyard Stream under this consent for irrigation purposes shall cease.

Otamatapaio River flow (litres per second)	Maximum rate of diversion (litres per second)
450	200.0
400	160.0
350	120.0
300	80.0
250	40.0
200	0.0

9. Where the Canterbury Regional Council, in consultation with a Water Users Committee representing, but not limited to, surface water and hydraulically connected groundwater users who are subject to the above minimum flow, has determined upon a water sharing regime that limits the total abstraction from the resource as referred to above, then the taking of water in accordance with that determination shall be deemed to be in compliance with Conditions 7 and 8.

Use of water

10. Water taken from the storage dam constructed in accordance with CRC052742 shall only be used for the spray irrigation of 120 hectares (including the 90 ha of land that may be irrigated under CRC012017) of crops and pasture for grazing sheep and beef cattle per irrigation season within the area of land shown on attached Plan CRC041033/CRC052739-43, which forms part of this consent.

11. Water for irrigation shall only be used on or applied to land that is subject to a memorandum of encumbrance that complies with the requirements of the agreement entitled "Agreement in Relation to the Allocation of Water for Irrigation" between Meridian Energy Limited and the Mackenzie Irrigation Company Limited dated the 31st of October 2006.
12. The consent holder shall, six months prior to this consent being exercised, provide to the Canterbury Regional Council a certificate from the consent holder's solicitor certifying that the memorandum of encumbrance is registered on the computer registers for the land shown on Plan CRC071649/CRC071650 and any other evidence of registration as the Canterbury Regional Council may require (if any).
13. There shall be a minimum 5 metre setback, where there is no irrigation, from any permanently flowing waterways within the irrigation area marked on Plan CRC041033/CRC052739-43.
14. 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.
15. The consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.

Water metering – Minimum flows

16. The consent holder shall, prior to exercising this consent, install water level measuring devices in stable reaches of the Glen Bouie Stream at map reference NZMS 260 H40:7920-0840 and Otamatapaio River at map reference NZMS 260 H40: 759-168 that will enable the determination of the continuous rate of flow in the reach of the water body to within accuracy of ten percent.
17. The water level measuring device shall be installed at a site that will retain a stable relationship between flow and water level. The measuring device shall be installed in accordance with the manufacturer's instructions.
18. The consent holder shall install a tamper-proof electronic recording device such as a data logger(s) that shall:
 - (a) time stamp a pulse from the water level recorder at least once every 15 minutes; and
 - (b) be set to wrap the data from the measuring device such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and
 - (c) store the entire season's data in each 12-month period from 1 July to 30 June in the following year, which the consent holder shall then download and store and provide to the Canterbury Regional Council in a format and standard specified in the Canterbury Regional Council's form for Water Metering Data Collection; and be readily accessible to be downloaded by the Canterbury Regional Council or by a person authorised by the Canterbury Regional Council: RMA Compliance and Enforcement Manager; and
 - (d) shall be connected to a telemetry system that collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder.
19. The measuring and recording devices described in Conditions 16 and 18 shall be available for inspection at all times by the Canterbury Regional Council.
20. Data from the recording device described in Condition 18 and the corresponding relationship between the water level and flow, and any changes in that relationship shall be provided to

the Canterbury Regional Council annually in the month of June, and shall be accessible and available for downloading at all times by the Canterbury Regional Council.

Water metering – Take of water

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

27. 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 meters are measuring the rate of water taken as specified in Conditions 21 to 25 inclusive; and
 - (b) the tamper-proof electronic recording device is operating as specified in Conditions 21 to 25 inclusive.

