

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

applications by **Glentanner Station Limited** take and use surface water from Lake Pūkaki or Pūkaki Canal (**CRC071362**) or Tekapo Stilling Basin (**CRC083609**) for spray irrigation of up to 200 hectares of crops and pasture, and for stock water use, at Catherine Fields, State Highway 8, Lake Pūkaki.

---

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

PART B – SITE SPECIFIC DECISION

---

## **TABLE OF CONTENTS**

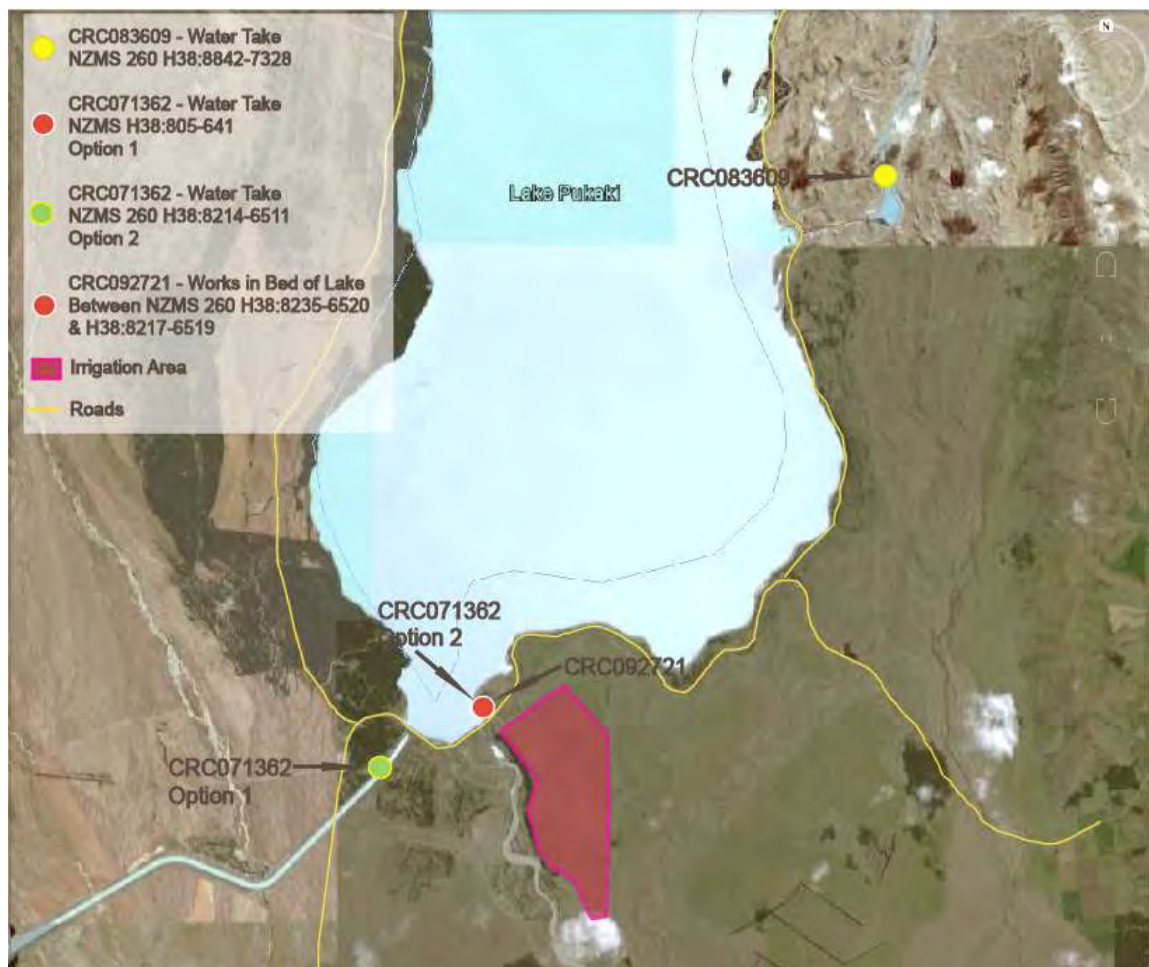
<b>1</b>	<b>INTRODUCTION .....</b>	<b>3</b>
<b>2</b>	<b>THE PROPOSAL .....</b>	<b>3</b>
<b>3</b>	<b>DESCRIPTION OF THE ENVIRONMENT.....</b>	<b>5</b>
<b>4</b>	<b>PLANNING INSTRUMENTS.....</b>	<b>6</b>
<b>5</b>	<b>NOTIFICATION AND SUBMISSIONS .....</b>	<b>8</b>
<b>6</b>	<b>THE SECTION 42A REPORTS .....</b>	<b>9</b>
<b>7</b>	<b>THE APPLICANT'S CASE.....</b>	<b>10</b>
<b>8</b>	<b>SUBMITTERS .....</b>	<b>17</b>
<b>9</b>	<b>UPDATES TO THE SECTION 42A REPORTS .....</b>	<b>19</b>
<b>10</b>	<b>APPLICANT'S RIGHT OF REPLY .....</b>	<b>20</b>
<b>11</b>	<b>STATUTORY CONTEXT .....</b>	<b>21</b>
<b>12</b>	<b>EVALUATION OF EFFECTS .....</b>	<b>21</b>
<b>13</b>	<b>EVALUATION OF RELEVANT PLANNING INSTRUMENTS .....</b>	<b>25</b>
<b>14</b>	<b>EVALUATION OF OTHER RELEVANT S104 MATTERS .....</b>	<b>29</b>
<b>15</b>	<b>SECTION 104D JURISDICTIONAL HURDLES.....</b>	<b>29</b>
<b>16</b>	<b>PART 2 RMA.....</b>	<b>30</b>
<b>17</b>	<b>OVERALL EVALUATION .....</b>	<b>31</b>
<b>18</b>	<b>CONDITIONS .....</b>	<b>32</b>
<b>19</b>	<b>DECISION .....</b>	<b>33</b>
	<b>APPENDIX A: CONDITIONS OF CONSENT (CRC071362) –PŪKAKI CANAL.....</b>	<b>34</b>
	<b>APPENDIX B: CONDITIONS OF CONSENT (CRC083609) – TEKAPO STILLING BASIN.....</b>	<b>43</b>
	<b>PLAN CRC071362 / CRC083609 .....</b>	<b>52</b>

## 1 INTRODUCTION

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

## 2 THE PROPOSAL

- 2.1 Water Permit Application CRC071362 proposes to take water from the **Pūkaki Canal** or **Lake Pūkaki** for irrigation of 200 ha on the applicant's property (Catherine Fields, Glentanner Station). Water Permit Application CRC083609 proposes to take water from the **Tekapo Stilling Basin** for irrigation of the same area.
- 2.2 In summary, three alternative take locations are proposed in two separate applications. All three proposed takes are alternative options for irrigating the same area of land on the applicant's property. If both applications are granted, the applicant intends to choose the most viable point of take out of the three alternatives, at which point the alternative intake locations will no longer be required.
- 2.3 The water will be used for spray irrigation of up to 200 hectares of crops and pasture for grazing at Catherine Fields, State Highway 8, Lake Pukaki, using centre pivot irrigators primarily, with some further irrigation on the peripheral areas using K-line or hard hose. The proposed intake locations and irrigation area are shown in Figure 1 below.



*Figure 1: Indicative location plans*

- 2.4 The proposed rate and location of takes for the two applications are as follows:
- (a) **CRC071362** – take water from either Pūkaki Canal at or about map reference NZMS 260 H38:805-641, **or** Lake Pūkaki at or about either map reference NZMS 260 H38:8214-6511 or NZMS 260 H38:822-652 at a maximum rate not exceeding 116 litres per second, and a volume not exceeding 1,200,000 cubic metres per year.
  - (b) **CRC083609** - take water from the Tekapo Stilling Basin at map reference NZMS 260 H38:8842-7328, at a maximum rate not exceeding 116 litres per second and a volume not exceeding 1,200,000 cubic metres per year
- 2.5 The proposed annual volume of water for irrigation is 600 mm per hectare, with approximately 120 days irrigation, from October to April inclusive. This will enable stocking rates to be increased to between 3 and 15 stock units per hectare.
- 2.6 The applicant has proposed a range of mitigation measures for its proposed activity, including:
- (a) To comply with the minimum lake level for Lake Pukaki, as specified in Rule 3, Table 4 of the WCWARP;
  - (b) To undertake soil moisture monitoring to effectively manage irrigation;
  - (c) To apply no more than half the average water holding capacity of the soil per return period of irrigation;
  - (d) To install a suitable water metering device;
  - (e) To install a suitable fish screening device, determined after consultation with Fish and Game New Zealand, installed at the joint intake location in the Tekapo Stilling Basin, shared with Simons Pass Station Limited, Simons Hill Station Limited and Classic Properties Limited;
  - (f) To include a buffer zone outside the irrigation area of between 30 and 50 metres from the bed of an ephemeral water course;
  - (g) To institute a farm management plan and additional measures to mitigate against effects of irrigation on surface water and groundwater, as identified by the Mackenzie Water Research Limited study;
  - (h) To abide by standard conditions assigned by Mackenzie Irrigation Company Limited;
  - (i) To accept a non-concurrent use condition in the event that CRC083609 and CRC071362 are both granted.

### **The applications**

- 2.7 The applications are for water permits to take and use surface water pursuant to section 14 of the RMA. Consent is required under the Waitaki Catchment Water Allocation Regional Plan (WCWARP), as discussed below.
- 2.8 Application CRC071362 was lodged with the Canterbury Regional Council (the Council) on 7 November 2006, with application CRC083609 being lodged later in time on 25 March 2008. Both applications were publicly notified and there were a number of submissions that are referred to later in this decision. The applications are for new activities and requested consent durations to 30 April 2025 for CRC071362 and a duration of 17 years for CRC083609.

### **Modifications after notification**

- 2.9 On 30 July 2009 the applicant advised that the intake location from Lake Pūkaki would not be from the notified location of NZMS 260 H38:822-649 at the Pūkaki Spillway, but from NZMS 260 H38:822-652, approximately 160 metres north of the spillway, as a result of concerns expressed by Meridian Energy Limited.
- 2.10 The applicant also advised that an additional intake location for Lake Pūkaki should be included as part of the application, specifying the location as NZMS 260 H38:8214-6511, which is

approximately 100 metres southeast of the other intake location, in the lake bed, rather than on the shore, recognising that the point of abstraction will be below the minimum lake level.

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

### **Related consents and applications**

- 2.12 Pūkaki Irrigation Company Limited (PIC) has applied for 5 land use consents (CRC082300, CRC062866, CRC062870, CRC062871 and CRC062872) to allow it to install multiple intake structures and construct a pipeline across numerous watercourses. This infrastructure may be used to convey water from the chosen location of take to the applicant's property. Our findings on applications CRC082300, CRC062866, CRC062870, CRC062871 and CRC062872 are provided in a separate decision (Pūkaki Irrigation Company Limited).
- 2.13 In addition to the above, the applicant has applied for its own land use consent (CRC092721) to install and maintain an independent intake structure in Lake Pūkaki, at the same location as the proposed PIC. This is intended to provide a further option in the event that the PIC scheme does not proceed, or economic considerations favour an independent intake. The decision on this application is also provided in a separate decision.
- 2.14 The locations of these intakes and pipelines correspond with the applicant's proposed points of take at Pūkaki Canal, Lake Pūkaki and Tekapo Stilling Basin. The applicant intends to only exercise the relevant land use consents (depending on the chosen point of take) and therefore, the alternative land use consents, if granted, will no longer be required.

## **3 DESCRIPTION OF THE ENVIRONMENT**

---

### **Pūkaki Canal**

- 3.1 Flows in the Pūkaki Canal are managed by Meridian Energy Limited for hydroelectricity generation purposes. Pūkaki Canal is a manmade structure with average flows of 187 cumecs, a maximum recorded flow of 534 cumecs and a consented flow of 560 cumecs. Besides Meridian Energy Limited, there are no other consented users of water from Pūkaki Canal.

### **Lake Pūkaki**

- 3.2 Total inflows to the lake from contributing rivers average 152 cumecs, with major inflows from the Tasman, Jollie and Hooker rivers. Inflows from the Tekapo B Power Station canal, controlled by Meridian Energy Limited, average 115 cumecs. Outflows and lake levels are controlled by Meridian Energy Limited for hydroelectricity generation purposes. The lake surface area is approximately 175 million square metres.
- 3.3 Lake Pūkaki is considered to have high natural character and high landscape and visual amenity values under the WCWARP. Other than Meridian Energy Limited, there are no other consented surface water abstractors from Lake Pūkaki.

