

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

applications by **DW McAughtrie, Ellis-Lea Farms (2000) Ltd & Greenfield Rural Opportunities Ltd** filed under

CRC991473 for a water permit to divert water from Quailburn stream into Quailburn Government Race and to take and use water from Quailburn Government Race;

CRC991474 for a land use consent to disturb the bed and banks of Quailburn Stream; and

CRC991475 for a discharge permit to discharge surplus water into Quailburn Stream

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

PART B - SITE SPECIFIC DECISION

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1 INTRODUCTION

- 1.1 This is a decision on applications by **DW McAughtrie, Ellis-Lea Farms (2000) Ltd & Greenfield Rural Opportunities Ltd** (the applicants). It is one of many decisions we have made on 104 applications by various applicants for water permits and associated consents in the Upper Waitaki Catchment.
- 1.2 The decision should be read in combination with our Part A decision, which sets out our findings and approach to various catchment wide issues that are common to multiple applications. References to our Part A decision are made throughout this decision as appropriate.

2 THE PROPOSAL

- 2.1 The applicants are seeking replacement consents for an existing irrigation scheme that provides water for The Glens (Ellis Lea Farms 2000 Ltd), Willowburn Station (DW McAughtrie) and Riverside Station (Greenfield Rural Opportunities Ltd) from the Quailburn Government Race. The location of the three properties and the key components of the scheme are illustrated in Figure 1 below.



Figure 1: Indicative location plan

- 2.2 Water is diverted from the Quailburn Stream by a rock weir in the bed of the stream. The rock weir, at its maximum, is approximately 3m in length, 1.5m wide and 0.5m in height and comprises un-consolidated river gravels and boulders pushed up from the bed.
- 2.3 The water is directed along a short diversion channel to a manually operated underflow gate. This intake structure is used to regulate the amount of water entering the Quailburn Government Race. Any surplus water that comes down the diversion channel and is not able to pass through the intake structure is immediately discharged as by-wash back into the Quail Burn. The discharge is continuous, but the rate fluctuates depending on how much is being taken through the control gate.
- 2.4 From the intake, the Quailburn Government Race flows around the bottom of slopes to the northwest of the intake alongside all three properties but on its own title. There are several small off-shoots from this race for stock water within the properties. The race system was established

by the government and has been in place since 1921. The race is an open race except for around the steeper slopes of the Greenfields property where it is piped.

- 2.5 Once the race reaches The Glens it is directed to a small storage pond approximately 140m wide in diameter from which water is taken for irrigation. No consent to dam water is required for this pond as it is dug below ground level, nor is a discharge required from the dam given the low inflow at this end of the race.
- 2.6 At the current point in time, only The Glens uses water from the Quailburn Government Race for irrigation. In conjunction with water supplied from the Benmore Irrigation Scheme, approximately 400 ha of flat and gently rolling land on The Glens is irrigated using centre pivot and k-line irrigation. Up to 85 ha of this land is irrigated using water supplied from the Quailburn Government Race. Willowburn and Riverside Stations only use the race system for stockwater and do not use any of this water for irrigation purposes.
- 2.7 The applicants propose the following activities as part of the proposal:
 - (a) To disturb the bed and banks of the Quail Burn to facilitate the taking of water and carry out maintenance works on the diversion structure as required. Maintenance works will be required to re-build the rock weir after heavy rain and/or flooding has washed the weir away. These works are expected to take up to 1 hour each time.
 - (b) To divert water from the Quail Burn into the Quailburn Government Race, at or about map reference NZMS 260 H39:638-371, at a rate not exceeding 170 litres per second.
 - (c) To discharge by-wash water up to a rate of 170 litres per second into the Quail Burn, at or about map reference NZMS 260 H39:638-371.
 - (d) To take and use water from the Quailburn Government Race and a storage pond fed from the Quailburn Government Race at a maximum rate of 170 litres per second, with a volume not exceeding 14,688 cubic metres per day and 1,304,050 cubic metres per year (excluding stock water), between map references NZMS 260 H39:638-371 and H39:378-392.
 - (e) Water will be used for spray irrigation of up to 255 hectares of pasture and winter feed crops across all three properties (85 ha of irrigation on each property), within the areas shown in Figure 1 above.
 - (f) Water will be stored in a pond at the end of the Quail Burn Government Race.
- 2.8 The irrigation of Willowburn Station and Riverside would allow crops to be finished off, and pasture to be taken off for supplementary feed. Willowburn Station will be irrigated using centre pivot irrigation, with Riverside using a combination of spray and drip irrigation. For The Glens property, pasture will be irrigated using the existing spray systems to maintain a constant cover over the milking platform.
- 2.9 Based on the above, the applicants are seeking to divert and take an equivalent amount of water to that which was authorised under the existing consents (as discussed further below). However they are proposing to use this water to irrigate new areas on Riverside and Willowburn Stations not currently irrigated from the Quailburn Government Race.

The applications

- 2.10 There are three separate applications that make up the proposal:
 - (a) **CRC991473** – for a water permit to divert water from Quailburn Stream and take water from the Quailburn Government Race, pursuant to section 14 of the RMA;
 - (b) **CRC991474** – for a land use consent to disturb the bed of Quailburn Stream to maintain the diversion structure, pursuant to section 13 of the RMA; and
 - (c) **CRC991475** – for a discharge permit to discharge by-wash water into Quailburn Stream, pursuant to section 15 of the RMA.
- 2.11 All three applications were lodged with the Canterbury Regional Council (the Council) on 23

December 1998. Consent is required under various plans, as discussed further below. The applications were publicly notified and there were a number of submissions that are referred to later in this decision. The application requested a consent duration of 35 years.

Modifications after notification

- 2.12 These applications were previously made in the name of The Glens Ltd (purchased property from JB Mitchell), DW McAughtrie and TJ & J Cooke but, due to the sale of the properties, the applicants have since changed to DW McAughtrie, Ellis-Lea Farms (2000) Ltd and Greenfield Rural Opportunities Ltd.
- 2.13 Since lodgement, the annual volume being sought and area to be irrigated had been amended. The total irrigation area now proposed is 255 hectares compared with the previous 500 hectares. The volume sought was originally 3,219,000 cubic metres per year (as notified), but was reduced to 1,749,000 cubic metres per year. It was reduced further to the current proposal of 1,304,050 cubic metres in response to the recommendations in the s42A report.
- 2.14 In addition, the only discharge that now requires consent is the by-wash discharge near the point of diversion. No excess water from the race is discharged into water so a discharge permit is not required for the race itself or the storage pond as originally applied for.
- 2.15 The general principle for modifications after notification is that amendments are allowed provided they do not increase the scale or intensity of the activity or significantly alter the character or effects of the proposal. The key consideration is prejudice to other parties by allowing the change. In this case, we are satisfied that the above changes do not significantly alter the intensity or effects of the proposal and that no party would be adversely affected by allowing the changes.
- 2.16 In addition to taking water for irrigation, the original application also sought to take for stock water supply. However, subsequent to notification the applicants advised that they were no longer seeking consent for stock water and were instead relying on their rights under section 14(3) of the RMA. This was confirmed in the final set of conditions we received from the applicant, which contains no reference to stock water.
- 2.17 On this basis, we have not considered the issue of stock water in this decision. Any discussion of appropriate take volumes relates to the water required for irrigation purposes only. As discussed in our Part A decision, the applicants retain the ability to take water for stock and domestic use without the need for resource consent, subject to the limits in section 14(3) of the RMA

Related consents and applications

- 2.18 As mentioned above, these applications are seeking to replace consents WTK890012A, B and C and WTK691641A, B and C, which expired on 30 June 1999 and 1 October 2001 respectively. These consents authorised the diversion and taking of water within the system at a rate of 170 L/s and not exceeding 103,000 cubic metres per week. As these applications were lodged 6 months prior to the expiry of the above consents, the applicants are currently operating under s124 of the RMA.
- 2.19 One of the applicants, DW McAughtrie, has also applied for consent to irrigate a separate block of land on Willowburn Station known as "Top Block" taking water from a different source. We have considered those applications in a separate decision (CRC011939, CRC011940).
- 2.20 There are no other existing consented users on the Quail Burn, but there is one applicant for a replacement consent with lower priority (Bellfield Land Co Ltd – CRC011987) and one other applicant seeking new consents with lower priority further up the catchment (Maree Horo – CRC042011 to 18).

3 DESCRIPTION OF THE ENVIRONMENT

- 3.1 Willowburn Station is a 2,200 ha property located adjacent to SH8, between Twizel and Omarama. Riverside Station is a 1,802 ha property located on the western side of Willowburn Station, accessed from Quailburn Road. Both properties currently run deer, beef cattle and sheep.
- 3.2 The Glens was purchased by Ellis Lea Farms Ltd in 2008 and converted the property to a 1,000

cow dairy unit in 2008. As mentioned above, 400 ha of the property is currently irrigated using water from the Quailburn Government Race and the Benmore Irrigation Scheme.

- 3.3 The Quailburn Catchment is located approximately 15km North-west of Omarama and drains the Diadem and Ohau Range. It has a catchment area above the proposed minimum flow site of 82 km² which is located at the Henburn Rd. The altitude of the upper catchment ranges from 500m to 1900m above MSL.
- 3.4 Several tributaries, including the East Diadem and Serpentine Stream, fed into the Quailburn upstream of the gorge, then into the Ahuriri River. Flows at the minimum flow site were usually continuous, however below the site was often dry, with surface flows often not continuous to the Ahuriri River.
- 3.5 Fish & Game provided comment on the values in the Quail Burn and consider it to be an important spawning and juvenile rearing tributary of the Ahuriri River, particularly for rainbow trout which are tributary spawners. Good angling is available early in the season, in the lower reaches before these are dewatered later in the summer.
- 3.6 In terms of the flows in the Quail Burn, downstream of the diversion for Bellfield Land Company Ltd (CRC011987), surface flow ceases typically from December until April, except during flood events.
- 3.7 The Quailburn Government Race and associated storage pond provide a breeding ground for eel and trout and a habitat for bird life such as the pied stilt, black-fronted tern and black-billed gull. The pond is occasionally used for recreational trout fishing and shooting.
- 3.8 The proposed irrigation area is predominantly flat land at the base of the adjacent hills, and is visible to traffic travelling along State Highway 83.
- 3.9 Further description of the environment is provided in the summary of the evidence received from the applicants and submitters below.
- 3.10 We detailed our site visits in Part A and we do not repeat this information here. We did not visit the applicant properties. However, we sighted the property and noted the race and storage pond during our helicopter reconnaissance and were able to view the general command area from State Highway 8 and the Quailburn Road.

4 PLANNING INSTRUMENTS

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

Status of the activity

- 4.3 In our Part A decision we provide a detailed discussion of our approach to determining the status of activities. We now apply that approach to the current applications.
- 4.4 All three applications are listed in Schedule 2 of the Resource Management (Waitaki Catchment) Amendment Act 2004. Section 88A of the RMA therefore does not apply and the relevant plans for determining the status of this activity are the current operative plans, being the WCWARP (for

CRC991473) and the NRRP (for CRC991474 and CRC991475).

CRC991473 - Divert, take and use water (s14)

4.5 The following rules from the WCWARP are applicable to this application:

- (a) Rule 2, clause (1) – the applicants propose a minimum flow of 0.1 cubic metres per second at Hen Burn Road (Table 3, row (xi)(a)) to comply with this rule.
- (b) Rule 6 – The activity is within the allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam.
- (c) Rule 15 - Classifying rule – discretionary activity

4.6 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.

CRC991474 – Disturb the bed (s13)

4.7 The relevant provisions of the NRRP are as follows:

- (a) Rule BLR 2 – permits the use and maintenance of structures that were lawfully erected or placed before 1 November 2010, subject to compliance with a range of conditions
- (b) Rule BLR5 – permits the excavation, drilling, tunnelling, depositing, reclamation, drainage or disturbance in, on, under or over the bed, subject to compliance with a range of conditions

4.8 It is possible that these activities could be carried out to meet the permitted activity criteria, however from the information available it is not clear that they will. In particular, conditions 6(b) of Rule BLR2 and conditions 2 and 4 of Rule BLR5 are unlikely to be complied with. The activity is therefore classified as a **restricted discretionary** activity under Rule BLR5.

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

CRC991475 – Discharge water (s15)

4.10 The relevant provisions of the NRRP are as follows:

- (a) Rule WQL1 – permits the discharge of water into a river, subject to compliance with a range of conditions
- (b) Rule WQL48 – provides for the status of a discharge to water where it fails to comply with any of the conditions in WQL1. Will be classified as either a discretionary or non complying activity, depending on whether it complies with the listed conditions.

4.11 The activity is unlikely to meet Conditions 1 and 3 of Rule WQL1. Therefore the activity falls to be assessed under Rule WQL48. The activity is likely to comply with conditions of Rule WQL48. Therefore, it is classified as a discretionary activity.

4.12 In summary, the proposed discharge is a **discretionary** activity under Rule WQL48 and requires consent pursuant to Section 15 RMA.

Overall status of the proposal

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

5 NOTIFICATION AND SUBMISSIONS

- 5.1 Application CRC991473 was notified twice; once on 6 December 2003 as part of the ministerial call in an again on 4 August 2007, along with applications CRC991474 and CRC991475.
- 5.2 In the 2003 "ministerial call-in", a total of 314 submissions were received on application CRC991473. In the 2007 public notification, a total of 23 submissions were received on CRC991473 with 2 in support, 19 in opposition and 2 neither support nor oppose. A total of 18 submissions were received on CRC991474 and CRC991475 with 2 in support, 14 in opposition and 2 neither support nor oppose.
- 5.3 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.
- 5.4 Overall, the key effects of concern to submitters include effects on: ecosystems, water quality, allocations, minimum flows, natural character and landscape, efficiency and cultural values.