Fish Screen

28. 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 all the intakes to ensure that fish and fish fry are prevented from passing through the intake screen.
29. 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.
30. The fish screen shall be designed and installed to ensure that:
 - (a) the majority of the screen surface is oriented parallel to the direction of water flow; and
 - (b) 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; and
 - (c) 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; and
 - (d) the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.
31. The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 28 to 30 inclusive 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.
32. 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 Conditions 28 to 30 inclusive of this consent.
33. 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

34. For the purposes of interpretation of the conditions of this consent 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.
35. The consent holder shall prepare once per year:
 - (a) an Overseer[®] nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and

- (b) a report of the annual farm nutrient loading for Otematata Station using the model Overseer[®] (AgResearch model version number 5.4.3 or later).
36. When undertaking the modelling outlined in Condition 34, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
37. A copy of the reports prepared in accordance with Condition 34 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
38. The consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs)) as estimated in accordance with Condition 34 from Otematata Station does not exceed 97,622 kg of Nitrogen and 2,390 kg of Phosphorus. Where the NDAs have been reduced by the application of a receiving water quality nutrient trigger condition, the reduced NDA shall apply.
39. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the commencement of consent.
40. Where Overseer, or Overseer modelling, is referred for the purposes of calculating or determining compliance with the NDA limits associated with activities on the property, it shall be undertaken by an independent person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification
41. The consent holder shall at all times comply with the mitigation measures set out in section 5 of the Farm Environmental Management Plan (FEMP) for Otematata Station as provided to Environment Canterbury in November 2010 and attached to these conditions.
42. Subject to Condition 41, the consent holder shall implement, and update annually the FEMP for Otematata Station. The FEMP shall include:
- (a) Verification of compliance with NDAs (incorporating any reductions required by receiving water quality nutrient trigger conditions) by farm nutrient modelling using the model Overseer (AgResearch model version number 5.4.3 or later).
 - (b) Implementation of Mandatory Good Agricultural Practices ("MGAPS") and requirements to manage in accordance with the Otematata Station Overseer model inputs.
 - (c) The Overseer parameter inputs report, which shall be supplied to the Canterbury Regional Council.
 - (d) A property specific environmental risk assessment (including a description of the risks to water quality arising from the physical layout of the property and its operation which are not factored in as an Overseer parameter) prepared by a suitably qualified person which identifies any farm specific environmental risks along with measures to mitigate the farm specific environmental risks.
 - (e) A requirement to review the risk assessment if there are any significant changes in land use practice.
43. 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.
44. A report on Overseer modelling shall be provided within one month of completion of the Overseer modelling by the person with the qualifications described in Condition 40 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.
45. Changes may be made to the 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. A copy of that certification plus a copy of the resultant Overseer parameter report shall be provided to the Canterbury Regional

Council, Attention: RMA Compliance and Enforcement Manager, prior to the implementation of that change.

Subdivision

46. The NDAs shall be recalculated if there is a sale or transfer of any part, but not the whole, of the total farm area of 26,580 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 38. The new NDAs may be recalculated on any proportion as long as the total of all the NDAs does not exceed the NDAs of the parent title as set out in Condition 38. The recalculation of the NDAs shall be undertaken and certified using Overseer, completed and provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager together with a copy of the full Parameter report, within one month of the sale or transfer.

Fertiliser and soil management

47. 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.
48. 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.
49. For land based spreading of fertiliser:
 - (a) where an independent fertiliser spreading contractor is used the consent holder shall keep a record of the contractor used, which can be supplied to the Canterbury Regional Council upon request; or
 - (b) where the applicant's own fertiliser spreaders are used, the consent holder shall test and calibrate the fertiliser spreaders at least annually, and every five years the fertiliser spreader will be certified by a suitably qualified person in accordance with 'The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07' or any subsequent updates and the results of testing shall be provided to the Canterbury Regional Council upon request.
50. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September.
51. 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.
52. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
53. 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.
54. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
55. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.
56. Where practicable, the consent holder shall:
 - (a) use direct drilling as the principal method for establishing pastures; and
 - (b) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

Irrigation Infrastructure

57. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:
- (a) designed and certified by a suitably qualified independent expert holding a National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request; and
 - (b) tested within 12 months of the first installation of the new irrigation infrastructure and afterwards every five years in accordance with the 'Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007' (code of practice) by a suitably qualified independent expert.
58. Within two months of the testing referred to in Condition 57(b) the expert shall prepare a report outlining their findings and shall identify any changes needed to comply with the code of practice. Any such changes shall be implemented within five years from the date of the report. A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.
59. If existing irrigation infrastructure is being used, the consent holder shall obtain an evaluation report prepared by a suitably qualified person, on the following terms:
- (a) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
 - (b) This report shall be obtained within three months of the first exercise of the consent.
 - (c) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
 - (d) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