### **Tekapo Canal and Stilling Basin**

- 3.4 The Tekapo Canal and Tekapo Stilling Basin are man-made structures operated for power generation. The Tekapo Canal is approximately 26.5 kilometres long, with an average depth of 5.3 metres, a typical peak flow of 110 cumecs and a maximum flow of 130 cumecs.
- 3.5 The Tekapo Stilling Basin is situated prior to the Tekapo B power station, which discharges into Lake Pūkaki and produces a nominal annual generation of 800 GWh.
- 3.6 Salmonids inhabit the canal (including salmon, rainbow and brown trout) and recreational anglers make use of the canals and Stilling Basin. A salmon farm is situated in the canal several kilometres upstream of the proposed abstraction site. Didymo has been detected in the Tekapo-Pūkaki Canal.

## Property Location – Catherine Fields

- 3.7 Catherine Fields, the site of proposed irrigation, is located on terraces adjacent to the true left bank of the Pūkaki River, approximately 600 metres from the south shore of Lake Pūkaki and approximately 12 kilometres southwest from the Tekapo Stilling Basin intake location. The property consists of approximately 435 hectares of gently rolling pasture, not currently irrigated, stocked with merino sheep and used for growing seasonal feed crops.
- 3.8 The western boundary of the property is land administered by Meridian Energy Limited adjacent to the Pūkaki River, the northern boundary is DOC land, and Simons Pass Station flanks the eastern and southern boundaries. The property is separate from Glentanner Station itself, which is located at the head of Lake Pūkaki on the opposite shore. Catherine Fields passed to Glentanner Station as compensation, due to the station retiring high country land for the purposes of soil conservation.
- 3.9 The rolling hills between the State Highway and Catherine Fields are part of an area of terminal moraine, within which is a geopreservation area, administered by DOC, with a public access track to moraine landforms, including pillow lava. Glacial boulders are evident within this area of Catherine Fields, and the applicant noted on the site visit that boulders had been removed from the property in the past to allow cultivation, which had been provided to Meridian Energy Limited for use as rip rap material (seen on the shores of Lake Pūkaki in the proximity of the Lake Pūkaki spillway).

## Site Visit

- 3.10 We detailed our site visits in Part A and we do not repeat this information here. We did not inspect the site on the ground but did inspect the site from the air to familiarise ourselves with the proposal.

## 4 PLANNING INSTRUMENTS

---

- 4.1 As discussed in our Part A decision, there is a wide range of planning instruments that are relevant under the RMA. This includes national and regional policy documents, along with regional and district plans. The key planning instruments relevant to these applications are as follows:
- (a) Waitaki Catchment Water Allocation Plan (WCWARP);
  - (b) Natural Resources Regional Plan (NRRP);
  - (c) Proposed and Operative Canterbury Regional Policy Statement (CRPS); and
  - (d) Mackenzie District Plan (MDP)
- 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 The relevant plan for determining the status of these applications is the WCWARP. We have considered the relevant rules of the WCWARP below for each alternative take.

## Pūkaki Canal

- 4.5 The following rules from the WCWARP are applicable to this application:
- (a) Rule 3, clause (1) – The applicant proposes to adopt the minimum lake level for Lake Pūkaki of 518.0 metres above mean sea level (Table 4, row (ii)).

- (b) Rule 6 – The proposed annual volume of 1,200,000 cubic metres is within the annual allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam (applicable to abstraction from canals leading from the glacial lakes as per footnote 23, pg 52 of the WCWARP);
  - (c) Rule 17 – Classifying rule, complies with Rule 3, and Rule 6.
- 4.6 Overall, the proposal to take and use water from the Pūkaki Canal is a **discretionary** activity under Rule 17 of the WCWARP and resource consent is required in accordance with Section 14 of the RMA.

#### Lake Pukaki

- 4.7 The following rules from the WCWARP are applicable to this application:
- (a) Rule 3, clause (1) – The applicant proposes to adopt the minimum lake level for Lake Pūkaki of 518.0 metres above mean sea level (Table 4, row (ii)).
  - (b) Rule 6 – The proposed annual volume of 1,200,000 cubic metres is within the annual allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam (applicable to abstraction from canals leading from the glacial lakes as per footnote 23, pg 52 of the WCWARP); however, the proposal to take from Lake Pūkaki exceeds the allocation limit of 8 million cubic metres for agricultural activities upstream of Lake Pūkaki outlet.
  - (c) Rule 18 – Classifying rule, complies with Rule 2, but not Rule 6.
- 4.8 Overall, the proposal to take and use water from Lake Pūkaki is a **non-complying** activity under Rule 18 of the WCWARP and resource consent is required in accordance with Section 14 of the RMA.

#### Tekapo Stilling Basin

- 4.9 The following rules from the WCWARP are applicable to this application:
- (a) Rule 3, clause (1) – The applicant proposes to adopt the minimum lake level for Lake Tekapo of 704.1 metres above mean sea level in the period October to March, and 701.8 metres above mean sea level in April (Table 4, row (ii)).
  - (b) Rule 6 – The proposed annual volume of 1,200,000 cubic metres is within the annual allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam (applicable to abstraction from canals leading from the glacial lakes as per footnote 23, pg 52 of the WCWARP).
  - (c) Rule 17 – Classifying rule, complies with Rule 2 and Rule 6.
- 4.10 Overall, the proposal to take and use water from Tekapo Stilling Basin is a **discretionary** activity under Rule 17 of the WCWARP (and TRP) and resource consent is required in accordance with Section 14 of the RMA.

#### Overall status of the proposal

- 4.11 Based on the above, one of the proposed takes is non-complying (Lake Pukaki), while the other two are discretionary.
- 4.12 Given this circumstance, we considered whether to bundle all three options together and consider the entire proposal as a non-complying activity. However we have approached this decision on the basis that each of the intake locations is an alternative and that, if granted, only one of the consents will be exercised. On this basis, the effects of the exercising the alternatives will not overlap.
- 4.13 We have therefore determined the status of the activity separately for each of the alternatives. We consider that the status of one alternative should have no impact on the status of another, as only one option will be exercised. This is consistent with approach adopted by the Environment Court in relation to the bundling of consents (*Southpark Corporation Limited v Auckland City Council* [2001] 8NZRMA 350).

- 4.14 In summary, we have assessed the Lake Pūkaki option as **non-complying** and the Pūkaki and Tekapo Stilling Basin options as **discretionary**. This is reflected in our application of the s104D threshold tests later in this decision, which are only relevant to the Lake Pūkaki option.

## 5 NOTIFICATION AND SUBMISSIONS

### CRC071362 – Pūkaki Canal and Lake Pukaki

- 5.1 This application was publicly notified in 2007 and 22 submissions in total were received, including:

- (a) 4 in support;
- (b) 16 in opposition; and
- (c) 2 neither in support nor opposition.

- 5.2 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 these submitters and those on CRC083609 (see Table 2) is discussed in more detail later in this decision. Please note that all submissions hold equal importance, even if not specifically listed below.

**Table 1.** Summary of submissions on application CRC071362

Submitter	Reasons	Position
Canterbury Aoraki Conservation Board	AEE deficient, WQ effects, natural character, indigenous species habitat, landscape changes, 35 yr duration too long	Oppose
Upper Waitaki Community Irrigation Scheme	Consistent with objectives of the WCWARP, recognises irrigation potential in the Mackenzie	Support
Transit New Zealand	Impact on Transit infrastructure not assessed, piping under the state highway has potential to affect road and reserve due to failure or seepage	Oppose
Meridian Energy Limited	Need to comply with MIC tranching arrangements; need to consider water quality effects, both cumulative and individual; MEL controlled low flows not accommodated; need to consider effects on MEL infrastructure; need water metering; contrary to Part II of the RMA	Oppose
Department of Conservation	WQ effects on habitats, species & ecosystems; natural character, indigenous flora, fauna & threatened species; pest organism threat to freshwater habitats	Oppose
David Scott	Irrigation potential to increase productivity	Support
Mark Urquhart (Grays Hill Station)	Spray irrigation will be very efficient use of water, minimal effect with good advantage due to less soil loss, and to local community; landowner can protect other natural values	Support
L H Shand	protect outstanding natural features of the Mackenzie, as an iconic landscape locally, regionally, nationally and internationally	Oppose
S Mahon & A Erickson	Protect the quality of river water feeding Lake Pukaki, and monitor lakeside irrigation enterprises; protect the natural beauty of the Mackenzie country	Oppose



- 5.3 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.

#### **CRC083609 – Tekapo Stilling Basin**

- 5.4 This application was publicly notified in 2008 and 10 submissions in total were received, including 4 in support and 6 in opposition. Table 2 is based on the relevant s42A reports and summarises those submissions that directly referenced the application.

**Table 2.** Summary of submissions on application CRC083609

<b>Submitter</b>	<b>Reasons</b>	<b>Position</b>
Mr A J Gloag (Buscot Station)	Sustains the natural resource by preventing soil degradation and assisting against rabbit infestation	Support
Mr W G Murray (Glenmore Station)	Irrigation in the Mackenzie vital to sustainable land management	Support
Ruataniwha Farm Limited	Make the farm more viable, provide hay and silage to help fatten stock	Support
Meridian Energy Limited	Need to comply with MIC tranching arrangements; need to consider water quality effects, both cumulative and individual; MEL controlled low flows not accommodated; need to consider effects on MEL infrastructure; need water metering; contrary to Part II of the RMA	Oppose
Mr D W Thomas (Killermont Station)	Support new irrigation, agricultural growth and sustainability	Support
Land Information New Zealand	Insufficient information to assess impact on Crown Land/Pastoral Leases, easements may be required	
Department of Conservation (Twizel Area Office)	Contrary to Part II of the RMA; deficient effects assessment; water quality effects on ecosystems, including cumulative, not considered; preservation of natural character, protection of indigenous species not considered; not clear that fish screen will meet NIWA guidelines; Freshwater Fisheries Regulations may apply; need to consider Canterbury Conservation Management Strategy	Oppose
Royal Forest & Bird Protection Society Inc (South Canterbury Branch)	Concerned with land use intensification affecting landscape, water quality effects and impacts on native species, as well a potential increase in Canada geese population	Oppose
Fish & Game New Zealand (Central South Island Region)	Concerned with efficiency, water metering, water quality effects, fish screening, duration, land use intensification and amenity values	Oppose
Canterbury Aoraki Conservation Board	Concerned with effects on wetlands through nutrient leaching and run-off; request a condition requiring funding of research into water quality effects	Oppose

## **6 THE SECTION 42A REPORTS**

- 6.1 Two separate section 42A reports on the applications and submissions was prepared by the Council's Consent Investigating Officer, Ms Maria Bartlett; one on CRC071632 (Report 15B) and one on CRC083609 (Report 15A).
- 6.2 The primary reports were supported by a number of specialist s42A reports prepared by Messrs Heller, Hanson, Glasson, McNae and Stewart, and Drs Clothier, Schallenberg, Meredith and

Freeman. The key issues addressed by these reports were cumulative water quality effects, landscape effects, and environmental flow and level regimes.

- 6.3 All reports were pre-circulated in advance of the hearing. We have read and considered the content of the reports and refer to them as relevant throughout this decision.

#### **Ms Bartlett**

- 6.4 At the time the primary report was prepared, there was insufficient information for Ms Bartlett to reach firm conclusions on the effects of the proposal. Matters that were identified as outstanding at that time were:

- (a) People, community and amenity values - Adverse effects on an archaeological site within the proposed irrigation command area had not been addressed.
- (b) Natural character and landscape - Cumulative effects on landscape had not been addressed by the applicant.
- (c) Efficient and reasonable use - The applicant proposed an annual volume greater than reasonable use estimates predicted was required;
- (d) Water quality - Cumulative effects on water quality had not been addressed by the applicant.

- 6.5 Given uncertainty regarding cumulative effects on landscape and water quality, and given inconsistency with Policy 15 and Policy 16, of the WCWARP regarding efficient use of water, Ms Bartlett was unable to recommend that either application be granted.

- 6.6 We discuss these issues further below after summarising the applicant's case.

#### **Mr Glasson**

- 6.7 The Canterbury Regional Council landscape expert Mr Chris Glasson in his section 42A report said that the application site is located at the southern end of Lake Pūkaki within the moraine downlands. He noted that the site was discretely located with low visibility and that the site was not visible from SH8.

- 6.8 Mr Glasson commented that the site is partly modified sites due to farming operations, with building and shelter belts present. On this basis he considered that the adverse effects of the proposal on landscape values would be minor. If mitigation measures were adopted such as retaining tussock grassland on the hillocks, integrating the edges of the irrigated area according to the landform, locating and treating any pump house in a sensitive and recessive manner and the least visible option for the diversion system, then the adverse effects will be less than minor.

- 6.9 However, later in the same report he stated that the site as highly visible from the "observation point" and that the geometrically shaped edges to the proposed irrigation area created moderate adverse landscape effects which required mitigation. He said that without the retention of tussock grassland on the moraine hills, the proposal would create moderate adverse landscape effects. Mr Glasson also said that there was a need for a buffer between river terrace riser and irrigated land. The buffer should consist of tussock grassland and shrub vegetation to maintain the natural character of the river.