Table 1: summary submissions CRC991473, CRC991474 & CRC991475

Submitter	Issues	Support/Oppose
B D Shepherd ²	Long-standing water right should be continued	Support
T J & J Cooke ²	Long-standing water right should be continued to allow for pastoral development	Support
R E Millar ²	Long-standing water right should be continued to allow for pastoral and economic development	Support
J J Ryan ²	Long-standing water right should be continued to allow for pastoral development	Support
S A Ross ²	Consents should be granted	Support
Canterbury-Aoraki Conservation Board ^{1,2}	Concerns regarding dams affecting ecosystems and harvesting of high flows, effects on instream values, landscape, water quality and consider 35 yr duration too long.	Oppose
F I Home ²	Concerns with cultural values. Water harvesting is supported but a minimum flow should be set	Oppose
Department of Conservation ^{1,2}	High proportion of flows being abstracted, potential effects on stream including habitat values	Oppose
Meridian Energy Ltd ^{1,2}	Effects on water quality and need to meter take	Oppose
Bellfield Land Co ¹	Want to see a fair water sharing regime established	Oppose
Ohau Co Trust ¹ (since withdrawn)	Amount of water being sought exceeds that available and a fair flow sharing regime should be established	Oppose
Mackenzie Branch Federated Farmers ¹	Want to see all consents granted	Support
Fish & Game ^{1,2}	Quail Burn is important spawning tributary and stream is over-allocated	Oppose

1 August 2007

2 Call-in 2003

6 THE SECTION 42A REPORT

- 6.1 A section 42A report on the application submissions was prepared by the Council's Consent Investigating Officer, Ms Clare Penman.
- 6.2 The primary report was supported by a number of specialist s42A reports prepared by Messrs Heller, Hanson, Glasson, McNae and Stewart, and Drs Clothier, Schallenberg, Meredith and Freeman. The key issues addressed by these reports were cumulative water quality effects, landscape effects, and environmental flow and level regimes.
- 6.3 All reports were pre-circulated in advance of the hearing. We have read and considered the content of the reports and refer to them as relevant throughout this decision. Specific points noted from the s42A report are summarised below.
- 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 were as follows:
- (a) Water quality – There was no impact assessment or measures to address the water quality impacts that could arise from irrigation at the site. Given the conclusion regarding the potential cumulative adverse effects on water quality, Ms Penman considered that it was premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (b) Efficient and reasonable use – There was a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (c) Ecosystems – The applicants had proposed a fish screen but had not included any details of what this will entail;
 - (d) Landscape and amenity – The irrigation area is close to sensitive amenity areas and will be visible to the public using SH83;
 - (e) Cultural values – The applicants had not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- 6.5 In terms of landscape and amenity adding to what has been provided above Mr Glasson placed the application sites within his Landscape Unit 6. He described Landscape Unit 6 as being at the southern end of the Upper Waitaki catchment. It is, he told us, a landscape of an outwash plain and river terraces resulting from action from the Ahuriri River. The surface topography is flat to undulating.
- 6.6 He described the landscape as being defined on both sides of the valley by high valleys and enclosed at the southern end by the hills of Lindis Pass.
- 6.7 He noted that the landscape is characterised by large flat areas, some of which have been transformed into irrigated pastures. He noted it is generally a very visible landscape as State Highway 8 bisects the Unit. State Highway 8, he noted, carries a significant amount of traffic, including many tourists. Thus he formed the view it was a highly visible Landscape Unit.
- 6.8 He noted that the surrounding hills of the outwash surface area have been identified as an "Outstanding Landscape Area" (OLA) in the Waitaki District Plan. He was of the view that the landscape was very consistent, unified in form, colour and texture, with a low absorption capacity for change to occur.
- 6.9 In respect of these applications he referred in particular to CRC991473 and identified the application as "McAughtrie, Greenfield and Ellis-Lea Farms".
- 6.10 In Mr Glasson's principle report (Report 5) he noted that the original application had been amended. He noted that the area to be irrigated had been altered so as to reduce some effects.
- 6.11 He expressed the view that due to the close proximity of this site to Quail Burn Road, which made the site clearly visible, and the fact that part of the area was located in an OLA on the

lower hill slopes and also that part of the application site was highly visible from State Highway 8, this gave rise to concern. He was also concerned about the lack of riparian buffer areas adjacent to waterbodies. Taking into account all of these matters it was his preliminary view that the landscape effects were adverse and significant.

- 6.12 He did note that some mitigation had been proposed with retention of a wetland adjacent to State Highway 8 and Quail Burn Road and the removal of part of the irrigation from hill slopes.
- 6.13 It was his opinion however that provided the suggested mitigation measures (removing the proposed irrigated land from the OLA and lower slopes) were undertaken and also providing a 300 m buffer free of irrigated land along Quail Burn Road and creating riparian buffers along the important streams, then in his view the adverse effects would be reduced to a moderate level.
- 6.14 As we understood Mr Glasson's Report 5, he had in fact undertaken an assessment of the activities on Ellis-Lea Farms, D W McAughtrie and Greenfield Rural Opportunities Limited as identified within Figure 1 of this decision.
- 6.15 His main areas of concern appeared to relate to Willowburn Station irrigation area, principally in the southern area of Willowburn Station along Quail Burn Road. As we read and understood his evidence we understood he had lesser concerns with the activities occurring on the Ellis-Lea Farms.

Discharge consent

- 6.16 In respect of the proposed works in the bed (CRC991474) and discharge of water (CRC991475), Ms Penman was satisfied that all actual and potential effects of the activities would be minor.

7 THE APPLICANTS' CASE

- 7.1 Legal counsel for the applicants, Mr Ewan Chapman, presented opening submissions and called evidence from a number of supporting witnesses.

Opening legal submissions

- 7.2 The applicants are 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 stock water and non-consumptive diverts) and 29% of the total irrigable area.
- 7.4 He also told us renewal consents applied for by the UWAG members represent some 88% of all renewal applications. For these renewal applications, Mr Chapman emphasised that they need not rely on modelled scenarios undertaken in the WQS. He contended their effects were known and form part of the existing environment. Thus he said we would need to evaluate these applications in a different scientific context than new irrigation development.
- 7.5 Mr Chapman emphasised that despite the collective approach adopted for these hearings, each application needs to be considered in isolation from others (allowing for priorities). However Mr Chapman noted that UWAG is not producing any other evidence to support its own assessments of cumulative effects and adopts the MWRL evidence to the extent that it defines nodal thresholds.
- 7.6 While raising some challenge to the outcomes of the mitigation measures proposed by MWRL resulting from the WQS study, Mr Chapman told us that the UWAG members were not presenting their case to say that they cannot or will not meet an area-based NDA threshold. To the contrary, he said that we would be shown that they have taken the model and applied it to all properties and will, with mitigation, meet the thresholds.
- 7.7 Mr Chapman then addressed us on the issue of allocation of assimilative capacity. Relevantly, for this application in terms of the Ahuriri, he told us the assimilative capacity is exceeded. He contended the approach taken by MWRL that essentially resulted in some farming units

mitigating for the nutrient loss of other farming units, was inappropriate. He submitted a more appropriate method of allocation is on the basis of productive use of land. The productive use of the land he said represents the level of nutrient discharge of each farming unit and that should be used; and that the method of allocation based on dividing allocation on a per hectare basis should not be utilised.

- 7.8 He submitted that by assessing allocation of assimilative capacity on the basis of productive land use to reflect the NDA for each unit, these methods would be more representative and realistic of the nutrient discharge of each farming unit.
- 7.9 In terms of conditions concerning the nodal approach, he told us the essential issue lies with pinpointing who is exceeding their NDA if exceedances are detected at the nodal point. He told us the UWAG applicants' preference is for on-farm management of total nutrient discharge and annual auditing of individual FEMPs. He then referred us to a draft condition from the Rakaia Selwyn groundwater zone hearing, noting it was a very much site-specific condition.
- 7.10 He submitted that on-farm monitoring should be favoured over monitoring at nodal points. He said this did bring in the practicalities of the purpose of employing the FEMP with the result that if a breach of the FEMP occurs, the consent authority would have control to enforce the conditions of the consent against the individual applicant. It also reflects the reality that each farm will be different depending on the type of activity that is undertaken on that farm with their individual tailored farming management practices.
- 7.11 Mr Chapman also said that UWAG had not tabled a final set of conditions or final farm management plans. 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.
- 7.12 In a supplementary submission (21 October 2009) Mr Chapman addressed us on the subject of renewals, and more particularly "Are there further effects to be assessed on renewal?" He said, clearly that is a matter of fact and degree. He did note that we were under no obligation to automatically consent to a renewal and that we were fully entitled to assess the effects of the take on the surrounding environment, and that we were required to assess the efficiency levels of a renewal application.
- 7.13 Mr Chapman said that with respect to the current applications, whilst it was a renewal it is clear that because further land is to be irrigated within the confines of the take, it will give rise to our ability to assess these effects both on the water body, and in terms of water efficiency criteria.

Ms Johnston

- 7.14 Ms Johnston provided a description of the properties, the existing environment and the current and proposed activities. We have summarised this evidence in the preceding sections of the decision and do not repeat that information here. Ms Johnston went on to provide comments on submissions and the potential adverse effects of the proposal, as summarised below.

Comments on Submissions

- 7.15 In respect of the Meridian Energy Ltd submission, Ms Johnston said that the applicant would install a flow meter, and had provided mitigation to ensure that effects on water quality were minor.
- 7.16 In respect of the Fish and Game and the Department of Conservation submissions, the total allocation now being sought from the Quailburn River was within the allocation limit specified in Table 3 of the WCWARP.

Effects on other water users

- 7.17 Ms Johnston said that this was the renewal of an existing water right. No increase in rate or weekly volume (as currently authorised) was sought, and it was within the allocation set for the Quailburn and Tributaries in Table 3 of the WCWARP of 310 L/s.
- 7.18 There are two other abstractors in the Quailburn Catchment. Bellfield Land Co Ltd, who was also seeking the renewal of an existing water right and Ohau Company Trust Ltd who was a new

abstractor. Ms Johnston said that the applicant and Bellfield Land Co Ltd had reached agreement and would work together in the creation of an agreed flow sharing regime. Ohau Company Trust Ltd submitted against CRC991473, but had since withdrawn any objection to these applications (9/7/2009).

- 7.19 Ms Johnston then explained that Table 3 of the WCWARP specified an allocation limit of 310 L/s for the Quailburn and tributaries. This was the total rate of take of both the applicant and the Bellfield Land Co Ltd take. Both applicants had agreed to establish a flow sharing regime above the minimum flow.
- 7.20 Ohau Company Trust Ltd sought to take water when flows were above 1,000 L/s (B Permit), and therefore, could only take water at times when there was sufficient water for all to be abstracting.
- 7.21 Mitigation was proposed by restricting the rate of take and volume per week. Effects on other users were considered to be minor by Ms Johnston.

Quailburn Minimum Flow

- 7.22 Ms Johnston said that the applicant accepted the minimum flow for the Quailburn and tributaries as specified in Table 3 of the WCWARP of 100 L/s at Henburn Road.
- 7.23 She also said that the applicant proposed to install a fish screen in accordance with recommended guidelines. The minimum flows, along with the allocation regime aim to ensure aquatic values are protected.
- 7.24 Ms Johnston said the Quailburn provided a limited fishery for spawning and rearing habitat of rainbow and brown trout. However in Ms Johnston's opinion, the Quailburn Government Race itself and the end pond was a valued fishery, which was considered a positive effect from the existing activity.
- 7.25 Fish and Game and the Department of Conservation considered that a fish screen should be installed. The applicant had agreed to do this and would ensure that it was designed and installed in accordance with the NIWA client report.
- 7.26 Ms Johnston considered effects on in-stream values to be minor.

Inefficient use

- 7.27 The amended annual volume 1,304,050 m³/year was calculated using Schedule WQN9v2 of the NRRP based on 255 hectares and a land use of mixed cropping, and pasture for fattening deer, sheep and beef cattle, and The Glens was a dairy farm.
- 7.28 The proposed application depth of 20 mm per return period is less than 50% of the water holding capacities of the soils which is consistent with Policy 16(c) of the WCWARP.
- 7.29 Policy 19 of the WCWARP encourages the piping and/or sealing of distribution systems. The race was constructed in 1921 and as such, it was now well sealed, and race losses had been assumed to be zero. Policy 21 of the WCWARP requires all water takes to be metered. The applicant proposes to meter their take.
- 7.30 Ms Johnston again considered the effects of inefficient water use to be minor.

Water Quality

- 7.31 Ms Johnston said that cumulative effects on water quality had been addressed by Mackenzie Water Resources Limited (MWRL). The calculated nutrient mitigation requirement of the receiving environments determined in the MWRL Study had been used to identify an N and P threshold for each property.
- 7.32 Ms Johnston told us that OVERSEER® has been run by a qualified person to model the N and P outputs from the proposed farming system. The results of the model had been incorporated in to the table below. Ms Johnston said that the following table shows that the applicant could meet the property thresholds proposed by the MWRL study.

The Glens (Ellis-Lea)

	Nitrogen Threshold (Kg/Farm)	Phosphorus Threshold (Kg/Farm)
MWRL Water Quality Study Property Thresholds	11,858	82
Overseer® Outputs	11,175	47

Willowburn Station (McAughtrie)

	Nitrogen Threshold (Kg/Farm)	Phosphorus Threshold (Kg/Farm)
MWRL Water Quality Study Property Thresholds	6,584	156
Overseer® Outputs	6,452	77

Riverside Station (Greenfields)

	Nitrogen Threshold (Kg/Farm)	Phosphorus Threshold (Kg/Farm)
MWRL Water Quality Study Property Thresholds	5,930	137
Overseer® Outputs	5,841	97

- 7.33 Ms Johnston said that the applicant was committed to implementing the "Mandatory Good Agricultural Practices" set out within the FEMP. Implementing those practices ensures 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, she said, would ensure that the cumulative effects of the use of water for irrigation on water quality are no more than minor.
- 7.34 Whilst the applicant was within their property thresholds, the MWRL Study identified that the applicant still had to consider specific on farm effects and the impacts these activities could have on the local receiving environment. This required a specifically developed Farm Environmental Management Plan (FEMP) to identify and implement appropriate mitigation measures.
- 7.35 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.
- 7.36 The workshop identified potential on farm risks specific to each farm along with possible mitigation measures. We note that that the final FEMPs complete with a Farm environmental risk Assessment (FERA) were filed with ECan on 22 November 2010. We have audited the final FEMP as part of our evaluation of effects (Section 14).
- 7.37 Because the N and P thresholds from the MWRL Study could be met, and the applicant's commitment to addressing on farm risks with the implementation of the FEMP, Ms Johnston considered the effects of the use of water on water quality for both the local receiving environment and cumulative effects to be minor.

Landscape

- 7.38 Ms Johnston said that landscape effects had been addressed by UWAG's Landscape Architect, Mr Andrew Craig, who considered that this proposal would have a minor effect on landscape values.
- 7.39 She said that this application sought the renewal of existing water rights. The three properties to which the applications related were part of a substantially modified rural environment, whereby cultivation and fencing occurred regularly.
- 7.40 Willowburn and Ellis-Lea had the most "visible" of the irrigation areas, being that adjacent to

SH8, and irrigation had been occurring on the property of Ellis-Lea continually since the race began.

- 7.41 Ms Johnston confirmed that the applicant had a defined area to be irrigated, restricted to the "flat country". Irrigation did not occur on the area of land classified as "outstanding landscape" by Waitaki District Council.

People, communities and recreational values

- 7.42 The applicant had proposed an appropriate minimum flow condition in accordance with the WCWARP for the water body from which they have applied to take and use water. Ms Johnston considered that the minimum flow was designed to adequately protect people, community and amenity values within the waterway.
- 7.43 The WCWARP sets an annual allocation "cap" for agricultural and horticultural activities within defined areas (Table 5). The applicant had proposed an annual allocation limit for their own resource consents for the use of water, as well as implementing Farm Environmental Management Plans, which required existing irrigation systems to be audited and improved where possible, and new systems to be designed and installed by accredited personnel, and implementing initiatives to ensure that water is used wisely.
- 7.44 Therefore, given the applicant's commitment to ensuring efficient use of water on their properties, and that the take is within allocation limits set to protect in-stream values and other users, Ms Johnston considered that effects on people and communities would be minor.

Effects on Tangata Whenua Values

- 7.45 Te Runanga O Ngai Tahu submitted on all applications in the catchment, seeking that all applications be declined. Ms Johnston believed that the primary reasons for this were that the applications were considered to be inconsistent with the policies and objectives of the WCWARP, and also at odds with the cultural objectives of the RMA.
- 7.46 The application was entirely within the allocation limits defined by the WCWARP and complies with the minimum flow requirements. However, 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.