River water quality monitoring and response

60. The water quality of the Otamatapaio River shall be monitored within six months of the first exercise of consent as follows:
- (a) The location for monitoring of Otamatapaio River shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
 - i. Map reference: NZMS 260 H40: 786-173 immediately upstream of all irrigation takes.
 - ii. Map reference: NZMS 260 H40: 787-212 downstream of the discharge.
 - (b) Water quality variables monitored shall include:
 - i. dissolved inorganic nitrogen (DIN);
 - ii. dissolved reactive phosphorus (DRP);
 - iii. dissolved oxygen;
 - iv. conductivity;
 - v. turbidity;
 - vi. periphyton biomass as chlorophyll *a* per square metre (chl *a*); and

vii. *E. Coli.*

- (c) This monitoring may be carried out on an individual basis, or may be prepared in collaboration with other consent holders, or on a collective basis by a suitable independent body appointed by all relevant consent holders in the sub catchment.
 - (d) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
 - (e) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring river water quality and periphyton biomass. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
 - (f) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person who demonstrates that they understand the appropriate methods to use for surface water quality sampling, including preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
 - (g) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ.
 - (h) The results of all sampling shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
61. If the monitoring undertaken in accordance with Condition 60 shows that the average sample result for the downstream Otamatapaio River monitoring site specified in Condition 60 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 consent holder shall commission a report into the cause of the breach of the early warning trigger.
62. The reports referred to in Condition 61 and 66 shall:
- (a) be prepared by an expert review panel consisting of two qualified and experienced independent scientists. One of the scientists shall be nominated by the Canterbury Regional Council, and the other shall be appointed by the consent holder; and
 - (b) include the experts' conclusion on whether the exceedance(s) were as a result of natural influences, one off events, or in whole or part by nutrient loss associated with the irrigation authorised by this consent; and
 - (c) include an assessment as to whether the exceedance measured by the monitoring is likely to continue; and
 - (d) be completed by 30 July following the sampling; and
 - (e) be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
63. If both the authors of the report prepared in accordance with Condition 62 conclude, after considering all the relevant available information (including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council) that either:
- (a) the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent; or
 - (b) that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the downstream Otamatapaio River monitoring site,

then no further action needs to be undertaken by the consent holder.

64. If Condition 63 is not satisfied, then:
- (a) the NDA, as specified in Condition 38, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the total authorised irrigation area developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area (i.e. 120 irrigated hectares divided by the total farm area of 26,580 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 65.
65. In relation to the Remedial Action Plan referred to in Condition 64(b) and 68(b)(b):
- (a) It shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the early warning trigger pertaining to the 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.
 - (b) It shall be prepared by a suitably qualified and experienced person using Overseer or an equivalent method to demonstrate that the actions to be undertaken will achieve the necessary nutrient reductions as soon as practicable.
 - (c) If the Remedial Action Plan is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment a common Remedial Action Plan shall be deemed to comply with this condition.
 - (d) Any actions required by the Remedial Action Plan shall be incorporated into the consent holder's FEMP. The amended FEMP shall be implemented as soon as physically possible.
 - (e) The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
66. If the monitoring undertaken in accordance with Condition 60 shows that the average sample result for the downstream Otamatapaio River monitoring site specified in Condition 60 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 consent holder shall commission a report into the cause of the breach of the environmental standard trigger. This report shall satisfy the requirements specified in Condition 62.
67. If both the authors of the report prepared in accordance with Condition 66 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.
68. If the report prepared in accordance with Condition 66 concludes that the environmental standard trigger has been exceeded because of farm land use practices, then:
- (a) the NDA, as specified in Condition 38, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedance) under this resource consent divided by the total farm area (i.e. 120 irrigated hectares divided by the total farm area of 26,580 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 65.
69. If a required reduction in nutrient load is in effect under Condition 64(a) or 68(a) 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:

- (a) greater than 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl *a*/ m² (environmental standard trigger), then there shall be a further NDA reduction of 10% x IPF for the subsequent irrigation season.
- (b) less than 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl *a*/ m² (environmental standard trigger), but greater than 0.14 mg/l of DIN; or 0.006 mg/l of DRP; or 90 mg chl *a*/ m² (early warning trigger), then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
- (c) 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 NDA reduction shall be required under this condition, and the full NDA for the property, as specified in Condition 38 shall be restored.