## **7 THE APPLICANT'S CASE**

---

- 7.1 Legal counsel for the applicant, Mr Ewan Chapman, presented opening submissions and called evidence from Mr Ross Ivey (Farmer) and Ms Haidee McCabe (Resource Management Consultant). In addition, general briefs of evidence on behalf of all UWAG applicants were presented by Mr Robert Batty (Planner) and Mr Andrew McFarlane (Farm Management Consultant). We have summarised the key points from submissions and evidence below.

#### **Opening legal submissions**

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

applications and those issues will be raised when the specifics of the applications were discussed in closing.

- 7.3 Mr Chapman told us that UWAG represents some 72% of all applicants for water takes. This equates to 31% of the total water volume applied for (excluding stockwater and non-consumptive diverts) and 29% of the total irrigable area.
- 7.4 Mr Chapman emphasised that despite the collective approach adopted for these hearings, each application needs to be considered in isolation from others (allowing for priorities). However Mr Chapman noted that UWAG is not producing any other evidence to support its own assessments of cumulative effects and adopts the MWRL evidence to the extent that it defines nodal thresholds.
- 7.5 While raising some challenge to the outcomes of the mitigation measures proposed by MWRL resulting from the WQS study, Mr Chapman told us that the UWAG members were not presenting their case to say that they cannot or will not meet an area-based NDA threshold. To the contrary, he said that we would be shown that they have taken the model and applied it to all properties and will, with mitigation, meet the thresholds.
- 7.6 Mr Chapman then addressed us on the issue of allocation of assimilative capacity. He contended the approach taken by MWRL that essentially resulted in some farming units mitigating for the nutrient loss of other farming units, was inappropriate. He submitted a more appropriate method of allocation is on the basis of productive use of land. The productive use of the land he said represents the level of nutrient discharge of each farming unit and that should be used; and that the method of allocation based on dividing allocation on a per hectare basis should not be utilised.
- 7.7 He submitted that by assessing allocation of assimilative capacity on the basis of productive land use to reflect the NDA for each unit, these methods would be more representative and realistic of the nutrient discharge of each farming unit.
- 7.8 In terms of conditions concerning the nodal approach, he told us the essential issue lies with pinpointing who is exceeding their NDA if exceedances are detected at the nodal point. He told us the UWAG applicants' preference is for on-farm management of total nutrient discharge and annual auditing of individual FEMPs. He then referred us to a draft condition from the Rakaia Selwyn groundwater zone hearing, noting it was a very much site-specific condition.
- 7.9 He submitted that on-farm monitoring should be favoured over monitoring at nodal points. He said this did bring in the practicalities of the purpose of employing the FEMP with the result that if a breach of the FEMP occurs, the consent authority would have control to enforce the conditions of the consent against the individual applicant. It also reflects the reality that each farm will be different depending on the type of activity that is undertaken on that farm with their individual tailored farming management practices.
- 7.10 Mr Chapman also said that UWAG had not tabled a final set of conditions or final farm management plans. These matters would be worked through and provided to all parties as the hearing progressed. UWAG was of the view that one suite of conditions was inappropriate. There were variables between sub-catchments, take points, and the "type" of consent applied for which would mean that individual conditions would need to be worked through.

### **Farming operations**

- 7.11 Mr Ross Ivey lives at Glentanner Station and he holds a Bachelor degree in Agriculture Commerce. He is a second generation farmer at Glentanner, a property that has been in his family since 1960.
- 7.12 Mr Ivey said that Glentanner was a true high country gorge run located on the western shores of Lake Pūkaki adjacent to the Aoraki Mount Cook National Park. Glentanner is a run farm with merino sheep, Hereford cattle and red deer.
- 7.13 Mr Ivey also has commercial interests in Glentanner Park, a tourism business including a holiday park, airfield, scenic flights, café, retailing and information centre.
- 7.14 Mr Ivey said that Catherine Fields is a 435ha farm which was used as a runoff to Glentanner Station. Catherine Fields and Glentanner are approximately 35km apart. Catherine Fields became part of the Glentanner pastoral lease in 1983 after a soil and water conservation plan (Run Plan

- 52) was entered into with the Waitaki Catchment Commission. At present both properties are under one title.
- 7.15 The Run Plan was to provide for the grazing of 2400 stock units displaced from high altitude lands. It was instituted to retire from grazing some 8870 ha (two thirds) of the Glentanner pastoral lease.
- 7.16 Mr Ivey said that during the development process at Catherine Fields, the Run Plan portion of which was subsidised, Glentanner also carried out significant development from its own resources. There was still a deficit of some 1550 stock units of grazing yet to be provided to fully implement the plan and completely destock the high country at Glentanner.
- 7.17 Ms Ivey explained that there have been a number of problems and issues with implementation of the run plan which have not been resolved. Glentanner still maintains the view that they are worse off after having entered this Run plan. LINZ, or Land Information NZ and their agents DTZ are aware of the issues and sympathise with Glentanner's view. As a result, Glentanner still grazes some of their high country to make up the Run Plan shortfall in carrying capacity.
- 7.18 Mr Ivey said that the biggest problem with Glentanner's use of Catherine Fields as a runoff was the climate:
- (a) The rainfall is only 550 mm rainfall p.a.
  - (b) This rainfall is too variable.
- 7.19 He then said that the Waitaki Catchment Commission and Glentanner jointly spent a lot of money to make this dry land runoff farm work. Glentanner still was investing large amounts of money into Catherine Fields but was constantly being hamstrung by dry seasons, whether they were spring, summer or autumn droughts, or a combination of all three. He said that they had a well-documented fertiliser and lime history showing they had endeavoured to make Catherine Fields perform. Often young grass paddocks and winter supplement crops failed because of drought. Some autumns, approx. every 4<sup>th</sup> year, they totally destock Catherine Fields and move all stock to Glentanner.
- 7.20 Mr Ivey said that they had invested heavily in grassing and fertility, fencing, yards and buildings, stock water, tracking, rock removal and cultivation to be faced with continual disappointments from a lack of rainfall. Rainfall is the limiting factor. It was his opinion that it was not economically sustainable to farm Catherine Fields under the present basis from Glentanner.
- 7.21 Mr Ivey said that he feels that they are past the point of no return in terms of investment in Catherine Fields and saw irrigation as the logical solution to providing a dependable supply of pasture and crop production for sheep and beef farming in the future.
- 7.22 Ms Haidee McCabe of Irrigation Resource Solutions said that Catherine Fields was a 435ha property that was run in conjunction with Glentanner Station, a 16,000ha high country property. Collectively Glentanner and Catherine Fields run 10,000 SU with approximate proportions of 80% being sheep, 15% beef cattle and 5% deer.
- 7.23 She then said that at present Catherine Fields is primarily used as a finishing farm for Glentanner and running stud merino ewes plus all of the hoggets are wintered there. All of the Glentanner annual draft ewes are sent to Catherine Fields in October, lambed there and then the ewes are sold.
- 7.24 Ms McCabe said that the applicant's intention was to continue to use Catherine Fields as they presently do. However, with irrigation there would be additional cattle, finishing of more sheep, and an increase in capital sheep stock.

## **Water Source**

- 7.25 There are three possible water sources for these applications; Pūkaki Canal (between Lake Pūkaki and Ruataniwha), Lake Pūkaki and the Tekapo Stilling Basin (canal between Lake Tekapo and Lake Pūkaki).
- 7.26 Ms McCabe said that the Pūkaki Canal (CRC071362) was 12km long, carrying water from Lake Pūkaki to Lake Ruataniwha and is mechanically operated by Meridian Energy and therefore the

environmental values are minor. Salmon are known to inhabit the canal as well as the possibility of other fisheries species since fish are able to enter through the Pūkaki control gate.

- 7.27 Ms McCabe said that Lake Pūkaki (CRC071362) was the largest glacial lake with an area of approximately 169 km<sup>2</sup>. Three major rivers contribute to its inflows; the Tasman, Jollie and Hooker Rivers plus smaller tributaries. Tekapo B power station discharges into Lake Pūkaki and also contributed a large proportion of its inflows, which are controlled by Meridian Energy. She said that the lake levels vary significantly and the normal operating range was between 532mtrs and 518mtrs above sea level depending on the time of year and Meridian Energy's management. The fisheries, flora and fauna values were highest where the rivers flow into Lake Pūkaki, with numerous wildlife habitats. Fish species that have been recorded in Lake Pūkaki are brown trout, common bully, Canterbury galaxias, koaro, long-finned eel and rainbow trout. The habitat value for brown and rainbow trout was low.
- 7.28 The Tekapo Canal (CRC083609) carries a substantial volume of water from Lake Tekapo to Lake Pūkaki via the Tekapo B power station. Ms McCabe said that the canal was some 26.5km in length and averaged a depth of 5.3 meters. The Tekapo stilling basin was located just prior to the Tekapo B power station where the water then discharges into Lake Pūkaki. Salmon inhabit the canal and were farmed a few kilometres upstream of the proposed abstraction point. Other fisheries species present in the canal were rainbow and brown trout.
- 7.29 Ms McCabe said that consultation with Meridian Energy Limited (MEL) has been ongoing and in June 2009 general agreement on the location and revised concept had been reached to address the concerns Meridian raised. MEL submission was finally withdrawn in relation to the potential adverse effects on MEL infrastructure, on the 21<sup>st</sup> September 2009, given agreement has been reached.
- 7.30 Ms McCabe also assumed that as Fish & Game had supported the WCWARP minimum flows (she assumed that included support for the WCWARP minimum lake levels) which the applicant had proposed this aspect of the application would be supported by Fish & Game.
- 7.31 Ms McCabe said that the allocation abstracted from the canal, falls within the "Upstream of the Waitaki Dam but not upstream of the outlets of the glacial lakes". The cumulative allocation is 275 Mm<sup>3</sup> per annum and this application is within that limit.

#### **Effects on other water users**

- 7.32 This is a new consent application with other users also seeking to take water from the same possible water sources however Ms McCabe believed that effects on other water users were minor, and that the section 42a reporting officer was of the same opinion.

#### **Effects on ecosystems**

- 7.33 Ms McCabe then explained that Simons Hill and Simons Pass also had proposals to take from either Lake Pūkaki, the Pūkaki Canal or the Tekapo Stilling Basin. All three proposals were part of the Pūkaki Irrigation Company (PIC) scheme and may use the same infrastructure.
- 7.34 Ms McCabe said that the intake structures had been designed by Riley Consulting Ltd in order to address MEL concerns with intakes near Meridian infrastructures. The final design would also address fish screen requirements in accordance with the recommended guidelines, however, it should be noted that didymo had been detected in the Upper Waitaki canal system and the presence of this organism may challenge the performance of any intake and fish screen if it establishes itself.
- 7.35 Furthermore the high glacial sediment levels need to be considered during finalising the fish screens to accommodate this characteristic and ensure they can operate adequately.
- 7.36 It was Ms McCabe's opinion that the minimum lake levels proposed by the WCWARP in Table 4 were developed to ensure that the aquatic values of the lake systems are protected. The applicant proposed to accept the minimum lake levels relevant to each consent as defined in Table 4 of WCWARP. Given compliance with minimum lake levels and fish screens on intake to meet guidelines Ms McCabe's opinion was that the effects on ecosystem values were minor.
- 7.37 Ms McCabe said that whilst CRC071362 from Lake Pūkaki was considered non-complying as defined under the WCWARP Table 5, given the 8 Mm<sup>3</sup> Lake Pūkaki cap, the ecosystem was not considered to be adversely effected. The proposed volume was very small when compared with

the volume of the lake. It was therefore not considered an environmental issue but a planning matter.

### Efficient use of water

- 7.38 Addressing irrigation Ms McCabe said that the proposed application depth of 15-35 mm per return period was less than 50% of the water holding capacities of the soils and the annual volume had been determined by Irricalc modelling.
- 7.39 Policy 15 and 19 of the WCWARP encourages the piping or otherwise sealing of water distribution systems to minimise water losses and meet efficiency and effective use requirements.
- 7.40 Ms McCabe said that CRC083609 was proposed to be completely piped given it is a gravity feed system to spray irrigation and a troughed system. CRC071362 if sourced from the PIC scheme, would be a combination of piping and racing from a main headrace, However if sourced independently by the applicant this would be an entirely piped system. All systems were considered to be efficient given the race loses would be within 10% which was the general guideline.
- 7.41 Ms McCabe said that Policy 21 of the WCWARP required all water takes to be metered. To ensure that this application was consistent with this policy, the applicant proposed to meter their take at the intake location. She then said that if consent was exercised with the PIC scheme, additional metering would be required specific to the applicant to ensure allowances were not exceeded.
- 7.42 Given this, Ms McCabe considered that effects of inefficient water use are minor.