Disturb bed

- 7.47 Ms Johnston said that water was diverted into the Quailburn Government Race. A rock weir in the bed of the stream assisted with ensuring that sufficient water was available to be diverted.
- 7.48 The rock weir, at its maximum, was approximately 3m in length, 1.5m wide and 0.5m in height and comprised un-consolidated river gravels and boulders pushed up from the bed. It had very gentle upstream and downstream batter slopes of 4:1 H:V.
- 7.49 Ms Johnston said that maintenance of the rock weir was required. This included using machinery (such as a digger) to alter the dimensions of the weir up to the maximum length, width and height, or its location and angle to ensure that sufficient water was diverted into the race system.
- 7.50 Ms Johnston explained that the rock weir is intended to fail by erosion and washout in flows of approximately 6 m³/s, and needed to be reinstated. As with all river systems, a high flow event can alter the stream channel; therefore, reinstatement was carried out when flows were sufficiently low again to enable the rock weir to be built at the optimum location and dimensions for the stream at the time.
- 7.51 The rock weir was situated within the Quailburn Stream bed approximately 2,400 metres upstream of Henburn Road. There were no other structures within the bed of Quailburn Stream.

Discharge

- 7.52 Ms Johnston explained that when water was discharged into a waterway, the flow, and potentially the velocity, of the receiving waterbody was increased, thereby decreasing the carrying capacity

and resulting in localised scour at the discharge site. However the Quailburn Stream was a rocky, stable stream, and quite shallow, making it less subject to erosion. She also noted that the discharge had been occurring since the early 1950's without any adverse erosion resulting to Quailburn Stream, and it was intended that the discharge would continue to operate in the same way as it had historically. Ms Johnston considered the flood carrying capacity and erosion effects from the discharge of water were minor.

- 7.53 Ms Johnston said that the water that was discharged into Quailburn Stream was excess water that had been diverted. It was un-used (i.e. it had not been used for irrigation prior to the discharge occurring) and therefore, it was of the same quality as that being diverted, the quality of water in Quailburn Stream be unaffected. The effects on water quality and ecosystems are minor in Ms Johnston opinion.
- 7.54 Because of the quality of the water being discharged into Quailburn Stream was unaltered from that being diverted Ms Johnston considered there would be no effect on other users or amenity values.

Mr Andrew Craig

- 7.55 Mr Craig produced a landscape assessment on behalf of the UWAG applicants. His evidence was broken into two parts, Part A and Part B.
- 7.56 Part A focused on general landscape matters concerning the effects of irrigation as they would apply universally to all of the UWAG properties. He considered within Part A general landscape character and amenity of the wider application settings. We have already commented on his Part A evidence within Part A of our decision and do not repeat that comment here.
- 7.57 The second part of his evidence in his Part B concerned the individual applications. He concentrated on those applications where the proposed application activity was located on a visually sensitive site. He noted visual sensitivity is determined by the location of publicly accessible vantage points and the views that can be had from them in relation to the applied for irrigation areas.
- 7.58 A key point we took from his evidence was that context is all important; in particular, the context of application sites in terms of their setting and natural or seasonally variability of effects on landscape were also very important issues. We also did observe that there was a high level of agreement between Mr Craig and Mr Glasson about identification and use of mitigation measures. However, Mr Craig again made the point that the context of the application in terms of landscape and amenity were important considerations in determining the appropriateness or otherwise of mitigation measures proposed.
- 7.59 In terms of these applications, Mr Craig in his Part B concentrated on Willowburn Station (CRC011940, which is the subject matter of a separate decision). His Part B evidence did not comment upon the Glens, Willowburn Station, and Riverside Station.

Mr Robert Batty, planner

- 7.60 Mr Batty addressed us in relation to planning issues. 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.
- 7.61 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.
- 7.62 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

- 7.63 Mr Macfarlane is a farm management consultant with 29 years experience. He provided us evidence on behalf of all of the UWAG applicants.
- 7.64 He assessed the viability of the farm management plans and practicality and robustness of the mitigation measures and the ability to monitor progress.
- 7.65 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.
- 7.66 Mr Macfarlane also discussed with us the costing of various typical irrigation developments.
- 7.67 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.
- 7.68 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 note that we addressed evidence with respect to periphyton issues in Part A and do not repeat that here although we do return to it in our evaluation of effects. We emphasise that we have read and considered all submissions made, both in support and in opposition to the application, as well as reviewing and carefully considering evidence advanced before us.

Fish & Game

- 8.2 Mr Graeme Hughes (on behalf of Fish & Game) described the Quail Burn as a small but lengthy tributary of the Ahuriri River, the lower reaches, approximately one or two kilometres, cease to flow during dry summer periods. In the upper reaches there was limited anecdotal evidence that suggested that at times there are fish to catch, most often in the early season when spawning adults remain for a period before returning to the Ahuriri River. Indications were that the Quail Burn was not well known and was seldom fished. He noted that all the tributary streams (of the Ahuriri River) play an important part in maintaining a productive sports fishery, as spawning grounds, nursery waters, invertebrate production and water augmentation.
- 8.3 Mr Frank Scarf (also on behalf of Fish & Game) said that Rule 2 Table 3 (xi) of the WCWARP limits allocation to 310 L/s and required a minimum flow of not less than 100 L/s to be retained instream at the Hen Burn Road (H39:655355). A flow sharing regime was to be introduced when flows at Hen Burn Road exceed 1000 L/s.
- 8.4 McAughtrie et al and Bellfield Land Company seek replacement consents for their existing authorisations, CRC991473 and CRC011987, respectively. The former had applied to divert up to 170 L/s into what was referred to as the Quail Burn Government Race while the latter sought to take to divert and take 140 L/s immediately downstream from the Government Race intake for spray irrigation of 208 ha. Between them, these two applicants have exhausted the allocation of 310 L/s available from the Quail Burn.
- 8.5 Mr Scarf said that any approval for new applications (CRC042011, CRC042015, CRC042017 and CRC 042018 each taking 30 L/s) would necessarily default to 'B' permits with a 1000 L/s minimum flow and a sharing regime. He recommended a 1:1 sharing regime in that instance. Between them, these consents total 120 L/s, notwithstanding the applicant's claim that they

propose to take only 90 L/s at any one time.

8.6 The water management regime (in L/s) would be:

Observed flow	Retained instream	"B" take
1000	1000	0
1120	1060	60 (two pumps)
1240	1120	120 (four pumps)

8.7 Mr Scarf said that Gabities and Horrell estimated that MALF for the Quail Burn immediately upstream from the Government Race intake is about 330 L/s. This in turn, suggests that the 1:5 yr LF is about 220 L/s. From this, he concluded that the 100 L/s minimum flow identified in the Plan is inadequate and is something that may need to be addressed in the event of a Plan review.

8.8 Although there were submissions on the proposal as a whole no submitters gave evidence at the hearing specifically on the discharge or disturb the bed applications.

Tangata whenua

8.9 Mr Horgan told us that Ngai 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.

8.10 Mr Horgan told us that Ngai Tahu had adopted two focal points against which they assessed the applications; the Ahuriri Delta was one of the focal points 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 Ngai Tahu proposes to undertake mahinga kai habitat restoration.

8.11 Mr Horgan told us that provided the smaller applicants carry out appropriate riparian planting and fencing and undertake not to significantly increase the intensity of their farming operations, then Ngāi Tahu were not opposed to the granting of consent.

Ms Mandy Waaka-Homes (Ngai Tahu)

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

8.13 Ms Waaka-Homes told us that the Ahuriri Delta was a focal point due to the traditional links the iwi enjoyed with the Ahuriri River, ecologically the site is ideal for restoration of tuna (eels) and it is in close proximity to tributaries including the Quail Burn where elver are released.

Meridian Energy Limited – Mr Richard Turner

8.14 Mr Richard Turner is employed by Meridian Energy Limited (Meridian or MEL) as its planning manager – natural resources. Mr Turner provided a number of briefs of evidence.

8.15 Relevantly for these applications, his brief of evidence dated 30 November 2009 identified these applications as still being applications of concern from a water quality perspective.

8.16 His brief of evidence also provided information on the issue of derogation approval. This brief also provided information about those applicants that had not adopted conditions of consent that were agreed between Meridian in accord with the derogation approval requirements. This applicant was not noted among the list of applicants that had not so complied.

8.17 Mr Turner also discussed in his brief of evidence consent duration for replacement applications. We note that the applicant and the consent investigating officers are in agreement as to the fact that these consents are all replacement consents. We also note that Dr Freeman in his memorandum of 28 April 2010 at paragraphs 9-13 gave us further information on the status of

replacement consents, particularly where land may not have been irrigated.

- 8.18 Mr Turner was of the view that replacement applications should not be granted for a term longer than the expiry date of the resource consents for the Waitaki Power Scheme.
- 8.19 Mr Chapman on the other hand was of the view that there was no need to link the duration for replacement applications to that of the consents for the Waitaki Power Scheme. We return to this matter subsequently.
- 8.20 Mr Turner also commented on the issue of compliance with subcatchment nutrient thresholds. In particular, he voiced concern about the proposition put forward by Mr Chapman and Mr Batty for UWAG that monitoring at the subcatchment nodes should occur but that those nodes should not be used to assess compliance. Mr Chapman and Mr Batty put forward the suggestion that if the threshold limits at the subcatchment nodes are exceeded but individual consent holders are complying with their on-farm nutrient discharge allowances, then no remedial action should be required of the consent holders.
- 8.21 Meridian did not support this approach because Meridian was concerned with potential cumulative water quality effects in certain areas of the catchment. Mr Turner was concerned that if the approach outlined by Mr Chapman and Mr Batty was adopted and the threshold limits were exceeded at the subcatchment nodes, then cumulative effects could occur but no applicant would be held accountable to remedy the situation. Mr Turner was of the view that this was not appropriate.

Department of Conservation

- 8.22 In the legal submissions advanced on behalf of the Department of Conservation (DoC) we were told that the Director-General is particularly concerned about:
- (a) The possible effects on threatened indigenous fish populations in the lower Ahuriri, lower Tekapo and Pukaki Rivers (bignose galaxids, in particular); and
 - (b) The cumulative effects of these proposals on habitat for threatened fish and birds in the Upper Waitaki.
- 8.23 DoC put forward a range of briefs of evidence from very experienced ecological consultants and employees. We signalled in Part A we would refer to that where relevant in terms of individual applications within the context of Part B decisions.
- 8.24 An overriding theme coming through the DoC expert evidence was a criticism of the applicant group, including UWAG applicants, that very few of the streams and rivers subject to applications to take water were the subject of assessments of aquatic fauna and there was little in the way of information on the ecological effects of the proposed application.
- 8.25 DoC was concerned that key ecological information was lacking assessments of effects for all indigenous fish and birds.
- 8.26 DoC were critically concerned that an increase in nutrient levels and periphyton in streams and rivers has the potential to alter the invertebrate fauna of these streams, from communities with organic and nutrient pollution-sensitive species (such as mayflies) to communities with organic and nutrient pollution-tolerant species (such as snails and chironomids).
- 8.27 These experts noted that fish and bird diets that are closely linked to mayflies and caddisflies have the potential to be affected by changes to the invertebrate community, and this has not been assessed by many applicants.
- 8.28 The approach refers to the maps and plans given by DoC, which identified the locations of indigenous fish populations in relation to applications sites. For this application Mr Peter Ravenscroft identified a population of the bignose galaxies in streams adjacent to the application site. Dr Richard Allibone identified populations of bignose galaxiids in streams adjacent to the application site. In relation to the bignose galaxiids, we were told by Dr Allibone that this was a threatened fish species.

Mackenzie Guardians – Ms Di Lucas

- 8.29 Ms Lucas on behalf of Mackenzie Guardians provided to us a broad-ranging brief of evidence, much of which we have already commented upon in Part A.
- 8.30 In terms of this particular application she identified as being within her Ahuriri Systems site. Within her written evidence she identified the site as Site No. 31. She told us the site includes some up-slope land as well as existing wetland areas. She noted the landform complexity and the prominence of the site to the highway corridor and also from Quail Burn Road. We took this mean that she had a concern about the high visibility of the site from both State Highway 8 and Quail Burn Road. She was of the opinion that a reduction and redesign of the proposal would be appropriate to avoid, remedy and mitigate the effects, and avoid effects of over-expansion and over-intensification on the landscape corridor. She did seem to be primarily concerned about the wetland and the contrast with the dryland valley floor and impacts on the natural geo-morphological features.
- 8.31 In her summary table in relation to the Ahuriri System and in respect of these applications, she noted her recommendation was to remove irrigation activities from the hill slopes and to provide a landscape plan.
- 8.32 In reference to her photo book, Ms Lucas at Photo 32(a) through to Photo 35 inclusive provided us with photographs of the subject sites.
- 8.33 From the photographs we did note the wetland areas on the Glens in particular. We also noted the existence of extensive pastoral activities and the presence of stock on the subject sites.

Mackenzie Guardians – Dr Susan Walker, ecologist

- 8.34 Dr Walker (representing Mackenzie Guardians) noted that this site had had its terrestrial biodiversity values mapped as a consequence of the tenure review. She noted the subject site was adjacent to the Ahuriri RAP and WERI. She did not provide us with direct information in terms of the actual command area itself. She did however consider that the potential effects on terrestrial biodiversity in relation to this application were high.
- 8.35 We note that Dr Walker gave comprehensive evidence on the cumulative effects of irrigation on vegetation in the Mackenzie Basin. This evidence is discussed in Part A. Her evidence as Basin-wide and she concluded that more in-depth investigation was required. Also, she included as Attachment 15 (which we refer to above) her views in relation to a number of particular sites.
- 8.36 The details in Dr Walker's table were a little short on detail. She had assessed Ellis-Lea Farms. She did not have a CRC number. Nevertheless she noted that in terms of potential effects on terrestrial biodiversity she assessed the effect of irrigation as having the least effect on potential biodiversity. She noted that the estimate of the percentage of the farm converted sat at some 98%. She noted in terms of comments on existing biodiversity information that the site was mainly developed.
- 8.37 Dr Walker had a similar finding for Greenfield Rural Opportunities Limited. She did not appear to have undertaken an assessment of the McAughtrie block - although given the changes made to the size of the irrigation area on this block we do not think that that is an overly important issue.

9 UPDATES TO THE SECTION 42A REPORTS

- 9.1 The addendum s42A report of Ms Penman identified the following additional matters identified throughout the hearing.
- (a) Ms Penman referred to paragraph 46 of Ms Johnston's evidence which notes that after consultation with Fish & Game, a fish screen will be installed in accordance with the NIWA guidelines. Ms Penman was satisfied with this proposal and retention of the proposed condition.
 - (b) Ms Penman noted that a draft FEMP and assessment of cumulative water quality effects for the applicant was included with Ms Johnston's evidence.
 - (c) Ms Penman told us that the OVERSEER input parameters used for rainfall were 500 mm

while the map in the FEMP indicates it falls within the 550 mm to 650 mm band isohyets.

9.2 Ms Penman goes on to comment on the outstanding matters and concludes:

- (a) That she is now satisfied that the amended volume is suitable for the irrigation of the property.
- (b) That she is now satisfied with the applicant's proposal to upgrade the intake to include a fish screen and concurs that effects on ecosystem are no longer a concern.
- (c) That both local and cumulative water quality effects remain outstanding issues for this application
- (d) That the effects on landscape and amenity still remain an outstanding issue as the appropriate buffer distances from Quail Burn Road (as per recommendation of Mr Chris Glasson) have not been adopted.
- (e) That the comments in relation to Cultural (Tangata Whenua) values remain as per the original s42A report.