Lake water quality monitoring and response

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

- (a) Locations:
 - i. Ahuriri Arm, Map reference: NZMS 260 H39:8027-2667
 - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371
- (b) Depths: depth integrated 0-10m, 25m, 50m
- (c) Water quality variables:
 - i. total nitrogen;
 - ii. ammonia;
 - iii. nitrate;
 - iv. nitrite;
 - v. total Kjeldahl nitrogen;
 - vi. total phosphorus;
 - vii. dissolved reactive phosphorus;
 - viii. Secchi disc depth; and
 - ix. chlorophyll *a*.
- (d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
 - i. $TLc = 2.22 + 2.54 \log (\text{chlorophyll } a)$
 - ii. $TLp = 0.218 + 2.92 \log (\text{total phosphorus})$
 - iii. $TLn = -3.61 + 3.01 \log (\text{total nitrogen})$
 - iv. $TLI = \Sigma (TLc + TLp + TLn)/3$
- (e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (f) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring lake water quality. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.

- (g) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person that demonstrates that they understand the appropriate methods to use for lake water quality sampling, including depth integrated sampling, and preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
 - (h) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ and shall be capable of analysing the variables listed in subparagraph c above with detection limits generally recognised by the scientific community as appropriate for oligotrophic lakes.
 - (i) The results of all sampling including the calculated average summer TLI, shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
71. If the monitoring undertaken in accordance with Condition 70 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then:
- (a) the NDA, as specified in Condition 38, shall be reduced 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 (i.e. 120 irrigated hectares divided by the total farm area of 26,580 hectares); and
 - (b) a report into the cause of the breach of the early warning trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
72. If a reduction in nutrient loading is required under Condition 71(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the monitoring site over the period December to April:
- (a) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (b) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 38 shall be restored.
73. If the monitoring undertaken in accordance with Condition 70 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 38, 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 (i.e. 120 irrigated hectares divided by the total farm area of 26,580 hectares); and
 - (b) a report into the cause of the breach of the environmental standard trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
74. If a reduction in nutrient loading is required under Condition 73(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April:

- (a) continues to be greater than 3.0 then there shall be a further NDA reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season.
 - (b) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 38 shall be restored.
75. The nutrient load reductions and investigation referred to in Conditions 71 to 74 inclusive shall not be required if a two person expert scientist panel (with one expert nominated by the Canterbury Regional Council) both conclude after considering all the relevant available information (including catchment resource consent compliance, FEMP compliance monitoring pertaining to this consent and audit reports made available by the Canterbury Regional Council) that the cause of the breach of the early warning trigger or environmental standard (as applicable) was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.

Review of conditions

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

Lapse

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

Advice notes:

- *In relation to the lake monitoring required under Condition 70, it is anticipated that all consent holders subject to this condition would coordinate and cooperate together to ensure that the lake water quality monitoring is undertaken and the costs of that monitoring is shared between those consent holders. The Canterbury Regional Council may provide resources to facilitate that coordination and recover the costs of that facilitation from the relevant resource consent holders as a cost of supervising and administering the resource consents. Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders and may be the subject of enforcement proceedings.*
- *If any additional land use consents are required to carry out the proposed activity, those consents must be obtained before giving effect to this consent.*

APPENDIX B: CONDITIONS OF CONSENT (CRC052739) – DISCHARGE

1.
 - a. Water shall only be discharged from a man made race in to Backyard Stream or a storage pond at or about map reference NZMS 260 H40: 796-163, as shown on attached Plan CRC041033/CRC052739-43; and
 - b. Water shall only be discharged at a rate not exceeding 200 litres per second.
2.
 - a. All practicable measures shall be undertaken to avoid erosion of the bed or banks of 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 Backyard Stream], as a result of the discharge, the consent holder shall be responsible for rectifying the situation as soon as practicable.
3. The discharge, after reasonable mixing, shall not cause a change in the colour or a reduction of the clarity of the receiving water body.
4. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder
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 five years from the commencement of this consent.