### Effects of the use of water on water quality

- 7.43 Ms McCabe said that the property, according to the MWRL Water Quality Study, is located within the Pūkaki River groundwater catchment and Pukaki/Tekapo surface water catchments. For this property, the groundwater mitigation requirements are the most stringent and are accounted for in the overall property threshold from the MWRL Study.

	Nitrogen Threshold	Phosphorous Threshold
MWRL Water Quality Study Property Thresholds	4432 kg/annum	135 kg/annum
OVERSEER® Outputs	2882 kg/annum	127 kg/annum

- 7.44 Ms McCabe believed that this table showed that the applicant could meet the property thresholds which are the most restrictive.
- 7.45 OVERSEER® results are only valid if "Mandatory Good Agricultural Practices" are implemented. Ms McCabe said that the applicant was committed to implementing those practices set out within the Farm Environmental Management Plan (FEMP). It was Ms McCabe's opinion that this along with ensuring that the property thresholds of the WQS were not exceeded would ensure that the cumulative effects of the use of water for irrigation on water quality were no more than minor.
- 7.46 Ms McCabe said that the MWRL study also identified that the applicant had to consider specific on farm effects and the impacts these activities could have on the local receiving environment. 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.
- 7.47 Ms McCabe said that the workshop identified potential on farm risks specific to each farm along with possible mitigation measures. The on farm risks identified would need to be verified by an appropriately qualified person who on a site visit, for Catherine Fields, the desktop risk assessment identified the following potential risks:

- (a) Soil condition after winter fodder crops

- (b) Soil Erosion
  - (c) Timing of N Fertiliser applications
  - (d) Water trough placement
- 7.48 The applicant had committed to implementing the FEMP including an on farm risk assessment, appropriate mitigation, monitoring and auditing before the first exercise of this consent. The FEMP has been proposed as condition of consent.
- 7.49 Ms McCabe said that given that the N and P thresholds from the MWRL Study could be met, and the applicant's commitment to addressing on farm risks with the implementation of the FEMP, the effects of the use of water on water quality for both the local receiving environment and cumulative effects are considered to be minor.

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

- 7.50 Ms McCabe said that the applicant had proposed to adopt the minimum lake levels as per Table 4 of the WCWARP for the water bodies from which they have applied to take and use water. She considered adopting minimum lake level would adequately protect people, community and amenity values within the rivers specific to each applicant.
- 7.51 Ms McCabe also explained that the 1888 rabbit fence would need to be disturbed in a few specific areas to allow for the operation of the irrigation system. The rabbit fence was considered to come under the jurisdiction of the NZ Historic Places Trust under the Historic Places Act. Should consent be required, this would be sought in due course from the relevant authority.
- 7.52 Given the applicant's commitment to ensuring efficient use of water on their properties, to the minimum flow and flow-sharing regime protect in-stream values and other users, Ms McCabe considered that effects on people, communities and amenity would be minor.

#### **Effects on Tangata Whenua Values**

- 7.53 Te Runanga O Ngāi Tahu submitted on all applications in the catchment (except CRC083609), seeking that all applications be declined.
- 7.54 An email was sent to Paul Horgan of Ngāi Tahu on the 4<sup>th</sup> August 2009 outlining the consent applications and consent amendments. It was acknowledged that Ngāi Tahu general submission related to CRC071362 from Lake Pūkaki and the Pūkaki Canal however Mr Horgan indicated later that same day that there did not appear to be any issues with Glentanner's applications. A general update was provided again on the 26<sup>th</sup> August 2009.
- 7.55 Ms McCabe acknowledged that Te Runanga O Ngāi Tahu (and the local Papatipu Runanga) have a significant relationship with the Waitaki Catchment, and as such, appropriate minimum lake level conditions, and management of water quality effects, were proposed by the applicant to ensure that the potential effects on the environment, including tangata whenua values are minor.

#### **Effects on Landscape**

- 7.56 Ms McCabe said that Mr Andrew Craig a landscape architect who provided general and specific recommendations on behalf of UWAG clients to the hearing had concluded that the general effects on the Mackenzie landscape of these further applications will be significantly less than minor. However he did not present specific evidence on these applications on the basis that the location of this proposal was not visually sensitive.
- 7.57 In terms of the irrigation area associated with this application, Ms McCabe made the following points:
- (a) The irrigation area proposed is already part of a substantially modified environment, whereby land has been progressively cultivated and re-grassed, top dressed, new fences, boulder removal, quarrying and pylons though the property.
  - (b) The irrigation development is located over 400 metres from SH8 and over the hill crest of a 20 metre terrace and is not visible from SH8

- (c) The DOC land (between the irrigation area in the north and Lake Pukaki) contains the kettle holes. Kettle holes are not within the irrigation area.
- (d) Between the DOC land and irrigation area, a 62ha buffer of unmodified land is proposed by DOC and agreed by the applicant. The proposed pivot design is a further 250mtrs away from this buffer land.
- (e) Minor levelling of moraines may be required at specific locations for pivot tracks but the majority of this land is already modified.
- (f) A 130m buffer from the Pūkaki River bed is proposed
- (g) The gravel outwash area below the terrace of lighter soils at the south end of the property (beside the Pūkaki River), is not proposed to be irrigated.
- (h) The irrigation area above the terrace may be viewed at the southern property boundary from a distance on the Pūkaki River Road (not when adjacent to the land because of the high terrace). This is a private road for Meridian therefore used infrequently and supposedly not by the general public.

**Mr Robert Batty, planner**

7.58 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.

7.59 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.

7.60 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**

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

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

7.63 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.

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

7.65 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.

7.66 He raised with us the advantages of reliable availability of water and pointed out for us the benefits of irrigation, noting that while generally irrigation typically only represents a small part of the total farm area, but it does result in high productivity increases with a resultant favourable



impact on economic viability of farming operations. He concluded with the correct planning, management and monitoring any negative environmental impact of intensification of a small area would lead to positive environmental outcomes on the balance of the property. It was his view a net positive balance was certainly possible.

## **8 SUBMITTERS**

---

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

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

- 8.2 Ms Di Lucas on behalf of Mackenzie Guardians provided us with a broad ranging brief of evidence, much of which we have already commented upon in Part A.
- 8.3 In respect of these particular applications, Ms Lucas noted that the irrigation area is located on the Pūkaki terminal moraine and geopreservation site, extending down onto the floodplain and riverbed. Part of the site has been converted and with an overall natural landscape rating of 2 (out of 5). This rating indicates extensively grazed tussock grasslands that have been oversown, fertilised or drilled on a more regular basis but still contain indigenous biodiversity and a moderate-high natural character, or that have been significantly degraded through grazing to diminish grassland species.
- 8.4 Ms Lucas noted that the upper areas of the site are highly visible from the highway and from associated public areas, such as leading to the Kettlehole reserve, which allows an expansive view of the dryland basin, with the sequence from moraine features to broad outwash. Sites 15, 16 and 17 (as per her attachments) are overviewed. The moraine is recognised as a geopreservation site. The riverside route also provides visual access to the site. The great boulders deposited by the glacier are clearly legible.
- 8.5 Located on the prominent and important moraine to Pukaki, Ms Lucas considered that intensified and extended land development was not appropriate on this important natural landform sequence.
- 8.6 Ms Lucas agreed with Mr Glasson’s recommendation to not allow irrigation on the moraine. However she considered that his recommendation for buffering the river and refining the boundaries was not adequate to protect the natural science, aesthetic or legible landscape values. She considered that the lake setting, the river corridor, the moraine and the whole outwash system below require comprehensive landscape recognition as a feature of the ONL and that the application should be declined on this basis.

### **Mackenzie Guardians – Dr Susan Walker**

- 8.7 Dr Susan Walker (Plant Ecologist, Landcare Research) was engaged by the Mackenzie Guardians to provide evidence at the hearing detailing the effects on terrestrial ecology from the proposed irrigation of an additional 25,000 ha. The majority of Dr Walker’s evidence related to the proposed irrigation in all of the Upper Waitaki catchment. A summary of this evidence has been included in Part A of this decision.
- 8.8 In relation to individual applications, Dr Walker’s Attachment 15 contained her more particularised reviews in respect of each site. Dr Walker assessed the Catherine Fields as being approximately 78% converted. She noted that it was mainly already developed, but that there was little information on terrestrial ecology. She considered that the area makes an important contribution to ecological sequences in the north and east of the Mackenzie Basin and concluded that overall the potential effects of irrigation on terrestrial biodiversity were moderate.

### **Meridian Energy Limited – Mr Richard Turner**

- 8.9 Mr Richard Turner, Planning Manager – Natural Resources, Meridian Energy Ltd, tabled a list of consent applications which were of a concern to MEL from a cumulative water quality perspective based on the sub-catchments in which the properties were located relevant to Meridian’s operations and areas of interest.

- 8.10 The Meridian Energy approach was adopted for two reasons;
- (a) the potential environmental effects and impacts on hydro-energy generation operations from intake blockages from macrophyte and periphyton growths and the associated increases in operating and maintenance costs and generating efficiency.
  - (b) The lack of any cumulative or comprehensive water quality assessment in the resource consent applications that were notified, making it difficult to consider the actual and potential adverse effects of the applications on the operation of the Waitaki Power Scheme.
- 8.11 The current applications were included in the Meridian Energy Ltd list of consent applications of concern. The principle concern in respect of the sub-catchment concern was in quantifying the nutrient thresholds to ensure that a TLI in Lake Benmore did not exceed 2.75, based on a summer average.
- 8.12 Mr Turner also noted that there were discrepancies between the applicant's proposed consent conditions and those common consent conditions agreed with MEL prior to derogation approval being acquired. Mr Turner's evidence acknowledged that a number of applications from this hearing contain these discrepancies.
- 8.13 In relation to the applicants proposed takes from the hydro-canal Mr Turner has noted that MEL and the MIC applicants, (taking from the canals), have agreed on additional consent conditions. These conditions included ceasing abstraction when advised by MEL for maintenance or safety reasons or when MEL temporarily ceases discharging into the canal.

#### **Forest and Bird**

- 8.14 Ms Sue Maturin (Conservation Field Officer) presented evidence on behalf of the Royal Forestry and Bird Protection Society of New Zealand Inc. She told us that Forest and Bird were opposed to the current applications on the basis that they would result in the following adverse effects on the environment:
- (a) A marked land use change resulting in intensification;
  - (b) Change to the landscape character;
  - (c) Impacts on water quality downstream;
  - (d) Effects on remnant native plant and fauna species; and
  - (e) An increase the Canadian geese population.
- 8.15 Other than the above, her evidence did not include any specific information on the current applications for Catherine Fields. However Ms Maturin did provide further comment on Forest and Bird' general concerns with land use intensification in the Upper Waitaki, including impacts on water quantity, quality, native fish and braided river birds. On the basis of these concerns, she concluded that the applications should be declined.

#### **Te Runanga o Ngāi Tahu – Paul Horgan**

- 8.16 Mr Horgan told us that Ngāi Tahu had taken a balanced approach when assessing the applications and resisted the temptation to simply oppose all applications in their entirety. More particularly, Ngāi Tahu has generally placed its emphasis upon the new (rather than replacement) consent applications and those that will result in large scale land use intensification, rather than the taking of water so as to provide security of supply for existing farming operations.
- 8.17 Mr Horgan told us that Ngāi Tahu had adopted two focal points against which they assessed the applications; the Haldon Arm was one of these as it would be one of the most acute receiving environments for the discharge of nutrients from the irrigation proposals. He told us it was also a location where Ngāi Tahu proposes to undertake mahinga kai restoration.
- 8.18 Mr Horgan told us that provided the smaller applicants carry out appropriate riparian planting and fencing and undertake not to significantly increase the intensity of their farming operations, then Ngāi Tahu were not opposed to the granting of consent. This position was evident in the

exchange referred to by Ms McCabe (#7.47) where Mr Horgan acknowledged by email that there did not appear to be any issues with Glentanner's applications.

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

---

- 9.1 Ms Bartlett listed the following additions and amendments to the applications had been presented by the applicant throughout the hearing:
- (a) The applicant had stated that, as the 1888 Rabbit Fence will be disturbed as a result of centre pivot installation, authority will be sought from NZHPT (para 97, McCabe);
  - (b) Mr Andrew Craig had provided a general assessment of effects on landscape (Part 1 of his evidence), which the applicant relies upon (there is no site specific assessment in Part 2 of Mr Craig's evidence), and which concluded that the application sites are all modified and will not change to any great extent (para 8.3);
  - (c) The applicant had provided a Policy 16(c)(i) assessment (Appendix F, McCabe), which is based on 31% irrigation on 25 mm PAW soils, with the remainder on 80-85 mm PAW soils, and indicated a requirement of 600 mm per hectare.
  - (d) The applicant provided a draft Farm Environmental Management Plan (FEMP) for Glentanner Station (Catherine Fields) and OVERSEER nutrient budgets (Appendix E, McCabe) which contribute to assessments of water quality effects and efficiency of water use.
- 9.2 Ms Bartlett then went on to provide the following additional comments on the potential effects of the proposal

### **Effects on Ecosystems**

- 9.3 While effects on ecosystems was not an outstanding matter, Ms Bartlett noted that the applicant indicated in Ms Haidee McCabe's evidence that the fish screen specifications recommended in the S42a reports were accepted as conditions of consent.