9.3 We note that in Mr Glasson's addendum report he still had concerns in relation to this proposal. His concerns however appear to have been limited to the McAughtrie or Willowburn Station part of the proposal. He does record that he considers the site to be close to State Highway 8. He does record the site layout as being amended so that the hill country and the OLA (as provided for under the Waitaki District Plan) are no longer included in the development. He also records irrigation will now take place only on flat land. However, he remains of the opinion that a 300 m buffer along Quail Burn Road is required so as to protect the landscape and visual values.

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. In terms of these applications, Mr Chapman in redefining the UWAG group placed this proposal into the following categories:

- (a) Ellis-Lea Farms (2000) Ltd – government race– a consent that was previously exercised;
- (b) McAughtrie (Willow Burn) – government race– an original consent that was never fully exercised.; and
- (c) Greenfields Rural Opportunities Ltd – government race – an original consent that was never fully exercised.

10.2 Mr Chapman told us that the purpose of these recategorisations was to direct our focus on the actual and potential effects on the environment and to recognise that in many of the circumstances there would either be no change or there would be enhancement to the environment as a result of conversion processes for more efficient irrigation being undertaken.

10.3 He also made the point that the resource consenting process would result in beneficial change because unlike the previous circumstance the properties here would now enter a management regime controlled by FEMP reviews and consent conditions. He contended this was a significant change that we should place favourable weight on as he considered that these changes had been underrated by the reporting officers.

10.4 We also note in his response that Mr Chapman accepted that Ms Penman's condition regarding a 5 mm mesh size on the fish screen is acceptable.

10.5 Turning to more general comments, Mr Chapman challenged Dr Freeman's Table 5, contained within his first addendum report dated 12 January 2010. Mr Chapman contended the list was flawed because applications are placed in the red category solely by virtue of their location within the Ahuriri Catchment. Mr Chapman considered the correct approach for the ranking of the applications was to determine where they sit in relation to the existing environment.

10.6 He noted there had been much emphasis on nutrient management but he contended we should also be considering sustainability of the erosion-prone fragile soils within the catchment. He also

submitted we should take note that district plans encourage farming, including irrigation, within these environments; and the tenure review undertaken by the Crown encourages intensification of land use retained in freeholding ownership in order to release more vulnerable pastures to be set aside under Crown ownership.

- 10.7 He also contended we should consider economic implications on the survival of these farms given their investment in infrastructure as a factor. He also noted we should take into account managing the land in light of weed and pest problems and how irrigation assists in that regard.
- 10.8 Mr Chapman addressed us on the MWRL proposition in terms of the Ahuriri River, namely a needs plus a buffer approach. Mr Chapman made it clear that the UWAG applicants in the Ahuriri, which includes this application, at the time of reply had only just received information relating to each individual farm's NDA, but noted the approach was of critical concern.
- 10.9 In terms of staging of implementation, Mr Chapman told us that undoubtedly those UWAG applicants, this applicant among them, may choose to stage the introduction of a new system of irrigation.
- 10.10 We did subsequently receive from Mr Chapman generic conditions and revised FEMPs applicable to all the UWAG applicants.

11 STATUTORY CONTEXT

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

12 SECTION 104 EVALUATION

- 12.1 Drawing on our review of the application documents, the submissions, the Officers' Reports, the evidence presented at the hearing and our site inspection, we have concluded that the effects we should have regard to are:
- (a) Flows, Ecosystems and Other Users
 - (b) Landscape
 - (c) Inefficient take and use
 - (d) Water quality
 - (e) Tangata whenua values
 - (f) Disturb bed
 - (g) Discharge

Flows and Ecosystems

- 12.2 The applicants now propose to upgrade the intake and after consultation with Fish & Game, a fish screen will be installed in accordance with the NIWA guidelines. The effects on the ecosystem are no longer a concern to the section 42A reporting officer and we concur with that assessment.
- 12.3 We note Mr Scarf's concern that the proposed minimum flow is as set out in Table 3 of the

WCWARP may not be adequate and could be changed during a plan change. Nevertheless 100 L/s is the current minimum flow and the applicant proposes to abide by it, which together with the fish screen provisions should provide adequate protection for ecosystems from the take.

- 12.4 As the applicant had the highest priority to water from the Quailburn Stream we do not need to assess the effects on other applicants. Nevertheless we note that if granted the applicant's take will be metered and that no other applicant will be disadvantaged.

Landscape

- 12.5 The irrigation area was visible from the State Highway and Mr Chris Glasson 42A Landscape reporter concluded that the effect of irrigation would be acceptable if a significant buffer along State Highway 8 and Quailburn Road to protect wetland area was adopted. The landscape and amenity assessment of this particular proposal was challenging. That, in part, is because this proposal (or these applications) is made up of three different "farms". These are the Glens (Ellis-Lea Farms (2000) Ltd), Willowburn Station (D W McAughtrie); and Riverside Station (Greenfield Rural Opportunities Limited).
- 12.6 As noted earlier, while D W McAughtrie and Greenfield Rural Opportunities Ltd have previously held consents, those resource consents have not been exercised. In contrast, Ellis-Lea Farms (or the Glens) have consistently exercised their consent.
- 12.7 In relation to all of the irrigation areas, the single source of irrigation water is the government race. The government race has been supplying water to these farms (for stockwater purposes at least) for a considerable period of time.

The Glens (or Ellis-Lea Farms (2000) Limited)

- 12.8 The other complicating factor is that the Glens (or Ellis-Lea Farms) is made up of another area of land to the north, which is the subject of separate resource consent under CRC011940.
- 12.9 In undertaking our assessment then in relation to landscape issues we are alive to the fact that a dairying activity has occurred on the Ellis-Lea Farms for some significant period of time. We are alive to the point that this portion of the proposal is visible from and runs alongside State Highway 8. In addition, we are aware that there are other irrigation activities in close proximity to Ellis-Lea Farms, which also border or run closely alongside State Highway 8.
- 12.10 Mr Craig for the UWAG applicant group made it clear that this was the circumstance and simply put forward the proposition that this irrigation activity was part of the existing environment. Thus a grant of consent in relation to at least Ellis-Lea Farms would not give rise to any additional landscape effects.

Willowburn Station (D W McAughtrie)

- 12.11 Moving to Willowburn Station (D W McAughtrie) Mr Glasson had concerns, as we understood them, in terms of visibility from State Highway 8, visibility from Quail Burn Road, and affect on waterbodies on the subject site.
- 12.12 As the proposal migrated through the hearing process the actual area upon which irrigation could occur has been markedly reduced. If a comparison is made between the area now sought for irrigation in the latest FEMP compared with Figure 1, it will be clear that there is a significant reduction in area sought to be irrigated under this consent application. Importantly, the irrigation site is now well removed from State Highway 8 and it is well removed from any wetland areas. The area still does abut Quail Burn Road however in our view, given the point that Quail Burn Road is a secondary or lesser road, which suggests a lesser carriage of traffic, and given the significant reduction in the amount of frontage of the irrigation area now available to be viewed, we are of the view that even though visible from Quail Burn Road irrigation activities on such a limited site (in terms of size) do not cause issues of concern.
- 12.13 We note the irrigation that will occur on Willowburn Station is to allow crops to be finished and to allow pasture to be taken off supplementary feed. We acknowledge that Willowburn Station will be irrigated using centre pivot irrigation. However, the irrigation site on Willowburn Station will be surrounded by significant areas of open pasture, which we think will allow absorption of any adverse visual impact caused by the presence of a pivot irrigator. We also observe and accept evidence presented in terms of the opinion that a pivot irrigator, given its form and structure, while it impedes views does not prevent them.

Riverside Station (Greenfield Rural Opportunities Limited)

- 12.14 Turning to Riverside Station (Greenfield Rural Opportunities Limited), we are told that Riverside will also be used to allow crops to be finished off and to provide pasture for supplementary feed. The form of irrigation on Riverside will be a combination of spray and drip irrigation.
- 12.15 The key issue for us in terms of Riverside is whether or not any of the proposed areas are on hill slopes, thus increasing visibility from State Highway 8 and Quail Burn Road; and secondly, whether any of the proposed irrigation areas fall within the OLA under the Waitaki District Plan.
- 12.16 The evidence presented to us was clear that irrigation would not occur on hill slopes. We were also told by the applicants' "water consultant" that the irrigation area did not lie within the OLA as identified within the relevant district plan.
- 12.17 We have examined this last issue closely. As best we are able to, taking into account Figure 1 and the various Figures referred to in the relevant FEMPs for Riverside Station, we form the view that the area immediately to the east of the foothills does fall within an OLA.
- 12.18 Irrigation activities in such an area are non-complying activities. We acknowledge we are not being asked to consider a land-use consent for irrigation activities under the district plan and any consent that we are authorised to issue relates to the take and use of water. However, we have nevertheless examined the relevant provisions of the Waitaki District Plan and we conclude that taking them into account – as we are entitled to in determining whether or to grant this consent – we are of the view (which we will return to later) that a grant of consent would not be consistent with the policies and objectives in relation to OLAs as they appear within the Waitaki District Plan. So we do conclude that a grant of consent in that respect would give rise to effects in terms of landscape and amenity that are more than minor.

Conclusion

- 12.19 In reaching a conclusion on landscape and amenity effects we have looked at the context and location of the applications in relation to the landscape attributes of the immediate environs. In that regard we have found that the landscape character, at least on the flat land areas, is significantly modified as a result of farm and pastoral activities. The immediate environs are already impacted upon by the presence of irrigation infrastructure.
- 12.20 We have already observed that in terms of visibility the activities proposed for Riverside and Willowburn Stations are, in the main, well separated from State Highway 8. Also, we also accept that the irrigation activities have been occurring on Ellis-Lea Farm for a significant period time. Other than our finding on Riverside Station, we form the view in terms of effects that a grant of consent for Ellis-Lea Farm, Willowburn Station and those parts of Riverside Station that are not within the OLA would not, in terms of effects, depart markedly from the baseline environment. We also conclude with regard to views from State Highway 8 as a result of a grant of consent – with the exceptions referred to – will not detrimentally affect the quality of those views.

Inefficient take and use

- 12.21 The annual volume presented during the hearing is consistent with the volume derived by Ms Penman using the methodology prescribed by the WCWARP and we agree that this volume constitutes an efficient take and use.

Water quality

- 12.22 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 application.
- 12.23 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 the Quailburn Stream and Ahuriri River

12.24 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.

12.25 A starting position 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 Mrs Johnston, but for consistency with other decisions we have undertaken an independent audit. Key points arising from our audit in relation to this application and additional to Mrs Johnston's is summarised below:

Riverside Station (Greenfield Rural Opportunities Ltd)

12.26 The soils on the property are described as follows:

- (a) 200 ha Pukaki soils, medium quality silt loam over stony gravels;
- (b) 55 ha Tekapo soils, medium quality fine sandy loam;
- (c) 507 ha Ohau soils, fair quality silt loam over stony loam;
- (d) 1040 ha Tekapo hills soils, medium quality stony loam on greywacke.

12.27 No information was provided on which soils are beneath the proposed irrigation area. Whilst the description infers that the soils are reasonably developed (and therefore that the developed setting in OVERSEER is appropriate for estimating nitrogen losses) we cannot be sure that this is the case.

12.28 The property currently runs deer, beef cattle and sheep and there are no plans to change the stocking regime.

12.29 The FEMP recognises the Ahuriri Arm of Lake Benmore as requiring the most severe nutrient mitigations for Riverside Station, i.e., an additional 10.7 kg N/ha/y are required to be prevented from leaching (or otherwise lost from the system) and 1.1 kg P/ha/y compared with that achieved using good agricultural practice. The modelled OVERSEER outputs for Riverside Station were 5902 kg N/y and 95 kg P/y.

12.30 The information on the property NDA is confusing. In the text of the FEMP it states: "The WQS thresholds set for Riverside, using the most stringent nutrient mitigation requirement, are 5,930 kg N/year and 137 kg P/year", whereas in Table 4 below the text the thresholds are given as 6436 kg N/y and 104 kg P/y. These are not big differences, but their inconsistency does undermine the credibility of the figures cited. We understand (from comparison with other FEMPs) that the difference is probably due to the figures in the table including a buffer (the needs plus buffer scenario) but this is not stated.

12.31 The mitigations proposed in addition to those assumed in OVERSEER are listed as:

- (a) No winter application of fertiliser on the irrigation area;
- (b) N fertiliser applications split to under 50 kg N/application;
- (c) No P fertiliser within three weeks of irrigation;
- (d) Olsen P of below 30 maintained.

12.32 Mitigation measures proposed to ameliorate site specific environmental risks are:

- (a) Fence off the diversion from the Quailburn, Keep drinking bays for stock;
- (b) Place culverts along the tracks that cross the Quailburn diversion (government race);
- (c) Maintain a 20 metre layback from any waterway when applying land-based fertiliser
- (d) Maintain a 20 metre buffer zone from permanent waterways within the irrigation area
- (e) Upgrade the take point out of the Quailburn River in conjunction with Ellis Lea Farms and Willowburn Station.

12.33 The above mitigation measures, while worthwhile, would not be sufficient in our view to reduce nutrient losses to the level demanded by the Ahuriri Arm threshold, i.e. by 10.7 kg N/ha/y and 1.1 kg P/ha/y more than achieved using good agricultural practice. The applicant appears to be relying on their modelled nutrient losses being below the property threshold (NDA) allocated by MWRL.

The Glens (Ellis-Lea Farms)

12.34 The Glens is a fully developed dairy farm of 414 hectares, milking 1,000 cows. The property is situated between Omarama and Twizel, adjacent to SH83.

12.35 The land area is fully irrigated with water sourced from Benmore Irrigation Scheme and the Quailburn Government Race.

12.36 There are no changes to the farm system proposed.

12.37 The FEMP recognises the Ahuriri Arm of Lake Benmore as requiring the most severe nutrient mitigations for The Glens, i.e., an additional 10.7 kg N/ha/y are required to be prevented from leaching (or otherwise lost from the system) and 1.1 kg P/ha/y compared with that achieved using good agricultural practice. The modelled OVERSEER outputs for the Glens were 12656 kg N/y and 78 kg P/y.

12.38 The WQS thresholds set for the Glens, using the most stringent nutrient mitigation requirement, are 11858 kg N/year and 82 kg P/year.

12.39 The soils on the Glens are described as light to medium silt, with water holding capacity of 40 mm to 75 mm.

12.40 Photographs of the soil profile indicate there is little organic matter accumulation to date and that the soils are relatively uniform and structure-less. As the farm is fully irrigated we can assume that the soils shown are representative of the irrigated area. They appear to fit the definition of "shallow" soils as described by Drs Snow and Monaghan. We have assumed that nitrogen losses using the developed setting will be underestimated on such soils.

12.41 The mitigations proposed in addition to those assumed in OVERSEER are the same as those for Riverside Station above.