APPENDIX C: CONDITIONS OF CONSENT (CRC052740) – DISTURB THE BED

1. The works shall be limited to maintenance and installation of intake structures and discharge structures within the beds of Glen Bouie Creek and Backyard Stream, including excavation of gravel and sediments to maintain an adequate flow of water to the diversion structures.
2. The works carried out in accordance with condition (2) shall be located at Glen Bouie Creek and Backyard Stream at or about map reference(s) NZMS 260 H40:792-084 and NZMS 260 H40:799-157, as shown on attached Plan CRC041033/CRC052739-43.
3. Any gravel, sand and other natural material excavated as part of the works authorised by this consent during the disturbance of the bed of Glen Bouie Creek and Backyards Stream, must be deposited on, or near to, the excavation site, and shall be reshaped and formed to a state consistent with the surrounding natural riverbed
4. All practicable measures shall be undertaken to ensure that works do not deflect floodwaters into the berm.
5. Works shall not be undertaken in any manner likely to cause erosion of or instability to, the banks or bed of Glen Bouie Creek and Backyards Stream; or reduce the flood-carrying capacity of the waterway.
6. Prior to commencing excavation, a copy of this resource consent shall be given to all persons undertaking activities authorised by this consent.
7. At least 20 working days prior to the commencement of the works, the consent holder shall submit to the Canterbury Regional Council, Attention: RMA Enforcement and Compliance Manager, an Erosion and Sediment Control Plan (ESCP) that includes, but is not limited to the following:
 - a. a locality map; and
 - b. detailed drawings showing the type and location of erosion and sediment control measures, on-site catchment boundaries, and off-site sources of run-off; and
 - c. drawings and specifications of all designated erosion and sediment control measures with supporting calculations; and
 - d. a programme of works, which includes but is not limited to a proposed timeframe for the works;
 - e. a schedule of inspections and maintenance of erosion and sediment control measures; and
 - f. details of when the erosion and sediment control measures are to be established and decommissioned; and
 - g. measures to ensure that there is no tracking of mud or earth onto the surrounding road network, including the provision of shaker ramps and/or wheel washes where appropriate; and
 - h. measures to be undertaken should erosion and sediment control measures fail and result in contamination of any watercourse or water body.
8. The ESCP shall be prepared in general accordance with the Environment Canterbury Erosion and Sediment Control Guidelines 2007 (ECAN ESC Guidelines).
9. The ESCP shall be communicated to all persons undertaking activities authorised by this consent and a copy of the ESCP shall be kept on site at all times.
10. The Erosion and Sediment Control Plan and any revisions of that document shall be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, for

certification that the Erosion and Sediment Control Plan meets all the requirements of the conditions of this consent.

11. No activities authorised by this consent shall commence or be undertaken other than in full compliance with the Erosion and Sediment Control Plan that has been certified by or on behalf of the Canterbury Regional Council RMA Compliance and Enforcement Manager in terms of condition 7.
12. The Canterbury Regional Council Compliance Monitoring Officer shall be notified of the intention to carry out works and their intended type and scope at least 48 hours prior to the commencement of work.
13. The consent holder shall adopt the best practicable options to:
 - a. Minimise soil disturbance and prevent soil erosion;
 - b. Prevent sediment from flowing into any surface water; and
 - c. Avoid placing cut or cleared vegetation, debris, or excavated material in a position such that it may enter surface water.
14. To prevent the spread of Didymo or any other aquatic pest, the consent holder shall ensure that activities authorised by this consent are undertaken in accordance with the Biosecurity New Zealand's hygiene procedures.