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

- 9.4 Ms Bartlett said that the applicant had not assessed effects on archaeological sites within the proposed irrigation command area, but acknowledged the need to consult with NZHPT and obtain authority as necessary. A condition limiting exercise of the consent until authority was obtained from NZHPT would be necessary.

### **Effects on Landscape**

- 9.5 Ms Bartlett noted that the conclusions of CRC landscape expert Mr Chris Glasson remain unchanged with regard to appropriate location of irrigation on Glentanner Station, being that the hillocks should remain in tussock grassland so that the flatter irrigated areas will become more integrated.
- 9.6 Ms Bartlett said that the applicant had indicated that only minor levelling of moraine will occur to enable pivot tracks to be created (pg19, McCabe), indicating that rolling moraine in the northern part of the proposed irrigation area that was unsuitable for pivot installation would not be irrigated, leaving a substantial buffer to State Highway 8, although the applicant had not amended the map of irrigation command area to reflect this.
- 9.7 In short, there were no outstanding issues with regards to localised landscape effects, however there were outstanding issues in relation to combined effects with the associated applications proposing to use PIC infrastructure.

### **Efficient and Reasonable Use of Water**

- 9.8 In discussions with the applicant, Ms Bartlett understood that Ms McCabe had accepted that it was unlikely 31% of soils will be 25 mm, given that it is only the eastern-most pivot that would cross the light soils, and had agreed that a maximum of 20% would be more likely. On that basis, Ms Bartlett recalculated the Policy16(c)(ii) assessment, which indicated a requirement of 1,076,000 cubic metres or just under 540 mm per hectare.

- 9.9 The applicant proposed to apply no more than 50% of average soil PAW as a mitigation measure, which on Mackenzie soils with average PAW of 25 mm will be in the order of 10mm, based on a 2 day return and 5 mm application.

### **Effects on Water Quality**

- 9.10 Ms Bartlett said that the applicant proposed to irrigate Mackenzie soils on the property, which were previously proposed to be excluded and had incorporated those soils into Overseer inputs. A buffer zone to the ephemeral waterway, previously proposed was no longer offered by the applicant. Discussions between Ms Bartlett and Ms McCabe clarified that the distribution of light soils on the property was not initially well understood, and the applicant was seeking flexibility in irrigation design.
- 9.11 Ms Bartlett said that a shallow groundwater presence was detected in the path of ephemeral watercourses on the property during geotechnical investigations undertaken by Rileys Consultants Ltd for Pūkaki Irrigation Company Ltd. As there were no permanently flowing waterways on or adjacent to the property, shallow groundwater represented the only potential pathway for nutrient losses to affect downstream surface water bodies.
- 9.12 The draft FEMP and water quality assessment provided by the applicant, including relevant MWRL analyses, had been audited by Environment Canterbury's technical experts. CRC experts consider that there were some uncertainties about potential adverse effects of the proposed activity on water quality such that either more information was needed or strict monitoring and response conditions were needed to address cumulative water quality effects. On this basis, Ms Bartlett was not satisfied that granting the application would ensure no more than a minor adverse effect on water quality.

### **Effects on other water users**

- 9.13 Ms Bartlett said that the applicant has not identified any adverse effect of granting the application to take from Lake Pūkaki in excess of the 8 million cubic metre limit specified in Rule 6, Table 5 of the WCWARP. However she was concerned about the potential effect of granting consent on the availability of water for other users given that the entire allocation would be taken up by this proposal.

### **Summary**

- 9.14 Ms Bartlett's principal concerns with respect to applications CRC071362 and CRC083609 were related to cumulative effects on water quality and landscape. She said that application CRC071362 was able to proceed independently of the larger areas of irrigation associated with Pūkaki Irrigation Company Ltd applications, which contribute to cumulative landscape effects within the Pūkaki moraine and outwash flats and effects on water quality in the Pūkaki groundwater zone.

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

---

### **Closing submissions**

- 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 relation to this particular application, no specific comment was made.
- 10.2 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 considered the correct approach for the ranking of the applications was to determine where they sit in relation to the existing environment.
- 10.3 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.

- 10.4 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.
- 10.5 We did subsequently receive from Mr Chapman generic conditions and revised FEMPs applicable to all the UWAG applicants.

### **Ms McCabe**

- 10.6 Ms McCabe provided some additional comments on the irrigation of moraine areas in her right of reply. She emphasised that there is an adequate buffer between the current command irrigation area and the DOC land containing the kettle holes, in the northern area. Minor levelling of moraines may be required at specific locations for pivot tracks but the majority of this land is already modified or excluded from the command area as detailed above. In addition she noted that the finalisation of the FEMP provides for a 50 metre buffer from the ephemeral water courses which effectively reduces the command area shown.

## **11 STATUTORY CONTEXT**

---

- 11.1 As discussed above, two of the proposed takes are **discretionary** (Pūkaki Canal and Tekapo Stilling Basin), with the third being **non-complying** (Lake Tekapo).
- 11.2 The relevant statutory context for a discretionary or non-complying 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) Section 104D jurisdictional hurdles
  - (e) Part 2 RMA
  - (f) Overall evaluation

## **12 EVALUATION OF EFFECTS**

---

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

### **Water quality**

- 12.2 There are a number of submissions which identify water quality as a result of land use intensification as a concern, including from Meridian Energy Limited, Department of Conservation, Royal Forest and Bird Protection Society, and Fish and Game New Zealand.

- 12.3 There are no permanently flowing waterways on the property, although there is an ephemeral watercourse through the proposed irrigation area.
- 12.4 In addition, the Pūkaki River only flows intermittently, depending on flow releases controlled by Meridian Energy Limited. The property is situated on a terrace 60 metres above the riverbed; and a setback distance of 130 metres is proposed from the irrigation area.
- 12.5 Groundwater flows dominantly north-South, and while there is some possibility that the Pūkaki River could receive leachate through ephemeral channels, the river is so impacted by the Waitaki Power Scheme that requiring monitoring with respect to this application would serve no resource management purpose.
- 12.6 The applicant provided a farm environmental management plan (FEMP) outlining all mitigation measures to be used on the property to limit localised and cumulative effects on water quality.
- 12.7 We have audited the final FEMP, which includes an on-site Farm Environmental Risk Assessment and we consider the mitigation measures proposed are appropriate.
- 12.8 Given that all mitigation proposed to address localised and cumulative water quality effects have been identified in a farm management plan which would be part of the conditions of consent, we consider that effects on water quality will be minor.

### **Ecosystem values**

- 12.9 In addition to the above water quality issues, there are potential adverse effects on ecosystems to consider, including fish, didymo, Canada Geese, and terrestrial ecology.
- 12.10 In relation to fish, a condition has been proposed requiring installation of a fish screen that complies with guidelines in the NIWA Fish Screening: good practice guidelines for Canterbury. We are satisfied that such a condition will ensure the effects on ecosystems can be considered minor. We do note however that didymo was detected in the Tekapo-Pūkaki canal at the Mt Cook salmon farm on 24 June 2009, approximately 3 kilometres from the Tekapo Stilling Basin. The organism would challenge performance of the intake and fish screen if it established in the canal. Conditions have therefore been included on the related consents for the installation of the proposed infrastructure to minimise this risk.
- 12.11 The Royal Forest & Bird Protection Society Inc (South Canterbury Branch) and Fish and Game New Zealand (Central South Island Region) raised concerns about effects of land use intensification on the population of Canada Geese however the applicant proposed to allow access to hunters for population control, as required.
- 12.12 We acknowledge the evidence of Dr Walker in relation to the potential effects of irrigation on terrestrial ecology. However given the existing state of the application site (which was accepted as being mainly developed), we are satisfied that the potential effects of the proposal on terrestrial ecology will not be significant.
- 12.13 Finally, we note that the applicant proposed to comply with the minimum lake level for Lake Tekapo, which will ensure that the ecosystem values of the lake will be protected.

### **Landscape values**

- 12.14 We received competing evidence on the issue of landscape, principally from Mr Glasson and Ms Lucas. Mr Craig on behalf of the applicant did not provide any specific evidence on the proposal on the basis that the application site was not highly visible.
- 12.15 Although the comments in Mr Glasson's s42A report appeared somewhat inconsistent, we took his position to be that the local effects of the proposal on the landscape would be acceptable, provided that certain mitigation measures were provided, including the retention of tussock on the moraine hills. Ms Lucas (on behalf of Mackenzie Guardians) supported Mr Glasson's recommendation about no irrigation on the moraine hills, but considered that this was not adequate to alleviate the effects and that the proposal should be declined.
- 12.16 In considering these two positions, one of the key factors we have considered is the visibility of the site. In this regard, we note that the site is not visible from SH8, being approximately 400 metres from SH8 and over the hill crest of a 20 metre terrace. It is also not visible from the public viewing areas near Lake Pukaki. We accept Mr Glasson's evidence that SH8 is the location

from the the landscape is most frequently appreciated. We do note however that the proposed irrigation area would be visible from the air and from the DOC administered public access track.

- 12.17 We accept that the proposed irrigation area is already part of a substantially modified environment, whereby land has been progressively cultivated and re-grassed, top dressed, with new fences, boulder removal, quarrying and pylons though the property. The presence of centre pivot irrigators, as proposed, would introduce additional manmade structures to the landscape. However we consider that this represents an evolution of farming activity on the land and that the presence of pivots will detract from the wider appreciation of the landscape.
- 12.18 On balance, we consider that given the relatively low visibility of the site and its modified nature, the effect of the proposal on landscape values will be acceptable. However we do have some concerns about the possibility of irrigating the moraine towards the northern end of the irrigation area and the "minor levelling of moraines" for the pivot tracks proposed by the applicant. We accept Ms Lucas's evidence that the moraine is part of an important and legible natural landform sequence, notwithstanding the modified nature of the landscape. We agree with Ms Lucas, Mr Glasson and Ms Bartlett that irrigation on the moraine should be avoided.
- 12.19 Given this finding, we agree with Ms Bartlett's proposed condition that seeks to avoid irrigation on moraine areas containing ephemeral wetlands or tarns or which are unsuitable for pivot irrigators due to natural topography. In addition, we agree that no levelling of glacial moraine shall occur. We did consider requesting a revised map to reflect these conditions, but consider that the conditions are sufficiently certain without the need for a revised map.

#### **Inefficient use of water**

- 12.20 There are three relevant issues to consider in relation to efficiency, being the proposed annual volume, the methods of conveyance under the different alternatives, and the metering requirements.

#### Annual volume

- 12.21 In relation to annual volume, the applicant proposed a maximum volume of 1,200,000 m<sup>3</sup>/year under each of the three alternatives. This was determined using 600 mm (as per MIC shareholding) for 200ha and justified by Irricalc which was considered to be consistent with Policy 16(c) of the WCWARP.
- 12.22 In contrast to the above, Ms Bartlett calculated annual volume using the method outlined in Report U05/15 ("the WQN9v2 approach"). Using this approach, Ms Penman recommended an annual volume of 1,076,000 m<sup>3</sup>/year would be a more appropriate and efficient volume of water for spray irrigation of the proposed area.
- 12.23 As acknowledged by the applicant, under Policy 16 of the WCWARP there are two acceptable methods for calculating and efficient annual volume. The first is using a soil water balance approach. The applicant contends that Irricalc is such an approach. The second alternative is the WQN9v2 approach used by Ms Penman.
- 12.24 Of the two alternatives, we consider that the available data allows the WQN9v2 approach to be used for calculating annual volumes. We note that the Irricalc methodology requires supporting data such as soil-moisture measurements and local rainfall and requires verification when the proposal is in place. We have some concerns about the data and measurements on which the Irricalc calculations were based, which may not be adequate to satisfy the requirements of a soil water balance approach under Policy 16.
- 12.25 Based on the above, we consider that to adopt the annual volume proposed by the applicant may allocate more water than what is required and result in an inefficient use of water. We therefore prefer the annual volume of 1,076,000 m<sup>3</sup>/year calculated by Ms Bartlett using the WQN9v2 approach and adopt this as the appropriate volume of water for spray irrigation of the proposed area. With this annual volume and the metering proposed in conditions of consent, we are satisfied that the amount of water taken and used will be efficient.

#### Distribution of water

- 12.26 Regarding delivery of water to Catherine Fields, the proposed abstraction from Tekapo Stilling Basin will utilise gravity feed, which is a more efficient use of energy resources than the option to pump from Lake Pukaki. In addition, the proposal would involve an entirely piped scheme rather

than the open race option that forms part of the proposal to take from Lake Pūkaki or Pūkaki Canal. The piped system will avoid any race losses associated with the open canal options.