12.42 Mitigation measures proposed to ameliorate site specific environmental risks are:

- (a) Increase the riparian planting as indicated in the in the map provided in the FEMP, as well as within the existing fenced area
- (b) Provide a 20 metre layback from any water way when applying fertiliser by land based application e.g. bulk spreader
- (c) Re-drilling of areas that may have been heavily stocked over the winter months (or any other areas where pugging is a problem)

12.43 The above mitigation measures, while worthwhile, would not be sufficient in our view to reduce nutrient losses to the level demanded by the Ahuriri Arm threshold, i.e. by 10.7 kg N/ha/y and 1.1 kg P/ha/y more than achieved using good agricultural practice. The applicant appears to be relying on their modelled nutrient losses being below the property threshold (NDA) allocated by MWRL.

Willowburn Station

- 12.44 We note that the final FEMP for Willowburn was tabled 1 April 2010 whereas the final FEMPs for Riverside and The Glens were not presented until 22 November 2010.
- 12.45 Willowburn Station is a 2,200 ha property located adjacent to SH79, between Twizel and Omarama. The farm produces fat lambs, beef cattle, store weaner deer/velvet and grazes dairy dry stock. The farm is effectively split into two blocks both bisected by the Wairepo water race and Willowburn Stream.
- 12.46 82 hectares is used to grow crops and/or small seeds. 168 hectares is irrigated using a centre pivot with water supplied from the Benmore Irrigation Scheme and this is situated on the top block adjacent to SH8, 35 hectares is currently irrigated out of the Wairepo system using k-line irrigation to grow pasture. No changes to the farm system are proposed.
- 12.47 The FEMP recognises the Ahuriri Arm of Lake Benmore as requiring the most severe nutrient mitigations for Willowburn Station, i.e., an additional 10.7 kg N/ha/y are required to be prevented from leaching (or otherwise lost from the system) and 1.1 kg P/ha/y compared with that achieved using good agricultural practice. The modelled OVERSEER outputs were 5663 kg N/y and 77 kg P/y.
- 12.48 The WQS thresholds set for Willowburn Station, using the most stringent nutrient mitigation requirement, are 6584 kg N/year and 156 kg P/year.
- 12.49 The soils on Willowburn are described as light to medium silt; with water holding capacity of 40 mm to 75 mm. Photographs of soils were very similar to those for The Glens.
- 12.50 The mitigation measures proposed in addition to those assumed in OVERSEER included those listed for Riverside above but in addition included:
- (a) The use of nitrification inhibitors, and,
 - (b) The upkeep of Willowburn Swamp (40 ha)
- 12.51 Mitigation measures proposed to ameliorate site specific environmental risks are:
- (a) Fence off the wettest area of the Willowburn swamp to stop stock access;
 - (b) Restrict stock access to the Willowburn during the winter months of June, July and August
 - (c) Place culverts at selected areas along the Willowburn Stream for stock movement
 - (d) Fence off the areas that have already been pugged up and eroded badly along the Willowburn
 - (e) Twenty metre layback from any water way when applying fertiliser by land based application e.g. bulk spreader
 - (f) Create a sufficient track in the areas around the Willowburn Stream to allow for the shifting of stock without them accessing the stream readily.
 - (g) Either plant a riparian margin, a filtration zone, or look at putting in a stilling basin in location described in below map
 - (h) Fence off the streams that run through the deer block, but keep drinking bays
 - (i) Maintain a 20 metre buffer zone from waterways while irrigating
- 12.52 We note that the mitigation measures proposed appear quite specific and well thought out. We note in particular the proposal to use nitrification inhibitors. We refer to Dr Ryan's evidence (see Part A) who told us that nitrification inhibitors were one of two (the other being reducing stock numbers) options available to sheep and beef farmers requiring significant reduction in nitrogen leaching losses.

12.53 The critical issues for us in considering the cumulative effect of all the components of this application are:

- Are the predicted nutrient load realistic?
- 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?
- Can the effects be avoided, remedied or mitigated?

Predicted load realistic

12.54 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 view 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 this application we have reasonable surety about the soils draining irrigation areas of the Glens, rather less so for Willowburn (because not all the property is irrigated) and even less for Riverside (because of the variable topography and small proportion proposed for irrigation). We have, therefore, erred on the side of caution and assumed all the soils beneath irrigation areas are shallow.

12.55 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 increase on nutrient load brought about by the irrigation.

Effects on waterbodies

Ahuriri Arm of Lake Benmore

12.56 In part A we determined that the Ahuriri Arm of Lake Benmore was already close to the oligotrophic-mesotrophic boundary. MWRL agreed with this assessment, but submitted that through improvements to replacement consents and significant nutrient mitigation of new consents all consents could be granted without causing the oligotrophic-mesotrophic boundary to be breached. We disagreed with the MWRL submission for the reasons given in Part A. Therefore we need to assess each application on its own merits, but taking into account other applications before us together with priority issues.

12.57 Dr Freeman's addendum (on behalf of the Regional Council) recommended that all the stations making up this (CRC991473) application be declined because:

- (a) Riverside – It is an application for replacement consent for irrigation but it is not currently developed. It is in the Ahuriri catchment and will cause adverse effects on the Willow Burn,
- (b) The Glens - Replacement in Ahuriri catchment but will cause adverse effects on the Willow Burn
- (c) Willowburn - It is an application for replacement consent for irrigation but it is not currently developed. It is in the Ahuriri catchment and will cause adverse effects on the Willow Burn (note Dr Freeman stated it was a true replacement but this referred to CRC011940)

12.58 Dr Freeman also gave a useful summary of estimated total property nitrogen loads to the Ahuriri Arm associated with irrigation development proposals, together with their priority as determined by Professor Skelton on the basis of the date the application was deemed to be notifiable. Dr Freeman's (Table 7) figures (based on modelling using the developed setting only) gave the total predicted nitrogen load lost from each property as:

- (a) Riverside – 5841 kg N/y

- (b) The Glens – 11,170 kg N/y
 - (c) Willowburn – 6452 kg N/y
- 12.59 The above figures (abstracted from OVERSEER estimates for the various properties) relate to the N loads from each entire property. The percentage of each property that would be irrigated by this proposal is:
- (a) Riverside – 4.7% of 1802 ha
 - (b) The Glens – 20.5% of 414 ha
 - (c) Willowburn – 3.4% of 2200 ha
- 12.60 However there is existing irrigation on two of the properties not covered by this application. Taking all (existing plus proposed) irrigation into account the percentage of each property irrigated is as follows:
- (a) Riverside - 4.7% of 1802 ha
 - (b) The Glens – 100% of 414 ha
 - (c) Willowburn 13% of 2200 ha.
- 12.61 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.
- 12.62 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. From the applicants' OVERSEER estimates on N losses for their proposed farming systems we can derive an estimate of the 'average' areal loss of nitrogen per ha. These are as follows:
- (a) Riverside – 5902 kg N/y = 3.27 kg N/ha/y
 - (b) The Glens – 11858 kg N/y = 28.6 kg N/ha/y
 - (c) Willowburn – 5663 kg N/y = 2.57 kg N/ha/y
- 12.63 The OVERSEER estimates for Riverside and Willowburn appear consistent with Dr Snow's evidence considering that the proportion of these properties irrigated is much less than the 35% that she gave as an upper bound.
- 12.64 As an additional check on Riverside and Willowburn, we have considered losses from the irrigated areas alone. Given that that these properties do not propose a change in farming operations (i.e. overall stock numbers will stay within normal annual and seasonal parameters) we consider this approach reasonable. 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 1,700 kg N/y for Riverside and Willowburn Stations. The sum of this figure and the background ~2 kg N/ha/y cited by Dr Snow for dryland farms gives reasonable correspondence to the predicted Overseer loads.
- 12.65 We cannot make the same calculation for The Glens because it is a totally irrigated system. However it is reasonable to assume that the unit contribution from the irrigation covered by this application is the same as that from other parts of the farm. Pro-rating the proportion of the N load irrigated by this application gives a figure of 2432 kg N/y.
- 12.66 We note that The Glens is the only property that can be considered a true replacement consent and that therefore the nutrient load forms part of the existing environment.
- 12.67 Overall we consider the 'new' nitrogen load (additional to the permitted baseline) arising from this application is ~ 3400 kg N. While this is a relatively modest we need to consider it in relation to those applications in the Ahuriri catchment that we have already granted (higher

priority), and our stated intention not to allow significant net increases in nutrient load at a property level.

- 12.68 There are three properties combining to form this application, one of which (The Glens) is a replacement consent but will also contribute nitrogen in particular at ~10 times the rate (28.6 kg N/ha/y) of the other properties. The 'intensity' of the nitrogen loss from The Glens is ~10 times the average nitrogen loss from either of the sheep and beef properties. In addition, Willowburn is proposing significant and innovative mitigation measures in the form of nitrification inhibitors to reduce its nitrogen footprint, as well as conservation measures to preserve the integrity of Willowburn swamp.
- 12.69 We are aware that the sum of relatively minor contributions may result in a cumulative effect on the lake and we have been cognisant of this possibility in arriving at our final decision. We have also taken priority issues into account and note that in the Ahuriri catchment, this application ranks 6th and 7th (see Table 7, Dr Freeman's addendum).

Groundwater

- 12.70 We agree with Dr Bright that effects on groundwater in this case are manifest by interaction with surface waters and that groundwater *per se* is largely a matter for policy considerations. We note that no evidence on groundwater specific to this application was given by any party to this hearing.

Periphyton Growths in Quail Burn and Willowburn Streams and Ahuriri River

- 12.71 Dr Coffey's evidence (MWRL, Part A) included information on periphyton surveys in Ahuriri River. He reported periphyton biomass below levels of concern at all the sites he visited (upper, SH8 Bridge, and node). He also reported that the quality of macroinvertebrates declined from good to fair with distance down the river. We note that bed of the Ahuriri River is hard and dominated by cobbles, which would be susceptible to nuisance periphyton growths should nitrogen and/or phosphorus concentrations in the river be above that limiting periphyton growth (under stable flow conditions).
- 12.72 Dr Coffey also reported on periphyton surveys in the Quailburn. He stated there was no existing irrigation in the Quailburn sub-catchment but reduced physical habitat quality at the Quailburn Node site relative to Quailburn Upper. This was reflected in reduced riparian cover and increased periphyton cover at the downstream sampling site. He also noted that both cover and biomass of periphyton would constitute a "nuisance" condition at the downstream site. The Quailburn Node site supported good instream habitat quality on the basis of macroinvertebrate community structure. Dr Coffey concluded therefore, that nuisance growths of periphyton at the downstream sampling site were a reasonably recent development.
- 12.73 Dr Coffey also sampled the Willowburn Stream at two sites –Willowburn and Willowburn node. He noted that both sampling sites were soft-bottomed sites and there was extensive existing irrigation in the Willowburn subcatchment that extended into the headwaters of the sub-catchment. Dr Coffey also sampled macroinvertebrates and noted that macroinvertebrate community structure indicated poor instream habitat quality at both sampling sites.
- 12.74 In Part A we rejected the MWRL proposal that the threshold for periphyton growth should be a 25% increase in maximum annual biomass calculated from modelled 'current' nutrient concentrations. We found instead, that MfE periphyton guidelines are applicable and should be used to protect streams from nuisance periphyton growths.
- 12.75 There are three important elements that will determine whether the MfE guidelines are likely to be breached:
- (a) The flow path of drainage water/groundwater to the Willowburn and Quailburn Streams;
 - (b) Whether the stream environment is suitable for growth of periphyton, and,
 - (c) The amount of dilution as the drainage water mixes with these waterbodies, and the Ahuriri River, particularly under summer low-flow conditions.
- 12.76 Superimposed on both of these elements is the groundwater travel time. However, for our purposes, that only affects the timing of any effect, rather than the effect itself. In any case

considering the topography and location of the proposed irrigation areas in relation to the above water bodies it is likely that travel time will be short and that any effects will be manifest relatively quickly.

- 12.77 From Dr Coffey's limited measurements above we conclude that the Willowburn Stream is unlikely to be affected by benthic periphyton because of habitat limitations. Because it is soft-bottomed there is nowhere for benthic periphyton to attach, and while sessile periphyton could still attach to plant surfaces this does not have the same implications for aquatic biodiversity. The Quailburn remains hard-bottomed at least down to Quailburn node site. Because of the lack of information on groundwater flow direction we cannot be sure the Quailburn Stream receives leachate from existing irrigation relating to this application (The Glens) but it appears likely that it does near the confluence with the Willowburn and it will certainly be impacted downstream of the confluence. Dr Coffey's evidence suggests that current irrigation is not causing nuisance periphyton growths in the Ahuriri River and in our view the additional new load would not, by itself, be sufficient to cause such growths in the future.

Avoided, remedied or mitigated

- 12.78 We acknowledge that the applicants have proposed mitigation measures in their FEMPs 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 in our view the measure proposed by The Glens and Riverside, while beneficial to the stream habitat, will not result in major reduction in the load of nitrogen entering streams. The measures proposed by Willowburn appear to be more targeted towards nitrogen reduction; particularly the use of nitrification inhibitors to maximise the uptake of nitrogen by pasture, and minimise the conversion of fertiliser and urine-deposited nitrogen to the mobile nitrate form.
- 12.79 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 and evidence 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

- 12.80 There may be a small increase in the nitrogen load arising from the granting of this application, which would contribute to cumulative water quality effects on the Ahuriri Arm of Lake Benmore. The largest contributor of nitrogen is from The Glens; a dairy farm with replacement consents. The smallest contributor will be Willowburn, which is in effect a new consent. The mitigation measures proposed by Willowburn should reduce nitrogen loads significantly although the research to verify this at a catchment level is lacking. Should nitrification inhibitors be used on the irrigation areas by all the stations making up this application then we would be confident there would be no net increase in the nitrogen load exported to the Ahuriri Arm. Nuisance periphyton growths are unlikely in the Willowburn because of habitat limitations but are possible in the lower Quailburn particularly after the confluence with the Willowburn.

Tangata Whenua values

- 12.81 There were no property-specific issues raised in the evidence of Ngai Tahu witnesses relating to this particular application, the receiving environment for irrigation drainage water from this proposal would be the Willowburn, lower Quailburn and Ahuriri River.
- 12.82 Ngai Tahu made it clear that they had identified the Ahuriri Delta as a primary site for mahinga kai restoration and were anxious that irrigation applications in the catchment, particularly those involving new and large scale intensification, did not have an adverse affect on this cultural initiative.
- 12.83 Ngai Tahu witnesses also made it clear that the cultural objective of restoring mahinga kai habitat in the Ahuriri Delta was reliant on maintaining or improving the existing water quality standards of the Ahuriri Delta.

- 12.84 Our assessment of the effects on water quality of this proposal (as previously discussed in this decision), particularly the contribution to the cumulative effects on the receiving waters of the Lower Ahuriri catchment indicate that the effects of the activity as currently proposed will be more than minor.

Disturb bed

- 12.85 The applicant had designed the weir to wash out in times of heavy rainfall or floods. Hen Burn Road bridge is the only structure and was located approx 2 km downstream of the proposed weir. Given the distance to that structure, the relatively small volume of water held behind the weir, and fact that it would wash out in higher flows, we are satisfied that potential effects of the weir maintenance and reconstruction on man-made structures would be minor.
- 12.86 There are potential effects on water quality to consider given that the works would be carried out in flowing water. However based on the short duration and timing of works, we are satisfied that, with appropriate conditions, adverse effects of the works on water quality would be minor. As effects on water quality are considered minor, we are satisfied that effects on Tangata Whenua values will also be minor.
- 12.87 The works would not require any disturbance of vegetation on the banks of the Quail Burn. The works will not affect riparian vegetation and we are satisfied that the effects of the works on riparian plants and animals would be minor.
- 12.88 Both the reporting officer and the applicant's consultant agreed the adverse effects of this activity which has been occurring for a number of years were no greater than minor and we concur with that opinion.