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

15. All practicable measures shall be undertaken to minimise vehicles and machinery entering Glen Bouie Creek and Backyards Stream.
16.
 - a. All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery.
 - b. There shall be no storage of fuel or refuelling of vehicles and machinery within 20 metres of the bed of a river.
 - c. Fuel shall be stored securely or removed from site overnight.
17. All practicable measures shall be undertaken to ensure that machinery is free of plants and plant seeds prior to use in the riverbed.
18. All practicable measures shall be undertaken to minimise adverse effects on property, amenity values, wildlife, vegetation, and ecological values.
19. The works shall not prevent the passage of fish, or cause the stranding of fish in pools or channels.
20.
 - a. Vehicles/and or machinery shall not operate within 100 metres of birds which are nesting or rearing their young in the bed of the river.
 - b. For the purposes of this condition, birds are defined as those bird species listed in Schedule A.
21. The consent holder shall ensure that the following procedure is adopted in the event that koiwi (human remains) or taonga (cultural artefacts) are unearthed or are reasonably suspected to have been unearthed during the course of construction and other activities.
 - a. Immediately as it becomes apparent, or is suspected by workers at the site that koiwi or taonga have been uncovered, all activity at the site will cease.

- b. The plant operator will shut down all machinery or activity immediately, and leave the area and advise his or her supervisor of the occurrence.
 - c. The supervisor shall take steps to immediately secure the area in a way that ensures that koiwi or taonga remain untouched as far as possible in the circumstances and shall notify the consent holder.
 - d. The Consent Holder will notify the New Zealand Police (in the case of koiwi) and the relevant runanga representatives that it is suspected that koiwi and/or taonga have been uncovered at the site.
 - e. The runanga representatives will contact the appropriate kaumatua to act on their behalf in this matter in order to guide and advise the consent holder as to the appropriate course and the consent holder will immediately advise the consent holder of the identity of such kaumatua.
 - f. The consent holder shall ensure that representatives on its behalf are available to meet and guide kaumatua and police (as appropriate) to the site, assisting with any requests they may make.
 - g. If the kaumatua are satisfied that the koiwi or taonga are of Maori origin the kaumatua will decide how they are to be dealt with and will communicate its decision to the consent holder, New Zealand Police and such other parties as are considered appropriate.
 - h. Activity on site shall remain halted until the New Zealand Police and the kaumatua have given approval for operations to recommence.
 - i. The consent holder shall ensure that kaumatua are given the opportunity to undertake karakia and such other religious or cultural ceremonies and activities at the site as may be considered appropriate in accordance with tikanga Maori (Maori custom and protocol).
22. On completion of works, the area shall be restored to its original condition as far as practicable.
23. Upon completion of works, all spoil and other waste material from the works shall be removed from site on completion of works.
- 24.
- a. The consent holder shall ensure that if water is abstracted the gallery and, or, intake shall be designed to prevent native and exotic fish species from entering the system.
 - b. The fish screen shall be designed by a person with experience in freshwater ecology and fish screening techniques, and constructed in a manner that ensures the principals of the NIWA fish screening guidelines (Fish Screening: Good Practice Guidelines for Canterbury, NIWA Client Report 2007-092, October 2007, or other revision of these guidelines. (Copy available on www.ecan.govt.nz) are achieved.
 - c. No water may be taken in terms of this permit until, upon completion of the intake structure a report is provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager. The report shall be prepared by the consent holder for certification and shall demonstrate compliance with the following:
 - i. Design plan for the gallery specifying gallery dimensions;
 - ii. Detail of depths and sizes of layers of gravel over the gallery;
 - iii. Photographic evidence of key stages of construction of the gallery, including demonstrating compliance with gravel specifications in sub clause (c)(ii) above;
 - iv. Any ongoing maintenance required by the manufacturer is carried out in accordance with their specifications."
 - d. The intake structure shall be maintained in good working order. Records shall be kept of all inspections and maintenance. And those records shall be provided to the Canterbury Regional Council upon request.

25. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent pursuant to Section 128 of the RMA, for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.
26. The lapsing date for the purposes of section 125 shall be five years from the commencement of this consent.