- 12.27 While the relative inefficiency of the canals is not fatal to those alternatives, it is an issue we have taken into account in our overall evaluation of the three options and which we return to later in this decision.

#### Water metering

- 12.28 The final issue relevant to efficiency was the requirement for metering of the proposed take. All parties agreed that metering was appropriate. The only disagreement was the location where this metering should occur.
- 12.29 The applicant considered that metering should only be required at the applicant's boundary given that it is a piped system with no discharge and that all the telemetered takes from the scheme will provide the overall take. In contrast, Ms Bartlett recommended that the take should be metered at the boundary of the property and at the take point at the Tekapo Stilling Basin. If only one meter is included, she considered that this should be at the intake site.
- 12.30 After considering the parties' views, we have determined that the appropriate outcome is for metering to occur in both locations. We consider that this provides a more complete and accurate record of the water from the take point to its use on the applicant's property and will enable the appropriate management of multiple takes from the same intake.

#### **Effects on other water users**

- 12.31 The applicant proposed to comply with standard conditions assigned by the Mackenzie Irrigation Company Limited, including ceasing abstraction during periods when maintenance of the canal and Stilling Basin was undertaken or flows in the canal were reduced, at request from Meridian Energy Limited. In combination with the derogation approval provided by Meridian, we are therefore satisfied that effects on the operations of Meridian will be minor.
- 12.32 The applicant proposed water metering in relation to the proposed abstraction. Metering at the PIC intake location would be for a combined rate of abstraction by Simons Pass Station Limited, Simons Hill Station Limited and Glentanner Station Limited. Accurate metering and monitoring of the entire combined abstraction from Tekapo Stilling Basin would be necessary to ensure that the combined rate authorised by all consents does not exceed the rate Meridian Energy Limited have agreed to supply.
- 12.33 Further abstraction from the Tekapo-Pūkaki Canal had the potential to reduce reliability of supply to existing abstractors. However, Meridian controls the overall rate of abstraction from the canal and the rate of flow, such that reliability of supply was a matter between abstractors and Meridian Energy Limited.
- 12.34 Another issue we have considered under this heading is the effect of allowing the Lake Pūkaki take option given that this will exceed the total permitted allocation for agricultural activities upstream of Lake Pūkaki outlet. We are mindful of Ms Bartlett's concern that to grant consent to this option could preclude other upstream users from providing for their reasonably foreseeable needs. This is a factor counting against this particular alternative and which we return to under the discussion of relevant planning instruments.

#### **Effects on Tangata whenua**

- 12.35 There were no property specific issues or values identified by the applicant or Ngāi Tahu during the hearing relating to this proposed activity. However it is evident through information provided in the Cultural Impact Assessment and Ngāi Tahu evidence at the hearing that avoidance of localised and cumulative effects from the irrigation proposals is of paramount importance to Ngāi Tahu.
- 12.36 Ngāi Tahu proposals to undertake mahinga kai restoration in the lower Tekapo River and Upper Haldon catchment is downstream of the proposed activity, but some considerable distance and of a scale that we concur with Paul Horgan (Te Runanga o Ngāi Tahu) is unlikely to have an adverse effect on Ngāi Tahu plans to revitalise their cultural association with the waterways and resources in the sub-catchment.
- 12.37 We consider that the activity aligned with the proposed mitigation measures and consent



conditions will have no more than a minor effect on tangata whenua values.

### **Other effects**

- 12.38 There would be positive effects on the local community, and regional and national economic benefits as a result of the proposed activity, due to increased production.
- 12.39 The proposed activity was likely to disturb the Rabbit Fence, built in 1888, that runs through the irrigation command area, which was classed as an archaeological site under the Historic Places Act. The applicant had not provided an archaeological assessment or considered effects of the proposed activity on the site but has proposed a condition requiring the approval of the Historic Places Trust before undertaking any work that disturbs the rabbit fence. Therefore the effects on people, communities and amenity values, and heritage preservation, will be minor.

### **Key conclusions on effects**

- 12.40 In relation to the actual and potential effects of the proposal, our key conclusions are as follows.
- 12.41 With implementation of the mitigation measures proposed in the FEMP, which would be part of the conditions of consent, we consider that effects on water quality will be minor.
- 12.42 In relation to potential effects on ecosystems, including in particular including fish, didymo, and terrestrial ecology, we are satisfied that any adverse effects of the proposal will not be significant.
- 12.43 We have given careful consideration to landscape values and conclude that on balance, given the relatively low visibility of the site and its modified nature, the effect of the proposal on landscape values will be acceptable. However we have imposed conditions to ensure that no irrigation occurs on the moraine.
- 12.44 On the issue of efficiency, we prefer the reduced annual volume calculated by Ms Bartlett to that proposed by the applicant and consider that this represents a more reasonable and efficient volume of water for irrigation. We also note that the proposed take from Tekapo Stilling Basin has advantages over the other options in terms of distribution efficiency as it will be entirely piped with no race losses.
- 12.45 In relation to the potential effects on other water users, we are troubled by the proposed take from Lake Pūkaki on the basis that it will consume the entire allocation available under the WCWARP and potentially reduce the availability of water from other users. However we see this as principally a policy consideration rather than an effect on the environment and we return to this issue below.

## **13 EVALUATION OF RELEVANT PLANNING INSTRUMENTS**

---

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

### **Water Quality**

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

- 13.5 In relation to the WCWARP, we consider that Objective 1 is the critical objective. In particular, Objective 1(b) seeks to safeguard life-supporting capacity of rivers, lakes, and Objective 1(d) seeks to safeguard the integrity, form, functioning and resilience of a braided river system.
- 13.6 We have determined that granting these consents with conditions (incorporating mitigations set out in the FEMP) will help to minimise nutrient loss from the irrigated area. The load arising from this activity will not cause (in combination with other consents we grant in the Haldon Arm catchment) more than minor effects of the trophic status of the Haldon Arm of Lake Benmore. Overall, we conclude that a grant of consent, with conditions, would be consistent with Objective 1(b) and 1(d) WCWARP.
- 13.7 Objective 1(c) requires us to manage waterbodies in a way that maintains natural landscape and amenity characteristics and qualities that people appreciate and enjoy. Given our findings in terms of effects on water quality, then our view is that granting consent would be consistent with Objective 1(c).
- 13.8 We note that Objectives 2, 3, 4, and 5 are “in the round” deal with and provide for the allocation of water. The critical qualification is that water can be allocated provided that to do so is consistent with Objective 1. Given the findings we have made about Objective 1 we conclude that allocating water in terms of the balance objectives would be consistent with the overall scheme of the WCWARP. We reach this view taking into account the national and local costs and benefits (environmental, social, cultural and economic) of the proposal, as required by Objective 3.
- 13.9 Policy 13 links the WCWARP to the PNRRP (as it existed at the time) by requiring us to have regard to how the exercise of the consent could result in water quality objectives of the PNRRP not being achieved. As we explained in our Part A decision, we have considered the objectives of the PNRRP and the now operative NRRP in relation to the current proposal. However we have generally given greater weight to the NRRP provisions on the basis that they represent the current approach for achieving the common goal of protecting water quality.
- 13.10 Under the NRRP, Lake Benmore (including the Haldon Arm) is classified as an “Artificial On-River Lake”. Objective WQL1.2 of the NRRP seeks to ensure that the water quality of the lake is managed to at least achieve the outcomes specified in Table 6, including a maximum Trophic Level Index (“TLI”) of 3 (i.e. oligotrophic-mesotrophic boundary). For the reasons discussed above, we consider that granting consent to the proposal would be consistent with this objective and would not (in combination with others we grant) cause the TLI maximum to be breached.
- 13.11 Overall then having regard to the scheme of the WCWARP and the NRRP we reach a conclusion that granting consent with appropriate conditions to the proposal would be consistent with the key objectives and policies of both of these plans relating to water quality.

## **Landscape**

- 13.12 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.
- 13.13 In considering these provisions we are informed by the provisions of the Mackenzie District Plan which identifies the applicant’s property as having a Rural zoning. The District Plan includes objectives of a similar vein to the CRPS, which seek to protect distinctive and outstanding landscapes from development that would detract from those landscapes.
- 13.14 The objectives and policies contained within the Mackenzie District Plan broadly mimic those that are contained in the higher order policy documents. Objective 3A seeks to protect and sustain the distinctive and outstanding natural landscapes and features of the district from subdivision and development that would detract from those landscapes. Reference is made to Section 6(b) RMA in the explanation and reasons.
- 13.15 Related policies seek the same or similar outcomes, namely recognising the Basin has a distinctive and highly valued landscape containing Outstanding Natural Landscapes through the Mackenzie Basin subzone within the rural zone and to protect the Basin from inappropriate subdivision use and development.

- 13.16 Objective 3B seeks to encourage a healthy productive economy, environment and community within, and maintain the identity of, the Mackenzie Country. Within the explanation and reasons supporting this Objective the Plan provides that sustainable management requires a balance to be found that provides for social, economic, and cultural wellbeing of the community while sustaining natural and physical resources and safeguarding the environment from adverse effects.
- 13.17 Objective 3C deals with landscape values and seeks the protection of natural character of the landscape and margins of lakes, rivers, and wetlands and for natural processes and elements that contribute to the District's overall character and amenity.
- 13.18 Policy 3C seeks to avoid adverse impacts on outstanding natural landscape features of the Basin. For our purposes, in particular from structures. The explanation and reasons refer to structures associated with more intensive farming such as large irrigators or industrial style buildings. The Plan notes that when placed in the foreground of views these structures can reduce scenic values and the sense of openness valued within the Basin.
- 13.19 In the course of our deliberations we had occasion to read and consider the recent Environment Court decision by Judge Jackson (*High Country Rosehip Orchards Ltd and Others v Mackenzie District Council* 2011-NZ EnvC-387), in which the Court considered the objectives and policies in the Mackenzie District Plan as they related to landscape. We note that the decision is an interim decision in all respects with the exception that it is a final decision in respect of the finding that the Mackenzie Basin as a whole (excluding Twizel and Tekapo townships, Mr Densem's Landscape Unit 54 west of Twizel, and the Dobson River Catchment) is an Outstanding Natural Landscape. All other determinations or judgments are interim.
- 13.20 We too in our approach have accepted that the Mackenzie Basin is an Outstanding Natural Landscape and from that point our focus has turned to the provisions of the Mackenzie District Plan. We have also, of course, closely considered Section 6(b) RMA. In terms of the policy base to the District Plan, the Environment Court has promoted suggestions for change.
- 13.21 Policy 3B(1) as per the Court's decision seeks to recognise within the Mackenzie Basin's ONL, which is all of the Basin, that there are some areas where different types of development and use (such as irrigated pastoral farming and other activities) are appropriate and to identify these areas. Equally, there are many areas according to Policy 3B(1) as amended where such use and development is inappropriate. We have been called upon to make a decision where development of the sort we are here interested in has been identified as appropriate.
- 13.22 Of particular interest we note that the Environment Court revised Objective 3B forming the interim conclusion that a more focused and more appropriate objective for landscape of the Mackenzie Basin seeks to protect and enhance the ONL. Among other matters, this objective seeks to achieve the following outcome:
- to protect and enhance the outstanding natural landscape of the Mackenzie Basin subzone in particular the following characteristics and/or values:*
- (a) *the openness and vastness of the landscape;*
  - (b) *the tussock grasslands;*
  - (c) *the lack of houses and other structures;*
  - (d) *residential development limited to small areas in clusters;*
  - (e) *the form of the mountains; hills and moraines, encircling and/or located in, the Mackenzie Basin;*
  - (f) *undeveloped lakesides and State Highway 8 roadside;*
- 13.23 Subject to the above, objective 3B goes on to enable pastoral intensification and high intensity (irrigated) farming in appropriate areas south and east of State Highway 8 except adjacent to, and in the foreground of views from, State Highways and tourist roads. The Court noted that this left the door open for extensive cultivation and irrigation on the Tekapo and Pukaki plains, subject to the availability of water and consideration of the ecological values of those areas. It also tentatively accepted indirect evidence received that desertification of some parts of the lower plains is irreversible.
- 13.24 As we saw it, the balance of the Environment Court's discussion around the policies focused primarily on views from state highways and tourist roads. Turning in detail to Policy 3B(8) as per the Environment Court's interim decision, the Court there reached an interim conclusion that

location of structures such as large irrigators were to be avoided close to state highways or in such positions where they limited the screening of views of the ONL of the Mackenzie Basin. Also, outcomes sought were to minimise the adverse effects of irrigation on pasture adjacent to the state highways or tourist roads. We note that the lack of visibility from SH8 was an important factor in support of our conclusions on landscape.