Discharge

- 12.89 Any water discharged will not be any greater than that diverted through the race. The race is appropriately aligned in a downstream direction to the flow to ensure that there is no erosion of the bed or banks at the point of discharge. In addition, the rate of discharge is no greater than that which is being diverted and accordingly will not decrease flood-carrying capacity of the Quail Burn
- 12.90 The water discharged will only be that which has been diverted down the race for approx 300 m. Therefore, it will not likely contain any contaminants or be significantly altered in terms of parameters such as temperature and turbidity. The race is not accessible to stock and remains within close proximity of the main stream before being discharged back.
- 12.91 There are no downstream water users on the Quail Burn. The discharge will not increase the rate of flow in the stream or alter the water quality of the discharge and receiving water.
- 12.92 As all other effects are considered minor, we are satisfied that effects on Tangata Whenua values are also minor.

Key conclusions on effects

- 12.93 In relation to the actual and potential effects of the proposal, our key conclusions are as follows.
- 12.94 By adopting the minimum flow required under the WCWARP and the use of appropriate fish screens, we consider that any effects on flows and ecosystems will be no more than minor.
- 12.95 In respect of potential effects on landscape values, we conclude that the effects are acceptable, provided that no irrigation occurs on those parts of Riverside Station within the OLA.
- 12.96 There may be a small but significant increase in the nitrogen load exported to the Ahuriri Arm if this consent were granted, which would contribute to the cumulative water quality effects on the Ahuriri Arm of Lake Benmore. One of the Stations making up this application has volunteered a condition requiring the use of nitrification inhibitors on irrigated areas. If this condition was extended to all three applicants, we would be confident that there would be no net increase in nitrogen export.
- 12.97 We agree that the annual volume proposed and method of application represents an effective and efficient use of water.

- 12.98 In relation to the cultural and spiritual values of tangata whenua, we find that the current proposal activity will have a more than minor effect on these values given the water quality issues discussed above.
- 12.99 We are satisfied that any potential effects relating to works in the bed and the proposed discharge are acceptable.
- 12.100 Finally, we note that use of water for irrigation may result in improved productivity of the land and positive economic benefits for the wider community.

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. 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 these applications.

Water quality

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

WCWARP

- 13.4 In relation to the WCWARP we consider that Objective 1 is the critical objective. In particular, Objective 1(b) seeks to safeguard life supporting capacity of rivers and lakes and Objective 1(d) seeks to safeguard the integrity, form, functioning and resilience of the braided river system.
- 13.5 We have determined that granting these consents with conditions (incorporating mitigations set out in the three FEMPs) will help to reduce nutrient loss from the irrigated areas on the three properties, but not to the extent where we are confident there will be no net increase in nitrogen load to the Ahuriri Arm. To grant consent in these circumstances would compromise Objective 1 as the Ahuriri Arm is close to the Oligotrophic-Mesotrophic boundary, which if breached would be contrary to Objective 1.
- 13.6 In terms of potential periphyton growths in Willowburn Stream, we received little information on the current state of the stream, but it appears that it is soft-bottomed and therefore not suitable habitat for periphyton growth. There is some evidence of nuisance periphyton growths in the lower Quailburn stream and any additional nutrient load could exacerbate this situation, which would also be contrary to Objective 1.
- 13.7 Overall, we can conclude that while the mitigation measures proposed will reduce the OVERSEER-predicted nutrient load on the Ahuriri Arm of Lake Benmore, we are not confident that they will be sufficient such that there is no net increase in load from the current situation (The Glens only irrigating). Thus we conclude that a grant of consent to the application in its current form would not be consistent with Objective 1(b) and 1(d)
- 13.8 Objective 1(c) requires us to manage waterbodies in a way that that maintains natural landscape and amenity characteristics and qualities that people appreciate and enjoy. Given our findings in that the substrate of Willowburn Stream not being conducive to periphyton growth; combined with a condition requiring the ratcheting back of irrigation should maximum annual periphyton biomass exceed MfE guidelines (at the confluence with Quailburn Stream where substrate is suitable for growth), then our view is that granting consent would be consistent with Objective 1(c).
- 13.9 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 not 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.

- 13.10 Policy 13 links the WCWARP to the PNRRP (as it existed at the time) by requiring us to have regard to how the exercise of the consent could result in water quality objectives in the PNRRP not being achieved. As explained in our Part A decision, we have considered the objectives of the PNRRP and the now operative NRRP in relation to the current proposal. 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.

NRRP

- 13.11 Under the NRRP, Lake Benmore (including the Ahuriri Arm) is classified as an "Artificial On-River Lake" under the NRRP. Objective WQL1.2 of the NRRP seeks to ensure that the water quality of the lake is managed to at least achieve the outcomes specified in Table 6, including a maximum Trophic Level Index ("TLI") of 3 (i.e. oligotrophic-mesotrophic boundary). For the reasons discussed above, we consider that granting consent to the proposal as it currently stands would not be consistent with this objective and may (in combination with others we grant) cause the TLI maximum to be breached.
- 13.12 The Willow Burn is categorised (via the NRRP Planning Map Volume) as 'Spring-fed upland'. Objective WQL1.1 of the NRRP seeks to ensure that the water quality of such rivers is managed to at least achieve the outcomes specified in Table 5. A key indicator for these applications is that maximum periphyton biomass in Alpine upland streams should be less than 50 mg/m² chlorophyll *a*. This water quality management unit also has water quality standards for DRP and DIN that apply via Schedule WQL1 and associated rules of 0.007 and 0.10 mg/L respectively
- 13.13 We understand that the applicant and reporting officer agreed on periphyton water quality conditions that included 120 mg/m² Chlorophyll *a* standard (and an early warning trigger of 90 mg/m² Chlorophyll *a*) for the Willow Burn. We appreciate that when those parties reached that agreement the NRRP was not operative, and issues relating to water quality objectives and standards had not reached the status that we have today.
- 13.14 We must have regard to the current provisions of the NRRP and therefore we have given considerable thought to the situation that applies to the Willow Burn. We note the following:
- (a) The reported mean concentrations (in the MWRL Rivers and Lakes Report) of DRP and DIN were 0.35 and 0.01 mg/L respectively, and are significantly higher than the Schedule WQL1 'standards'.
 - (b) The Willow Burn catchment is characterised by a relatively high level of established and authorised irrigation development.
 - (c) The likelihood that the DIN and DRP concentrations in the Willow Burn result in part from the existing authorised irrigation development in the catchment.
 - (d) Many of the tributary stream that feed into the Willow Burn are categorised as 'Hill-fed – lower' with an Objective WQL1 specified maximum periphyton outcome of 200 mg/m² chlorophyll *a* and Schedule WQL nutrient 'standards' for DRP and DIN of 0.006 and 0.47 respectively. We highlight the apparent inconsistency of having a majority of tributary streams with a lower periphyton outcome.
 - (e) The soft bottom substrate of the lower Willow Burn is not an ideal substrate for periphyton development. However, we also note that the Willow Burn does eventually discharge into the Ahuriri River.
 - (f) The New Zealand Periphyton Guidelines, that we were provided with at the hearing and heard were a critical source for the NRRP specified outcome, provide for 50 mg/m² chlorophyll *a* as a guideline for oligotrophic streams with diverse "clean-water" benthic invertebrate communities. That does not appear to describe the Willow Burn.
 - (g) The MWRL evidence indicated that the Willow Burn macro invertebrate communities were general fair to poor (using MCI or QMCI).

- 13.15 After considering all the above factors we consider that the proposed periphyton and associated water quality standards are appropriate for the Willow Burn and will achieve the intent of the NRRP classification. By imposing conditions requiring reduction in irrigated area in the event these standards are breached we think these standards can be maintained.

Conclusions on water quality provisions

- 13.16 Overall then having regard to the scheme of the WCWARP and the NRRP we reach a conclusion that granting consent to the proposal as it currently stands would not be consistent with the key objectives and policies of both of these plans relating to water quality. The principal reason for this conclusion is that the net nitrogen load from the combined (3 property application) will increase even with the mitigations proposed. Because the Ahuriri Arm is sensitive to further nutrient additions, this is unacceptable. However the additional load can, we believe, be reduced to the current load if the applicants accept further mitigation measures. We discuss these measures in sections 16 and 17. Adopting such measures would ensure that the proposal is consistent with the water quality provisions of the WCWARP and the NRRP.

Environmental flow and level regimes

- 13.17 Policies 3 and 4 of the WCWARP refer to the setting of environmental flow and level regimes to achieve the objectives of the WCWARP. In addition, Policy 12 seeks to establish an allocation for each relevant activity within the catchment and requires consideration of the effects on other users. This is reflected in the rules of the PNRRP which specifies minimum flows and levels for water bodies and allocation limits for specific activities.
- 13.18 As the applicant is proposing to adopt the minimum flow required by the WCWARP and falls within the instantaneous allocation limits, we are satisfied that the proposal is consistent with these policies.
- 13.19 Policy 40 deal with the environmental flow regime in the rivers and streams in the upper catchment. Policy 40 enables access to water for the activities identified in Objective 2, to the extent consistent with Objective 1.
- 13.20 As the environmental flow and level regime in the plan was proposed by the applicant, and as it is within the allocation for agricultural and horticultural activities identified in Rule 6, Table 5, the proposal is considered by us to be consistent with this policy.

Efficient use

- 13.21 Objective (4) of the WCWARP seeks to promote "*the achievement of a high level of efficiency in the use of allocated water*". Policies 15-20 deal with efficient and effective use of water and are applicable to this application. 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.
- 13.22 As discussed in the assessment of effects section of this decision, we are satisfied that the annual volume is reasonable for the intended use and that the applications are consistent with these objectives and policies.
- 13.23 Policy 28 provides guidance as to matters which must be considered when deciding whether to grant or refuse an application for replacement of existing consents. These include consideration of attempts to meet the efficiency expectations of the plan, recognition of the value of the investment by the consent holder and maintenance of the consent in any allocation limits and priority bands if granted.
- 13.24 We consider that the applicant has made attempts to show that they are meeting the efficiency expectations of the plan and conclude that the proposal is consistent with this policy.

Landscape

- 13.25 We discussed the relevant objectives and policies for landscape in our Part A Decision. In summary these are primarily found in the Proposed and Operative CRPS and the NRRP. In broad terms these provisions seek the protection of outstanding natural landscapes from inappropriate use and development.

- 13.26 In considering these provisions we are informed by the Waitaki District Plan, which provides that the bulk of the application sites are zoned as Rural Scenic. It is only a portion of the proposal site, namely that on Riverside Station immediately of the foothills, which appears to fall within an OLA under the Waitaki District Plan. In this respect irrigation of land for pastoral or crop within an OLA as shown on the planning map is a non-complying activity.
- 13.27 In looking at the landscape objective, the objective seeks to protect such areas from inappropriate use and development to ensure that the overall landscape qualities of the Rural Scenic zone are retained. In terms of policies, we refer to Policy 16.8.3(j) Waitaki District Plan which provides that farming activities involving irrigation of land for pastoral or crop production are to be avoided with the OLA.
- 13.28 The Rural Scenic zone, in contrast, seeks to have development and change managed appropriately. We note that in terms of explanation and reasons given under paragraph 16.8.5 Waitaki District Plan, it is expected that ongoing land use may occur in the Rural Scenic zone provided it is appropriately managed. Examples such as dairying being introduced in parts of the Omarama Basin with the availability of water for irrigation are referred to. It is noted that these activities could well expand further in the Basin within the Rural Scenic zone.
- 13.29 In contrast however the explanation and reasons section notes that land-use change in the outstanding and significant natural features zones is to be more strictly controlled to ensure that the natural or cultural landscape character that gives rise to the values identified are protected from inappropriate subdivision, use and development.
- 13.30 Faced with those objectives and policies in the Waitaki District Plan we reach the conclusion that allowing irrigation activity on any part of the Riverside Station sited within an OLA that is intended to be irrigated under this proposal would be inconsistent with the policy and objective base of the Waitaki District Plan.
- 13.31 In contrast, we find that allowing irrigation on those parts of the proposal that do fall within the OLA would be consistent with the policy and objective base of the Waitaki District Plan in relation to the Rural Scenic zone.
- 13.32 For the reasons already advanced, we think that particularly with the refinement of this proposal, primarily on the Willowburn Station portion of the proposal, that granting of consent from a landscape point of view would be consistent with the relevant objectives and policies relating to landscape as provided for in both the Waitaki District Plan and the WCWARP, the proposed and operative CRPS, and the NRRP.

Tangata whenua

- 13.33 The proposed activity will potentially impact on the matters outlined in Objective 1. In particular, sub-section (a) relating to spiritual and cultural values of Tangata Whenua. The applicant did not provide an assessment of tangata whenua matters relating to their proposal. However, we consider that as currently proposed, the cumulative effects on tangata whenua values, particularly water quality related matters, will be more than minor and therefore inconsistent with Objective 1(a) WCWARP.
- 13.34 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 and providing Ngai Tahu with opportunities for mahinga kai habitat restoration. Any deterioration in water quality or habitat values in the lower Ahuriri catchment will have an adverse effect on the Ngai Tahu cultural association and objectives of mahinga kai restoration in the Ahuriri Delta.
- 13.35 Objective WTL1(a) and (d) from Chapter 7 of the NRRP includes provisions that seek to achieve no overall reduction in the contribution of wetlands and waterways to the relationship of Ngai Tahu and their culture and traditions with their ancestral lands, water, mahinga kai sites, waahi tapu and waahi taonga. The Ngai Tahu objective of restoring mahinga kai habitat in the Ahuriri Delta is reliant on retaining existing water quality and ecosystem health in the tributaries, including the Willowburn and Quail Burn.
- 13.36 We find that the proposed water take and use activity notwithstanding the application of FEMPs and conditions will be inconsistent with Objectives WQN1 and WTL1 as currently proposed.

Disturb bed

- 13.37 The key objectives and policies that are relevant to the land use application (CRC991474) 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.
- 13.38 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.
- 13.39 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 and given the small scale of the works, with the imposition of appropriate conditions, we consider that the proposed works in the bed are consistent with these policies.

Discharge

- 13.40 In relation to the discharge application (CRC991475), 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.
- 13.41 As discussed in our evaluation of effects, the discharge water will only be that which has been diverted down the race for approx 300m and will therefore not alter the quality of the receiving waters. On this basis we consider that the discharge is consistent with the relevant objectives and policies.

Key conclusions on planning instruments

- 13.42 For all of the above reasons we consider that with the imposition of appropriate conditions granting consent would be largely consistent with the objectives and policies of the relevant plans. The one exception to this is water quality, which we return to in our final evaluation.