South Island Pied Oystercatcher

Black Stilt

Pied Stilt

Wrybill

Banded Dotterel

Black-fronted Dotterel

Spur-winged Plover

Paradise Shelduck

Grey Duck

NZ Shoveler

Grey Teal

NZ Scaup

Black-billed Gull

Red-billed Gull

Caspian Tern

White-fronted Tern

Black-fronted Tern

White-winged Black Tern

Australasian Bittern

Marsh Crake

Spotless Crake

Cormorant/shag colonies

**APPENDIX D: CONDITIONS OF CONSENT (CRC052741 AND CRC052742) – CONSTRUCT A DAM
AND DAM WATER**

1. Water shall only be dammed on land parcel Pt Run 743, at or about map reference NZMS 260 796-163, as shown on attached Plan CRC041033/CRC052739-43.
2. The volume of water dammed shall not exceed 300,000 cubic metres.
3. The depth of water in the dam shall not exceed 15 metres
4. The consent holder shall ensure that the freeboard is a minimum of 0.8 metres
5. The height of the crest shall not exceed 15 metres above natural ground level, as measured from the centre of the crest.
6. Prior to the commencement of construction a copy of this resource consent shall be given to every person involved in the construction.
7. A construction report shall be prepared by the person responsible for the design of the dam, and a copy of which shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of the construction of the dam.
8. Upon completion of the dam, and before first filling, the person responsible for the construction of the dam shall certify the dam as safe and ready for operation. A copy of the certification document shall be forwarded to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager.
9.
 - a. The person responsible for the design and construction of the dam shall be present during first filling and shall record any faults observed.
 - b. The consent holder shall immediately remedy any faults recorded during first filling.
 - c. A report shall be prepared detailing any faults observed and the remedial action taken, a copy of which shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of first filing.
10.
 - a. The consent holder shall ensure that a chartered professional engineer inspects the dam within five days of first filling.
 - b. The chartered professional engineer shall record any faults or findings that could potentially lead to dam failure, and recommend the appropriate remedial works. A report of these findings and recommended remedial actions shall be prepared and a copy of which shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of the inspection.
 - c. The consent holder shall immediately undertake any remedial works or corrective action recommended by the engineer and notify the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one week of completion.
11.
 - a. The consent holder shall undertake routine inspections and maintenance works on the dam.
 - b. The details and findings of any inspections and maintenance works shall be recorded in a logbook kept for that purpose. A copy of the logbook shall be forwarded to Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 June each year.

12. The consent holder shall ensure that the dam is inspected comprehensively by, or under the supervision of, a chartered professional engineer, yearly for the first 3 years and then once every 5 years after that. A copy of the inspection report shall be forwarded to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of the inspection.
13.
 - a. In the event of any evidence of erosion, seepage, cracking, settlement, slipping or other embankment deformation the consent holder shall, immediately:
 - b. Report the event to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager; and
 - c. Consult a chartered professional engineer who shall be requested to take responsibility for:
 - i. the inspection of the dam;
 - ii. the identification of remedial action required;
 - iii. the recording of the details of the inspection, reasons for the fault and remedial action required, in a report, a copy of which shall be forwarded to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of the inspection.
 - d. Undertake any remedial works or corrective action recommended by the engineer, and notify the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one week of completion.
14. In the event of dam failure, the consent holder shall immediately contact a chartered professional engineer who shall complete a report detailing the cause of failure and the action taken. A copy of this report shall be forwarded to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of the event.
15. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
16. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent pursuant to section 128 of the RMA, for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.
17. The lapsing date for the purposes of section 125 shall be five years from the commencement of this consent.

Advice note:

This consent does not remove the requirement for the applicant to seek a Building Consent for the proposed dam as required under the Building Act 2004.

APPENDIX E: CONDITIONS OF CONSENT (CRC052743) – DISCHARGE

1.
 - a. Water shall only be discharged from the dam consented under CRC052742.
 - b. Water shall only be discharged into ephemeral grass depressions at map reference NZMS 260 H40: 796-163.
 - c. Water shall only be discharged at a rate not exceed the spillway capacity, designed to be less than the 1 in 1000 AEP for the dam catchment.
2.
 - a. All practicable measures shall be undertaken to avoid erosion of the bed or banks of any downstream waterbody as a result of the discharge.
 - b. In the event of any erosion occurring as a result of the discharge, the consent holder shall be responsible for rectifying the situation as soon as practicable.
3. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.
4. 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.
5. The lapsing date for the purposes of section 125 shall be five years from the commencement of this consent.