- 13.25 For all of the foregoing reasons we conclude that a grant of consent with the conditions and mitigation measures we propose would achieve consistency with the relevant objectives and policies, particularly those of the Proposed and Operative CRPS and the Mackenzie District Plan, and would be in accord with the interim decision of the Environment Court on the relevant objectives and policies of the Mackenzie District Plan. Overall we consider that the proposal will not represent an inappropriate use or development, notwithstanding the wider landscape in which it is located.

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

- 13.26 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.
- 13.27 Our primary concern in relation to these provisions relates to the compatibility of the Lake Pūkaki option with Policy 12. As noted above, Policy 12 (in combination with Rule 6) sets allocation for activities which are breached by the proposed take due to the amount of water being taken. This breach is what makes this alternative a non-complying activity.
- 13.28 The broad purpose of Policy 12 is to ensure that the available water resource is allocated equitably between the different users within the catchment to enable all aspects of the community to provide for the social, economic, and cultural well and their health and safety. We note that no other potential users submitted on the application to abstract from Lake Pūkaki at volumes that exceed the limits in Policy 12. Nevertheless we accept Ms Bartlett's argument that granting consent for this particular take point would preclude future applicants. We have therefore come to the view that granting consent for the Lake Pūkaki take point would be contrary to Policy 12. As the applicant has indicated a preference for the Tekapo Stilling Basin take, which would have no such issues we have taken this into account in making our final decision.

### **Efficient use of water**

- 13.29 Policies 15 – 20 provide for an efficient use of water so that net benefits are derived from its use and are maximised and waste minimised. In particular, Policy 16 requires us to consider whether the exercise of these consents would meet a reasonable use test in relation to both the instantaneous rate of abstraction and the annual volume for take, use, dam or divert. As discussed in our evaluation of effects, provided that the lower annual volume calculated by the s42 officer is adopted, we are satisfied that the rates and annual volumes reflect an efficient and effective use of water and that the reasonable use test can be met.
- 13.30 Policy 19 of the WCWARP encourages the piping or otherwise sealing of water distribution systems to minimise water losses and maintain the quality of water. In this case, the only one of the three alternatives that will be entirely piped in the take from the Tekapo Stilling Basin. We consider that this option is more consistent with Policy 19 than the other available alternatives,
- 13.31 We note that the Tekapo Stilling Basin is further away from the proposed irrigation area than the other sources. However given the infrastructure required to convey water from this source will be used in combination with other applicants that are closer to the Tekapo Canal, we do not consider that this separation distance is a significant factor.

### **Tangata whenua**

- 13.32 Objective 1(a) of the WCWARP relates to the integrity of mauri and is closely linked to Objective 1(b). If we are satisfied that the health of a particular water body is being safeguarded then the mauri is being safeguarded also.
- 13.33 Objective WQN1 from Chapter 5 of the NRRP seeks to enable present and future generations to access the region's surface water and groundwater resources to gain cultural, social, recreational,

economic and other benefits, while (c) safeguarding their value for providing mahinga kai for Ngāi Tahu and (d) protecting wāhi tapu and other wāhi taonga of value to Ngāi Tahu. This objective aligns with the Ngāi Tahu philosophy “Ki Uta, Ki Tai”, or recognising the interconnected nature of the Waitaki catchment and safeguarding the associated cultural values. In our assessment of effects for this application we consider that it is consistent with this objective.

- 13.34 Objective WTL1(a)&(d) from Chapter 7 of the NRRP seeks to achieve no overall reduction in the contribution of wetlands to the relationship of Ngāi Tahu and their culture and traditions with their ancestral lands, water, mahinga kai sites, wāhi tapu and wāhi taonga. The principal concern that Ngāi Tahu held with this proposal was the potential for adverse effects on the waterways and wetlands of the Lower Tekapo River and Haldon Arm. The distance of this activity from any waterways and the with the mitigation measures proposed we consider that this proposed activity is consistent with this Objective.

#### **Key conclusions on objectives and policies**

- 13.35 For all of the above reasons we consider that, with the imposition of appropriate conditions granting consent would be generally consistent with the objectives and policies of the relevant plans. We have reached this conclusion taking into account the relevant planning provisions in respect of water quality, efficiency, environmental flows, landscape, and tangata whenua values.
- 13.36 The only exception to the above is respect to the Lake Pūkaki option, which we consider to be contrary to Policy 12 of the WCWARP given its consumption of the entire available allocation of water. We also note that the proposed canal systems associated with the takes from Lake Pūkaki and Pūkaki Canal are less consistent with Policy 19 of the WCWARP compared to the piped system sourced from the Tekapo Stilling Basin.

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

---

- 14.1 Under s104(1)(c), we are required to have regard to any other matter that we consider to be relevant and reasonably necessary to determine the application.
- 14.2 One issue of potential relevance under this heading is the potential impact on the integrity of the WCWARP associated with granting consent to a non-complying activity (being the proposed take from Lake Pūkaki). While this was not raised as an issue during the hearing, we are mindful that approving a non-complying activity when there are other available (and preferred) alternatives could compromise the integrity of the plan. While not determinative in itself, this is an additional factor we have taken into account in our overall evaluation of the proposal.

#### **15 SECTION 104D JURISDICTIONAL HURDLES**

---

- 15.1 Based our evaluation under section 104, we now move to consider whether either of the jurisdictional hurdles under section 104D of the RMA can be met. This test only applies to the proposed take from Lake Pūkaki as it is a non-complying activity.
- 15.2 As stated above under our evaluation of effects, our key concern in relation to this aspect of the proposal was the effect on other users that that the entire available allocated for takes above the Lake Pūkaki outlet will be consumed. However we consider that this is primarily a policy consideration which we return to below.
- 15.3 Other than this issue we are satisfied that the adverse effects of the proposal (including effects on water quality, ecosystems and landscape) will be minor and the first jurisdictional hurdle has been met. Our comments regarding the relative inefficiency of this option in comparison to the Tekapo Stilling Basin take do not alter this conclusion.
- 15.4 The relevant plan under which consent is required is the WCWARP. We have provided an evaluation of the relevant objectives and policies of that plan (including the relevant provisions of the PNRRP incorporated by reference) earlier in this decision. We consider that due to its exceedance of the available allocation, this proposed take would be contrary to Policy 12 of the WCWARP and that the second jurisdictional hurdle has not been met
- 15.5 For the reasons identified above, we have determined that one of the jurisdictional hurdles is satisfied in this instance. We now move to consider relevant Part 2 matters, following which we complete our overall evaluation as to whether consent should be granted to any or all of the applications.

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

### Section 6 – Matters of National Importance

- 16.2 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)).
- 16.3 In respect of s6(a) we recognise that preservation of the natural character of lakes and rivers is the imperative. We think that because of our finding in terms of the water quality issues, which takes into account mitigation measures, the grant of consent recognises and provides for the preservation of the natural character of lakes and rivers.
- 16.4 In terms of s6(b), we have evaluated the natural features and landscape, primarily by reference to the relevant planning instruments. We reach the view that the grant of consent in this case is not inappropriate because it will not, in our view, diminish the natural features and landscapes such as they are in any significant way.
- 16.5 In terms of section 6(c), it is our view, taking into account the evidence received, that there are not areas of significant indigenous vegetation and significant habitats of indigenous fauna that are at risk thus requiring protection as a consequence of the grant of consent.
- 16.6 In relation to section 6(e) we are cognisant of the relationship that Ngāi Tahu hold with the natural resources of this area, and while no specific values were specified by Ngāi Tahu in relation to this application, we believe that the mitigation measures and conditions provide for the cultural relationship to this catchment that is of importance to Ngāi Tahu.
- 16.7 For the above reasons, we consider that granting consent to the proposal would recognise and provide for s6 matters, as we are required to do under the RMA.

### Section 7 – Other Matters

- 16.8 Section 7 lists “*other*” matters that we shall “*have particular regard to*”. We make the following observations in relation to each of those matters as they are relevant to this application, referring to the sub paragraph numbers of s7:
- 16.9 Sub-section (a) refers to kaitiakitanga. We have taken particular regard of the views of Ngāi Tahu in determining this decision, and recognise the kaitiaki role that Ngāi Tahu who are manawhenua in the Waitaki catchment duly exercise. The kaitiaki duty imposes on manawhenua a responsibility to be active in their advocacy for the recognition and protection of the cultural and spiritual values. We consider that this proposal, with the mitigation proposed will satisfy the requirements of s7(a). We consider that the proposed activity with mitigation measures and conditions sits within the acceptable environmental parameters outlined by Ngāi Tahu such that that it will not cause distress to the function of kaitiakitanga.
- 16.10 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 results in the efficient use and development of the water resource.
- 16.11 Sub-section (c) refers to the maintenance and enhancement of amenity values. Maintenance and enhancement of amenity values will be achieved in this instance through utilising mitigation measures such as those provided in the FEMP.
- 16.12 In terms of sub-section (d), we have had particular regard to the intrinsic values of ecosystems and consider that through the grant of consent with the conditions imposed such values will be safeguarded.
- 16.13 Sub-section (f) refers to the maintenance and enhancement of the quality of the environment. The applicant has proposed mitigation measures to ensure that this objective is achieved.

16.14 Having particular regard to the above matters in the context of section 7, we conclude that the grant of consent could be supported

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

16.15 Finally, section 8 requires that we shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

16.16 The cultural values of tangata whenua are appropriately recognised in the relevant planning documents applicable to the Mackenzie Basin sufficient to alert applicants to the need to address such values. We are satisfied that the notification of the appropriate Runangā and tribal authority has been followed and that the applicant was a contributor to the general assessment of the impact of irrigation activities on cultural values.

16.17 We are satisfied that the consultation procedures provided Ngāi Tahu with the opportunity to understand and respond to the proposed activity, albeit in conjunction with a large number of applications in the Mackenzie Basin.

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

16.18 Turning now to the overall purpose of the RMA, that is, “to promote the sustainable management of natural and physical resources”.

16.19 The proposal will allow the development of land to occur, which may provide for the economic and social well-being of the community. The applicant has proposed measures to “avoid, remedy or mitigate” the potential impacts on ecosystems, water quality, amenity and landscape values as required in Section 5(2)(c).

## **17 OVERALL EVALUATION**

---

17.1 Under s104B of the RMA, we have a discretion as to whether or not to grant consent. This requires an overall judgment to achieve the purpose of the Act and is arrived at by:

- (a) Taking into account all the relevant matters identified under s 104;
- (b) Avoiding consideration of any irrelevant matters;
- (c) Giving different weight to the matters identified under s 104 — depending on our opinion as to how they are affected by the application of s 5(2)(a), (b), and (c) and ss 6-8 — to the particular facts of the case; and then in light of the above; and
- (d) Allowing for comparison of conflicting considerations, the scale or degree of conflict, and their relative significance or proportion in the final outcome.

17.2 As discussed above, all three proposed takes are alternative options to irrigate the same area of land. If granted, only one of these alternatives will be exercised. We have therefore considered each proposed take separately on its merits and reached the following conclusions.

17.3 Following our finding in Part A that all consents in the Haldon could be granted without causing a more than minor effect on the trophic status of that waterbody, there are no other water quality impediments to the granting of consent.

17.4 Other factors in our consideration were the positive economic effects of the proposal in providing a more stable and reliable farming operation on the land. We have also given careful consideration to the potential effects on landscape values, both in isolation and in combination with nearby proposed developments, and concluded that the effects of the activity are acceptable given the existing state of the land and its relatively low visibility.

17.5 In relation to the Lake Pūkaki option, whilst we concluded that environmental effects of taking the water were minor, we did consider that from a policy point of view it had shortcomings that the other two takes points did not. It is non-complying and although we considered that it met the s104D test, to grant this particular take would not be consistent with Policy 12 of the WCWARP, particularly in respect to future applicants who may wish to use water from upstream of Lake Pūkaki outlet.

- 17.6 In addition it requires an open canal to convey water with possible losses and efficiency considerations (as for the take from Pūkaki canal). In contrast the Tekapo Stilling Basin option (favoured by the applicants) will be entirely piped and will have no conveyance losses. We have therefore decided to use our discretion and decline the Lake Pūkaki option, but grant the two canal options. Whilst the difference between the Lake Pūkaki take and the Pūkaki canal take is trivial in terms of effects, the canal take does not breach Policy 12 and therefore under the WCWARP leaves possibility of further allocation of the resource in the future.
- 17.7 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:
- (a) Grant consent to the proposal to take and use water from the Tekapo Stilling Basin, and
  - (b) Grant consent to the proposal to take and use water from the Pūkaki Canal, but not the alternative option from Lake Pūkaki.