14 EVALUATION OF OTHER RELEVANT S104 MATTERS

- 14.1 Under s104(1)(c) RMA, we are required to have regard to any other matter that we consider to be relevant and reasonably necessary to determine the application.
- 14.2 After hearing all the relevant evidence, we consider that there are matters that exist in relation to this application but those matters relate to the activities that are being "reconsented" in terms of Ellis-Lea Farms.
- 14.3 In terms of section 104(2)(a) RMA we are required when considering an application affected by section 124 RMA to have regard to the value of the investment of the existing consent holder. Clearly, in terms of the Ellis-Lea Farms operation there is significant investment in terms of irrigation infrastructure. All of the farm properties (Ellis-Lea, D W McAughtrie, and Riverside Station) have some level of investment in terms of infrastructure in relation to the diversion channels and intake structures. However, those channels and intake structures have been in place for some considerable period of time allowing for a return on that investment
- 14.4 Nevertheless, we have taken these matters into account in our considerations

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 RMA – Matters of National Importance

- 15.2 Sections 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, granting the application in its current form would not recognise and provides for the preservation of the natural character of lakes and rivers. However this could be addressed by additional conditions on the consent, as discussed further below.
- 15.4 In terms of s6(b), we have evaluated the natural features and landscape, primarily by reference to the relevant planning instruments. We reach the view that the grant of consent in this case (excluding irrigation of the OLA on Riverside Station) is not inappropriate because it will not, in our view, diminish the natural features and landscapes such as they are in any significant way.
- 15.5 In terms of section 6(c), it is our view, taking into account the evidence received, that there are not areas of significant indigenous vegetation and significant habitats of indigenous fauna that are at risk thus requiring protection as a consequence of the grant of consent.
- 15.6 In relation to section 6(e) we are cognisant of the relationship that Ngāi Tahu hold with the natural resources of this area, and while no specific values were specified by Ngāi Tahu in relation to this application, we believe that the mitigation measures and conditions (including the use of nitrification inhibitors on all properties) provide for the cultural relationship to this catchment that is of importance to Ngāi Tahu.
- 15.7 For the above reasons, we consider that granting consent to the proposal (with the mitigation measures and conditions we impose) would recognise and provide for s6 matters, as we are required to do under the RMA.

Section 7 RMA– Other Matters

- 15.8 Section 7 RMA lists “*other*” matters that we shall “*have particular regard to*”. We make the following observations in relation to each of those matters as they are relevant to this application, referring to the sub paragraph numbers of s7:
- 15.9 Sub-section (a) refers to kaitiakitangā. We consider that the proposed activity with mitigation measures and conditions we are imposing sits within the acceptable environmental parameters outlined by Ngāi Tahu such that that it will not cause distress to the function of kaitiakitangā.
- 15.10 Sub-sections (b), (c), and (f) are specifically relevant to this application. Sub-section (b) relates to the efficient use and development of natural and physical resources. Relevantly in this case is water. We have determined that the volumes of water we are prepared to grant and the methodology of its conveyance and distribution, 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. We are satisfied that the applicant has proposed mitigation measures and conditions we impose (including the use of nitrification inhibitors on all properties) will ensure that this objective is achieved.
- 15.14 Having particular regard to the above matters in the context of section 7 RMA, we conclude that the grant of consent could be supported, subject to appropriate conditions.

Section 8 RMA – Treaty of Waitangi

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

Section 5 RMA – 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 and water is consistent with the purpose of sustainable management;
 - (b) Irrigation will make contribution to the overall regional (Waitaki) wellbeing; and
 - (c) The natural and physical resources of the Basin (water and land resources) will be sustained.
- 15.19 This leaves section 5(2)(c) RMA and the obligation to avoid, remedy or mitigate adverse effects of the activities on the environment. Subject to the requirements that we discuss in the following sections, this will occur we conclude through conditions, which will address any possible impacts particularly those relating to water quality.

16 OVERALL EVALUATION

- 16.1 Under s104B of the RMA, we have a discretion as to whether or not to grant consent. This requires an overall judgment to achieve the purpose of the Act and is arrived at by:
- (a) Taking into account all the relevant matters identified under s 104;
 - (b) Avoiding consideration of any irrelevant matters;
 - (c) Giving different weight to the matters identified under s 104 — depending on our opinion as to how they are affected by the application of s 5(2)(a), (b), and (c) and ss 6-8 — to the particular facts of the case; and then in light of the above; and
 - (d) Allowing for comparison of conflicting considerations, the scale or degree of conflict, and their relative significance or proportion in the final outcome.
- 16.2 The key issues relate to water quality. The applicants through the mitigation measures proposed do address the site-specific environmental risk arising from the application of water to the site. In particular, one applicant (Willowburn Station) volunteered to use nitrification inhibitor on irrigated pasture in order to minimise nitrate leaching. If all three applicants were to use nitrification inhibitor on their irrigated pasture at rates and times recommended by the industry, we would be confident that the nitrogen load leaving the properties would be reduced to no more than that that currently exported from the Glens. In our view imposing such a condition is the fairest means of ensuring that all applicants can access irrigation water.
- 16.3 We realise that imposing such a condition will incur significant costs to the Glens and Riverside, who have not volunteered such condition. However, the alternative options are to decline the application in total or to one or more parties to the application.
- 16.4 The use of nitrification inhibitors by all applicants would reduce effects to no more than minor and overcome the difficulties with the WCWARP and NRRP in relation to water quality and tangata whenua values.

- 16.5 Take and use - There are no concerns with effects and no planning problems other than in respect to water quality and the associated tangata whenua values. However we consider that with the imposition of a condition requiring the use of nitrification inhibitors on irrigated pasture the applicants should not increase the nutrient load to the Ahuriri, and that the granting the consent would be consistent with all relevant Objectives and Policies of the WCWARP.
- 16.6 Disturb bed - We are satisfied that the adverse effects of this activity are minor and that the application is consistent with the relevant plan provisions of the NRRP
- 16.7 Discharge - For the discharge application, we are all adverse effects are less than minor and we are also satisfied that the application is consistent with the relevant plan provisions of the NRRP
- 16.8 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, subject to conditions.

17 CONDITIONS

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

Nutrients and thresholds

- 17.5 In Part A we rejected the MWRL proposition that we could grant all the applications before us with conditions.
- 17.6 Much of the evidence on conditions presented by all parties to this hearing centred on the issue of determining whether grantees in a particular subcatchment had breached the nutrient allowance at a particular node, and if they had, how ECan could determine either which consent holder had caused the breach and whether one or all consent holders needed to take corrective action.
- 17.7 In rejecting the MWRL case, which relied upon existing irrigators lessening their nutrient load so that there would be assimilative capacity for new irrigators, we need to record our approach to ensuring that consents we grant do not cumulatively result in the trophic level index (TLI) of the Ahuriri Arm of Lake Benmore exceeding 2.75, or the TLI of the Wairepo Arm of Lake Ruataniwha exceeding 4.00. As we recorded in Part A our view is that the difference between current nutrient load, and the load resulting in unacceptable increases in the TLI of these waterbodies is so small that it would be risky to try and allocate that new load.
- 17.8 For those applications that we are inclined to grant, we have assessed their 'cumulative effects' in priority order, taking careful note of the complete package of mitigation measures they propose on their property. These mitigation measures may be in relation to a separate application before us but on the same property and therefore 'captured' in the FEMP.

- 17.9 We have kept a check on new irrigation resulting in additional nitrogen and phosphorus loads proposed by applicants in relation to those mitigation measures and not granted consents that would, in our view, lead to a significant net increase.
- 17.10 This approach will, in our view, ensure that the TLI of the critical lake ecosystems does not rise as a result of our granting these applications, and may even decline. This approach is, we believe, consistent with the NRRP, which has as an objective and maintenance or improvement of water quality. It also has the advantage, in our view, of taking the pressure off cumulative effects monitoring with all the ensuing uncertainties and difficulties discussed in Part A,
- 17.11 Recognising that streams and rivers in the catchment are nutrient limited by nitrogen and/or phosphorus, and that the NZ (MfE) Periphyton Guidelines provide appropriate thresholds for managing nuisance periphyton growths does, we believe, provide another monitoring tool for not only ensuring that streams and rivers are suitable for recreation and provide suitable habitat for invertebrates and fish, but also provide another defence to downstream lake ecosystems. The reporting of breaches in periphyton guidelines together with correction mitigation actions, provide a tool to prevent excess nutrients reaching the lakes.
- 17.12 We recognise that that where leachate enters groundwater that does not discharge to streams or rivers prior to entering Lake Benmore, periphyton monitoring is not appropriate. However for the majority of the applications before us, there is a stream or river downstream that provides a logical focus for offsite monitoring efforts. In cases where this is not the case we have imposed other monitoring requirements such as lysimeter or piezometer networks, and/or contributing to lake monitoring.
- 17.13 The advantage of stream water quality and periphyton monitoring is that it puts more emphasis on local monitoring and less emphasis on uncertain (given our findings on the WQS) modelling. We are of the view that as far as possible, consent monitoring should be related directly to the applicant's activities.
- 17.14 We did consider deleting the agreed conditions relating to lake TLI monitoring on the grounds that it was marginal whether trigger response conditions were relevant to replacement consents. The critical issue for us was whether the effects of replacement consents could be considered less than minor (with respect to lake water quality).
- 17.15 However upon reflection we have decided that (in the case of the Ahuriri Arm of Lake Benmore, and the Wairepo Arm of Lake Ruataniwha) the existing TLI is very close to the agreed trigger point, and the TLI may increase even without the grant of new consents (due to groundwater lag effects). We are reasonably confident however that this will not occur because by and large these activities have been 'on foot' for a long period of time and we think this is reflected in the current TLI. However, we cannot be completely certain and it seemed to us rather than leave the matter we should do something about it to at least provide a mechanism to respond to groundwater lag effects, if they occurred.
- 17.16 Thus, if TLI were to increase above the agreed trigger points then the lake monitoring conditions would serve a resource management purpose; particularly in conjunction with the condition to ratchet back existing irrigation. On balance, we have decided to retain the agreed lake monitoring conditions for Lake Benmore and the Wairepo Arm of Lake Ruataniwha.
- 17.17 For this particular application we have imposed an additional condition requiring the applicants to use nitrification inhibitors on their irrigation areas at rates and intervals recommended by accredited farm advisors to minimise nitrate leaching. We have done this to be confident that the nitrogen load resulting from granting the consent will not result in an increase in the TLI of the Ahuriri Arm.

18 DURATION

- 18.1 The applicant has sought a duration of 35 years for the take and use consent. We note that despite the fact that the applicant is seeking to irrigate new areas of land not currently irrigated, the final conditions sets provided do not include the common conditions sought by Meridian, including an expiry date of April 2025.
- 18.2 Meridian, through Mr Turner, suggests that there are benefits in having a common expiry date for all consents to take water within the catchment to do with assessing cumulative effects.
- 18.3 To determine this issue we have referred to and applied the approach set out within the NRRP,

Chapter 1, Section 1.3.5, which sets out some considerations that impact on duration. In particular we have placed weight on the following matters there referred to:

- (a) the nature and sensitivity of the affected environment, including:
 - (i) the degree to which the sensitivity of the affected environment may become more sensitive over time; and
 - (ii) the probability of future adverse effects arising from the consented activity; and
 - (iii) the level of knowledge about the affected environment;
- 18.4 Section 1.3.5 contains a range of other guidance criteria, which includes the consent holder's capital investment in a pre-existing activity. However, we think that the nature and sensitivity of the affected environment plus the three criteria we have listed above are the most significant.
- 18.5 Given our findings in relation to the current TLI status of the Ahuriri Arm of Lake Benmore and the degree to which the sensitivity of the affected environment, namely the Ahuriri Arm, may become more sensitive over time and the probability or possibility of future adverse effects arising from this consented activity and others, and the level of knowledge about the affected environment, we do support Mr Turner's call for a common expiry date.
- 18.6 We do recognise this will have impacts upon the consent holder's interests. In particular, the consent holder's need to ensure that there are permanence and economic life of the activity. However, in that regard we do note that provided the consent holder seeks to renew its consent in accordance with the RMA, there is a level of permanence and economic life for the activity. We also think that the term of the grant, which will be approximately 13 years, does provide for a level of permanence and economic life of the activity. A term of this duration would provide benefits to the community and would enable the consent holder to achieve some level of return on capital investment involved.
- 18.1 In terms of the applications to disturb the bed (CRC991474) and discharge water (CRC991475), we have decided to grant these consents for a period of 35 years notwithstanding the shorter term of the take and use consent. The key reason for this is that the effects of the activities are very minor and there is not the same uncertainty about change in the sensitivity of the receiving environment over time. As such, we consider that there is no resource management basis for a shorter term.

19 DECISION

- 19.1 Pursuant to the powers delegated to us by the Canterbury Regional Council; and
- 19.2 For all of the above reasons and pursuant to sections 104 and 104B of the Resource Management Act 1991, we **GRANT** the following applications by **DW McAughtrie, Ellis-Lea Farms (2000) Ltd & Greenfield Rural Opportunities Ltd**:
 - CRC991473** to divert surface water from Quailburn Stream into the Quailburn Government Race at a maximum rate not exceeding 170 litres per second and to take and use water from the Quailburn Government Race and a storage pond fed from the Quailburn Government Race at a maximum rate of 170 litres per second, with a volume not exceeding 14,688 cubic metres per day and 1,304,050 cubic metres per year, for the spray irrigation of up to 255 hectares of pasture and winter feed crops at the Glens, Willowburn Station and Riverside Station, Omarama.
 - CRC991474** to disturb the bed and banks of Quailburn Stream to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure.
 - CRC991475** to discharge unused water/surplus irrigation water into Quailburn Stream at a maximum rate not exceeding 170 litres per second, and a volume not exceeding 14,688 cubic metres per day.
- 19.3 Pursuant to section 108 RMA, the grant of consent is subject to the conditions specified at **Appendices A, B & C**, which conditions form part of this decision and consent.
- 19.4 The duration of CRC991473 shall be until the 30th April 2025. The duration of CRC991474 and

CRC991475 shall be for 35 years from the commencement of the consent.

DECISION DATED AT CHRISTCHURCH THIS 16th DAY OF FEBRUARY 2012

Signed by:

Paul Rogers 

Dr James Cooke 

Michael Bowden 

Edward Ellison 

Diversion and take of water

1. Water shall only be diverted from the Quailburn Stream, at or about map reference NZMS 260 NZMS 260 H39: 638-371 at a rate not exceeding 170 litres per second, with a volume not exceeding 14,688 cubic metres per day and 1,523,500 cubic metres per year between 1 July and the following 30 June.
2. Water shall only be taken from the Quailburn Government Race, between map references NZMS 260 H39: 638-371 and H39: 378-392 at a rate not exceeding 170 litres per second, with a volume not exceeding 14,688 cubic metres per day and 1,523,500 cubic metres per year between 1 July and the following 30 June.
3. Subject to Condition 4, whenever the flow in Quailburn 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 H39:6553-3542 (Hen Burn Road):
 - (a) is equal or greater than 410 litres per second, the maximum rate at which water is taken shall not exceed 140 litres per second;
 - (b) a sharing regime shall apply that limits the combined rate of abstraction to ensure that the flow in the Quailburn at Henburn Road, is equal to or greater than 100 litres per second;
 - (c) is equal to or less than 100 litres per second the taking of water in terms of this permit for irrigation purposes shall cease.
4. Where the Canterbury Regional Council, in consultation with a Water Users Committee representing, but not limited to, surface water and hydraulically connected groundwater users who are subject to the above minimum flow, has determined upon a water sharing regime that limits the total abstraction from the resource as referred to above, then the taking of water in accordance with that determination shall be deemed to be in compliance with Condition 3.

Use of water

5. Water shall only be used for the spray irrigation of 255 hectares of crops and pasture per irrigation season:
 - (a) for grazing sheep, beef cattle, deer, or non-milking dairy cows within the area of land identified as "McAughtrie" and "Greenfields" on the attached Plan CRC991473/4/5; and
 - (b) including milking dairy cows within the area of land identified as "Ellis Lea" on the attached Plan CRC991473/4/5.
6. Notwithstanding Condition 5, no irrigation shall occur within the area identified as an Outstanding Natural Landscape on Map 7 of the Waitaki District Plan (dated 17/01/2011).
7. 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 CRC991473/4/5.
8. 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.

9. 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

10. The consent holder shall, prior to exercising this consent, install a water level measuring device in a stable reach of the Quailburn Stream at map reference NZMS 260 H39: 6553-3542 that will enable the determination of the continuous rate of flow in the reach of the water body to within accuracy of ten percent.
11. 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.
12. 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.
13. The measuring and recording devices described in Conditions 10 and 12 shall be available for inspection at all times by the Canterbury Regional Council.
14. Data from the recording device described in Condition 12 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

15. The consent holder shall, within six months of the commencement date of this consent at the point of take:
 - (a) install a water meter(s) that has an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a location(s) that will ensure the total take of water from Quailburn Stream is measured; and
 - (b) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.
16. The water meter and recording device(s) specified in Condition 15 shall be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and shall either:
 - (a) store the entire season's data in each 12-month period from 1 July to 30 June in the following year, which shall be downloaded and stored in a commonly used format and provided to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or

- (b) be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder. No data in the recording device(s) shall be deliberately changed or deleted.
17. If the water meter specified in Condition 15(a) is not an electromagnetic or ultrasonic meter, the consent holder shall, prior to the first exercise of this consent install or make available an easily accessible straight pipe(s) at a location where the total water take is passing through, with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system, to allow the Canterbury Regional Council to conduct independent measurements.
18. The water meter and recording device(s) specified in Condition 15 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.
19. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 15 are at all times fully functional and have an accuracy standard of five percent.
20. Within one month of the installation of the measuring or recording device(s) specified in Condition 15 (or any subsequent replacement devices), the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
- (a) the measuring and recording device(s) is installed in accordance with the manufacturer's specifications; and
 - (b) data from the recording device(s) can be readily accessed and/or retrieved in accordance with Condition 16.
21. At five yearly intervals or at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying that:
- (a) the water meter(s) is measuring the rate of water taken as specified in Conditions 15 to 19 inclusive; and
 - (b) the tamper-proof electronic recording device is operating as specified in Conditions 15 to 19 inclusive.

Fish Screen

22. Water shall only be taken when a fish screen with a maximum mesh width and height size of 3 millimetres or slot width and height of 2 millimetres is operated and maintained across the intake to ensure that fish and fish fry are prevented from passing through the intake screen.
23. 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.
24. 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.
25. The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 22 to 24 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.
26. 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 22 to 24 inclusive of this consent.
27. 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

28. For the purposes of interpretation of the conditions of this consent:
- (a) Willowburn Station shall be defined as the areas in certificates of title and Pastoral Lease numbers Section 13 Blk XII Benmore SD, which total 1,341 hectares;
 - (b) Riverside Station shall be defined as the areas in certificates of title and Pastoral Lease numbers Section 1 Blk XVI Ahuriri SD, which total 1,804 hectares; and
 - (c) The Glens shall be defined as the areas in certificates of title and Pastoral Lease numbers Section 5 Blk XVI Benmore SD, which total 411 hectares.
29. 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 Willowburn Station, Riverside Station and The Glens using the model Overseer[®] (AgResearch model version number 5.4.3 or later).
30. When undertaking the modelling outlined in Condition 28, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
31. A copy of the reports prepared in accordance with Condition 28 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
32. Following conversion the consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs)) as estimated in accordance with Condition 28 does not exceed:
- (a) The Glens: 13,858 kg of Nitrogen and 85 kg of Phosphorus.
 - (b) Willowburn Station 7,760 kg of Nitrogen and 84 kg of Phosphorus.
 - (c) Riverside Station 6,436 kg of Nitrogen and 104 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.
33. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the commencement of consent.
 34. 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
 35. The consent holder shall at all times comply with the mitigation measures set out in section 5 of the Farm Environmental Management Plans (FEMPs) for Willowburn Station, Riverside Station and The Glens as provided to Environment Canterbury in April 2010 (Willowburn) and November 2010 (Riverside and The Glens) and attached to this consent.
 36. Subject to Condition 35, the consent holder shall implement, and update annually the FEMPs for Willowburn Station, Riverside Station and The Glens. The FEMPs 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 Overseer model inputs for Willowburn Station, Riverside Station and The Glens.
 - (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.
 37. 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.
 38. 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 34 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.
 39. Changes may be made to the Overseer model inputs for Willowburn Station, Riverside Station and The Glens, 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

40. 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 Willowburn Station, Riverside Station or The Glens. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 32. 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 32. 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

41. 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.
42. 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.
43. 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.
44. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September.
45. 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.
46. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
47. 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.
48. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
49. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.
50. 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.
51. Nitrification inhibitors shall be applied to all irrigated areas at the rates and frequencies recommended by an accredited farm consultant needed to minimise nitrate leaching. Verification of the amounts and timing of nitrification inhibitor application shall be supplied to Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager by 30 August each year.

Irrigation Infrastructure

52. 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.
53. Within two months of the testing referred to in Condition 52(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.
54. 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

55. The water quality of the Willowburn Stream at the confluence with Quailburn Stream shall be monitored within six months of the first exercise of consent as follows:
- (a) The location for monitoring shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
 - i. Map reference: NZMS 260 H39: 646-634 immediately upstream of all irrigation takes on the Quailburn Stream.
 - ii. Map reference: NZMS 260 H39: 691-343 downstream of the irrigation at the Willowburn Stream confluence with Quailburn Stream.
 - (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.
56. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for the downstream monitoring site specified in Condition 55 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.
57. The reports referred to in Condition 56 and 61 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.
58. If both the authors of the report prepared in accordance with Condition 57 conclude, after considering all the relevant available information (including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council) that 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 monitoring site,
- then no further action needs to be undertaken by the consent holder.
59. If Condition 58 is not satisfied, then:
- (a) the NDA, as specified in Condition 32, 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 on the relevant farm developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area; and

- (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
60. In relation to the Remedial Action Plan referred to in Condition 59(b) and 63(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 downstream 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 downstream 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.
61. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for the downstream monitoring site specified in Condition 55 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 57.
62. If both the authors of the report prepared in accordance with Condition 61 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.
63. If the report prepared in accordance with Condition 61 concludes that the environmental standard trigger has been exceeded because of farm land use practices, then:
- (a) the NDA, as specified in Condition 32, 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 on the relevant farm (at the time of the exceedance) under this resource consent divided by the total farm area; and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
64. If a required reduction in nutrient load is in effect under Condition 59(a) or 63(a) and monitoring for that period shows that the average sample results for the downstream 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 of 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 32 shall be restored.

Lake water quality monitoring and response

65. 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.
66. If the monitoring undertaken in accordance with Condition 65 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 32, 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 on the relevant farm under this resource consent divided by the total farm area; 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.
67. If a reduction in nutrient loading is required under Condition 66(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 32 shall be restored.
68. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 32, 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 developed for irrigation on the relevant farm under this resource consent divided by the total farm area; 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.
69. If a reduction in nutrient loading is required under Condition 68(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 32 shall be restored.

70. The nutrient load reductions and investigation referred to in Conditions 66 to 69 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

71. The Canterbury Regional Council may, once per year, on any of the last five working days of March or July serve notice of its intention to review the conditions of this resource consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the resource consent and which it is appropriate to deal with at a later stage, including (but not limited to) amending the flow in the Quailburn Stream at which abstraction is required to be reduced or discontinued as set out in Condition 3.

Lapse

72. 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 65, 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 (CRC991474) – DISTURB THE BED

1. The works shall be limited to:
 - a. Maintenance or replacement of the intake structure within the bed of the Quailburn Stream including excavation of gravel and sediments.
 - b. Maintenance only necessary to maintain adequate flow of water to the irrigation intake.
2. The works carried out in accordance with condition (1) shall be located at the Quailburn Stream, in the area shown on attached Plan CRC991473/4/5 at or about map reference NZMS 260 H39: 638-371.
3. Prior to commencing excavation, a copy of this resource consent shall be given to all persons undertaking activities authorised by this consent.
4. Any gravel, sand and other natural material excavated as part of the works authorised by this consent during the disturbance of the bed of the Quailburn Stream, must be deposited on, or near to, the excavation site, and shall be re-shaped and formed to a state consistent with surrounding natural riverbed
5. 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.
6.
 - 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.
7. Machinery shall be free of plants and plant seeds prior to use in the riverbed.
8. 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.

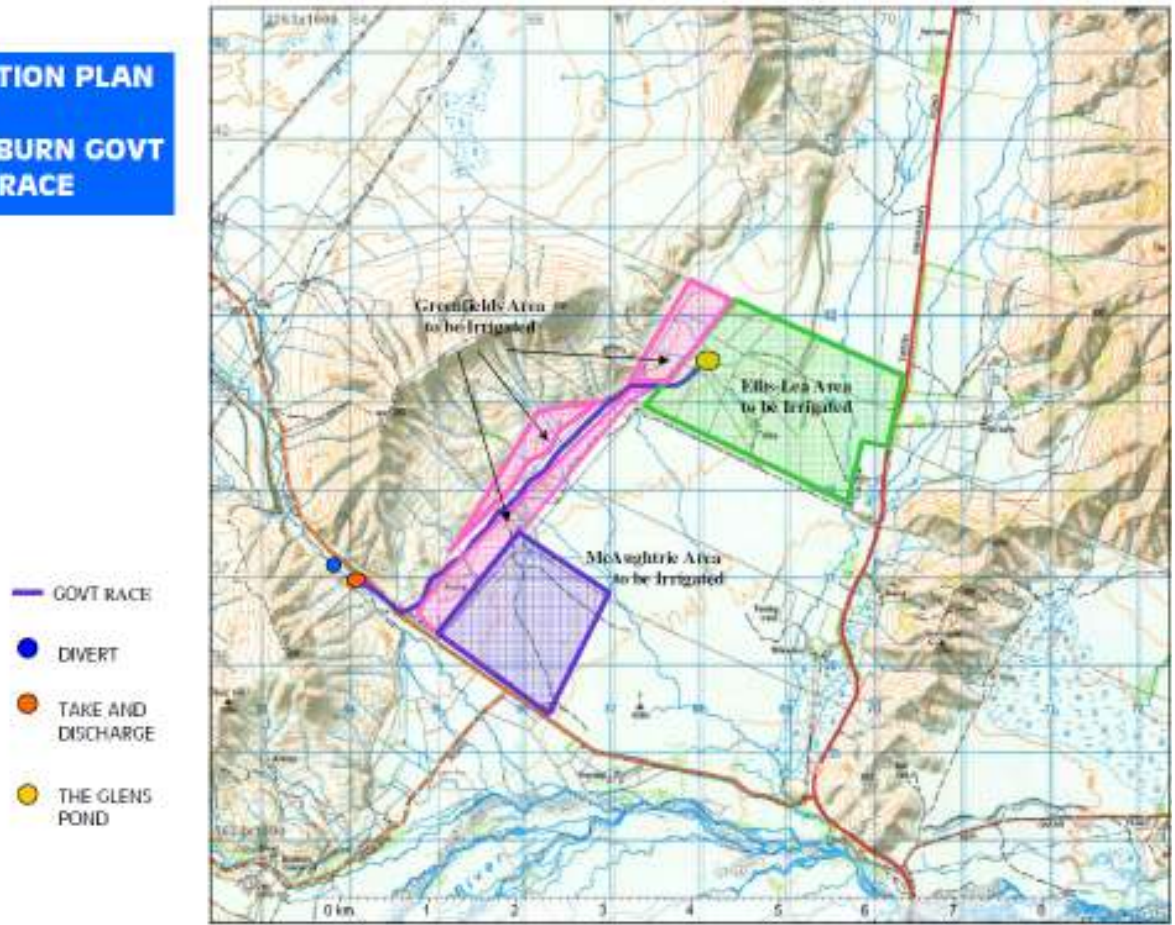
Note: You can access the most current version of these procedures from the Biosecurity New Zealand website <http://www.biosecurity.govt.nz> or Environment Canterbury Customer Services.
9. All practicable measures shall be undertaken to minimise adverse effects on property, amenity values, wildlife, vegetation, and ecological values.
10. The works shall not prevent the passage of fish, or cause the stranding of fish in pools or channels.
11.
 - a. Vehicles/and or machinery shall not operate within 100 metres of birds which are nesting or rearing their young in the bed of the river.
 - b. For the purposes of this condition, birds are defined as those bird species listed below:

12. Works shall not be undertaken in any manner likely to cause erosion of or instability to, the banks or bed of the Quailburn Stream; or reduce the flood-carrying capacity of the waterway
13. All practicable measures shall be undertaken to ensure that works do not deflect floodwaters into the berm.
14. In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall immediately:
 - a. Advise the Canterbury Regional Council of the disturbance;
 - b. Advise the Upoko Runanga of [Runanga], or their representative, and the New Zealand Historic Places Trust, of the disturbance; and
 - c. Cease earthmoving operations in the affected area until an area has been marked off around the site, and Kaumatua and archaeologists have given approval for the earthmoving to recommence. Note: This condition is in addition to any agreements that are in place between the consent holder and the Upoko Runanga (Cultural Site Accidental Discovery Protocol) or the New Zealand Historic Places Trust.
15. On completion of works, the area shall be restored to its original condition as far as practicable.
16. All spoil and other waste material from the works shall be removed from site on completion of works.
17. 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.
18. The lapsing date for the purposes of section 125 shall be 5 years from the commencement of this consent.

APPENDIX C: CONDITIONS OF CONSENT (CRC991475) – DISCHARGE

1.
 - a. Water shall only be discharged to Quailburn Stream at or about map reference NZMS H39: 638-371 as shown on attached Plan CRC991473/4/5:
 - b. The discharge shall only be unused conveyance water and shall contain no contaminants.
 - c. Water shall only be discharged at a rate not exceeding 170 litres per second.
2.
 - a. All practicable measures shall be undertaken to avoid erosion of the bed or banks of the Quailburn Stream occurring as a result of the discharge.
 - b. In the event of any erosion occurring to the bed or banks of the unnamed water channel, as a result of the discharge, the consent holder shall be responsible for rectifying the situation as soon as practicable.
3. The discharge shall not occur in a manner likely to cause erosion of, or instability to, the banks or bed of the Quailburn Stream; or reduce the flood-carrying capacity of the waterway
4. The discharge, after reasonable mixing, shall not cause a change in the colour or a reduction of the clarity of the receiving water body.
5. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.
6. The lapsing date for the purposes of section 125 shall be 5 years from the commencement of this consent.

**LOCATION PLAN
QUAILBURN GOVT
RACE**



Note: In accordance with Condition 6 of CRC991473, no irrigation shall occur within the area identified as an Outstanding Natural Landscape on Map 7 of the Waitaki District Plan (dated 17/01/2011).