## **18 CONDITIONS**

---

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

### **Nutrients and thresholds**

- 18.5 In Part A we rejected the MWRL proposition that we could grant all the applications before us with conditions.
- 18.6 Much of the evidence on conditions presented by all parties to this hearing centred on the issue of determining whether grantees in a particular subcatchment had breached the nutrient allowance at a particular node, and if they had, how ECan could determine either which consent holder had caused the breach and whether one or all consent holders needed to take corrective action.
- 18.7 In rejecting the MWRL case, which relied upon existing irrigators lessening their nutrient load so that there would be assimilative capacity for new irrigators, we need to record our approach to ensuring that consents we grant do not cumulatively result in the trophic level index (TLI) of Lake Benmore exceeding 2.75. As we recorded in Part A our view is that in the case of applications before us draining to the Haldon Arm we are confident that the TLI threshold will not be breached even if all applications for consent before us are granted.
- 18.8 In light of this conclusion, we considered whether or not any useful resource management purpose would be served by requiring those applicants draining into the Haldon Arm to monitor lake TLI. For replacement consents or very small areas of new irrigation, we consider that such a monitoring requirement would be excessive. However for applicants seeking sizeable areas of new irrigation (particularly those that have proposed monitoring conditions), we consider that monitoring should take place.



18.9 Whilst the evidence strongly suggests that irrigation will not cause the TLI threshold to be breached, we consider it prudent for these applicants to monitor the principal resource potentially affected by their activities, to ensure this does not occur. 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.

## 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, 104B and 104D of the Resource Management Act 1991, we **GRANT IN PART** application **CRC071362** and **GRANT** application **CRC083609** by **Glentanner Station Limited** for the following activities:

**CRC071362** - To take and use surface water from Pūkaki Canal for spray irrigation of up to 200 hectares of crops and pasture for grazing stock, at Catherine Fields, State Highway 8, Pukaki.

**CRC083609** - To take and use surface water from Tekapo Stilling Basin for the spray irrigation of up to 200 hectares of pasture and crops, and for stockwater use, at Catherine Fields, State Highway 8, Lake Pukaki.

19.3 We decline the alternative option under CRC071362 to take and use surface water from Lake Pūkaki for spray irrigation of up to 200 hectares on Catherine Fields.

19.4 Pursuant to section 108 RMA, the grant of consent is subject to the conditions specified at **Appendix A** and **B** respectively, which conditions form part of this decision and consent.

19.5 The duration of these consents shall be until the 30<sup>th</sup> April 2025.

**DECISION DATED AT CHRISTCHURCH THIS 9<sup>TH</sup> DAY OF MARCH 2012**

Signed by:

Paul Rogers




---

Dr James Cooke



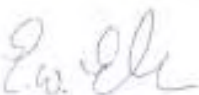
---

Michael Bowden



---

Edward Ellison



---

**Limitation on consent**

1. This consent shall not be exercised concurrently with consent CRC083609.

**Take of water**

2. Water shall only be taken from the Pūkaki Canal at surface water abstraction point H38/0208 at or about map reference NZMS 260 H38:805-641.
3. Water shall only be taken between 1 September and the following 30 April at a rate not exceeding 116 litres per second, a daily volume (being from 12am to 12am the following day) not exceeding 10,022 cubic metres and an annual volume (measured between 1 July and the following 30 June) not exceeding 1,076,000 cubic metres.
4. Whenever the level of Lake Tekapo is at or below 701.8 metres above mean sea level in the months April to September inclusive, and at or below 704.1 metres above mean sea level in the months October to March inclusive, abstraction shall cease
5. The taking of water in terms of this consent shall cease for a period required by the owner and/or operator of the Waitaki Power Scheme, where the owner and/or operator considers it necessary to undertake maintenance on, to ensure the structural integrity and safety of, or to avoid risk or compromise to the operation of, the Waitaki Power Scheme.
6. The taking of water in terms of this consent shall cease whenever the owner and/or operator of the Waitaki Power Scheme ceases to take, divert and/or discharge water into the Tekapo – Pūkaki Canal(s), unless the owner and/or operator of the Waitaki Power Scheme gives written agreement to the continuation of take

**Use of water**

7. Water shall only be used for the spray irrigation of 200 hectares of crops and pasture per irrigation season for grazing sheep, beef, cattle, deer and non-milking dairy cows within the area of land shown on attached Plan CRC083609/CRC083609, which forms part of this consent, provided that no irrigation shall occur with the areas specified in Condition 8.
8. Irrigation shall not occur within the following areas:
  - (a) on soils with an average water holding capacity of 25 mm or less;
  - (b) within 130 metres of the bed of the Pūkaki River;
  - (c) within 50 metres of the bed of any watercourse or ephemeral channel;
  - (d) within moraine areas containing ephemeral wetlands or tarns;
  - (e) within any area unsuitable for use of centre pivot irrigators due to natural topography.
  - (f) There shall be no levelling of glacial moraine landforms to enable use of centre pivot irrigation.
9. Water for irrigation shall only be used on or applied to land that is subject to a memorandum of encumbrance that complies with the requirements of the agreement entitled "Agreement in Relation to the Allocation of Water for Irrigation" between Meridian Energy Limited and the Mackenzie Irrigation Company Limited dated the 31<sup>st</sup> of October 2006.
10. The consent holder shall, six months prior to this consent being exercised, provide to the Canterbury Regional Council a certificate from the consent holder's solicitor certifying that the memorandum of encumbrance is registered on the computer registers for the land shown on Plan CRC083609/CRC083609 any other evidence of registration as the Canterbury Regional Council may require (if any).

11. The consent holder shall take all practicable steps to:
  - (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
  - (b) Avoid leakage from pipes and structures; and
  - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
12. The consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.

### **Water metering**

13. 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 is measured , including:
    - i. the total take of water from the Tekapo Stilling Basin; and
    - ii. the total take of water from the Pūkaki Irrigation Company Limited pipeline at the point at which water is supplied to Glentanner Station; 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.
14. The water meter and recording device(s) specified in Condition 13 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.
15. If the water meter specified in Condition 13(c) 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.
16. The water meter and recording device(s) specified in Condition 13 shall:
  - (d) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions; and
  - (e) be maintained throughout the duration of the consent in accordance with the manufacturer's instructions; and
  - (f) be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.

17. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 13 are at all times fully functional and have an accuracy standard of five percent.
18. Within one month of the installation of the measuring or recording device(s) specified in Condition 13 (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 14.
19. 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 13 to 17 inclusive; and
  - (b) the tamper-proof electronic recording device is operating as specified in Conditions 13 to 17 inclusive.

#### **Fish Screen**

20. 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.
21. 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.
22. 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.
23. The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 20 to 22 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.
24. 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 20 to 22 inclusive of this consent.
25. 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

26. For the purposes of interpretation of the conditions of this consent Catherine Fields shall be defined as the areas in certificates of title and Pastoral Lease numbers Pt P 6 RS 41652 BLK 1 Gladstone SD BLK X111 Pūkaki SD-BAL AT 25320/34, which total 435 hectares.
27. The consent holder shall prepare once per year:
  - (g) an Overseer<sup>®</sup> nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
  - (h) a report of the annual farm nutrient loading for Catherine Fields using the model Overseer<sup>®</sup> (AgResearch model version number 5.4.3 or later).
28. When undertaking the modelling outlined in Condition 27, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
29. A copy of the reports prepared in accordance with Condition 27 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
30. 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 27 from Catherine Fields does not exceed 4,432 kg of Nitrogen and 135 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.
31. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the commencement of consent.
32. 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
33. The consent holder shall at all times comply with the mitigation measures set out in section 5 of the Farm Environmental Management Plan (FEMP) for Catherine Fields as provided to Environment Canterbury in November 2010 and attached to these conditions.
34. Subject to Condition 33, the consent holder shall implement, and update annually the FEMP for Catherine Fields. The FEMP shall include:
  - (a) Verification of compliance with NDAs (incorporating any reductions required by receiving water quality nutrient trigger conditions) by farm nutrient modelling using the model Overseer (AgResearch model version number 5.4.3 or later).
  - (b) Implementation of Mandatory Good Agricultural Practices ("MGAPS") and requirements to manage in accordance with the Catherine Fields Overseer model inputs.
  - (c) The Overseer parameter inputs report, which shall be supplied to the Canterbury Regional Council.
  - (d) A property specific environmental risk assessment (including a description of the risks to water quality arising from the physical layout of the property and its operation which are not factored in as an Overseer parameter) prepared by a suitably qualified person which identifies any farm specific environmental risks along with measures to mitigate the farm specific environmental risks.
  - (e) A requirement to review the risk assessment if there are any significant changes in land use practice.
35. 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.

36. 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 32 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.
37. Changes may be made to the Catherine Fields Overseer model inputs, provided that written certification is provided that the change is modelled using Overseer, and that the result of that modelling demonstrates that the NDAs are not exceeded. A copy of that certification plus a copy of the resultant Overseer parameter report shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, prior to the implementation of that change.

### **Subdivision**

38. 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 435 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 30. 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 30. 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**

39. 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.
40. 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.
41. 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.
42. Nitrogen fertiliser shall not be applied to land between 31<sup>st</sup> May and 1<sup>st</sup> September.
43. 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.
44. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
45. 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.
46. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
47. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.

48. Where practicable, the consent holder shall:

- (i) use direct drilling as the principal method for establishing pastures; and
- (j) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

### **Irrigation Infrastructure**

49. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:

- (k) 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
- (l) 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.

50. Within two months of the testing referred to in Condition 49(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.

51. 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:

- (m) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
- (n) This report shall be obtained within three months of the first exercise of the consent.
- (o) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
- (p) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

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

52. The water quality of the Haldon (Northern) 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. Haldon (Northern) Arm, Map reference: NZMS 260 H39:8823-3531 (NZTopo50 CA16:7828-7366)
  - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371 (NZTopo50 CA16:7808-6205)
- (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.
53. If the monitoring undertaken in accordance with Condition 52 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Haldon 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 30, shall be reduced by  $5\% \times$  the Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (i.e. 200 irrigated hectares divided by the total farm area of 435 hectares); and
  - (b) a report into the cause of the breach of the early warning trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.



54. If a reduction in nutrient loading is required under Condition 53(c) 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 30, shall be restored.
55. If the monitoring undertaken in accordance with Condition 52 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Haldon 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 30, 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 (i.e. 200 irrigated hectares divided by the total farm area of 435 hectares); and
  - (b) a report into the cause of the breach of the environmental standard trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
56. If a reduction in nutrient loading is required under Condition 55(c) 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 Haldon 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 30 shall be restored.
57. The nutrient load reductions and investigation referred to in Conditions 53 to 56 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**

58. 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 any cumulative adverse effects on a waterway arising from abstractions.

### **Lapse**

59. 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 52, 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.*

- *This proposal will affect recorded archaeological sites. Works affecting archaeological sites is subject to a consent process under the Historic Places Act 1993. An authority (consent) from Historic Places Trust must be obtained for the work prior to commencement. It is an offence to damage or destroy a site for any purpose without an authority. The Historic Places Act 1993 contains penalties for unauthorized site damage. The consent holder is advised to contact the New Zealand Historic Places Trust for more information.*
- *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.*

**Limitation on consent**

1. This consent shall not be exercised concurrently with consent CRC071362

**Take of water**

2. Water shall only be taken from the Tekapo Stilling Basin at surface water abstraction point H38/0227 at or about map reference NZMS 260 H38:8842-7328.
3. Water shall only be taken between 1 September and the following 30 April at a rate not exceeding 116 litres per second, a daily volume (being from 12am to 12am the following day) not exceeding 10,022 cubic metres and an annual volume (measured between 1 July and the following 30 June) not exceeding 1,076,000 cubic metres.
4. Whenever the level of Lake Tekapo is at or below 701.8 metres above mean sea level in the months April to September inclusive, and at or below 704.1 metres above mean sea level in the months October to March inclusive, abstraction shall cease
5. The taking of water in terms of this consent shall cease for a period required by the owner and/or operator of the Waitaki Power Scheme, where the owner and/or operator considers it necessary to undertake maintenance on, to ensure the structural integrity and safety of, or to avoid risk or compromise to the operation of, the Waitaki Power Scheme.
6. The taking of water in terms of this consent shall cease whenever the owner and/or operator of the Waitaki Power Scheme ceases to take, divert and/or discharge water into the Tekapo – Pūkaki Canal(s), unless the owner and/or operator of the Waitaki Power Scheme gives written agreement to the continuation of take

**Use of water**

7. Water shall only be used for the spray irrigation of 200 hectares of crops and pasture per irrigation season for grazing sheep, beef, cattle, deer and non-milking dairy cows within the area of land shown on attached Plan CRC083609/CRC083609, which forms part of this consent, provided that no irrigation shall occur with the areas specified in Condition 8.
8. Irrigation shall not occur within the following areas:
  - (a) on soils with an average water holding capacity of 25 mm or less;
  - (b) within 130 metres of the bed of the Pūkaki River;
  - (c) within 50 metres of the bed of any watercourse;
  - (d) within moraine areas containing ephemeral wetlands or tarns;
  - (e) within any area unsuitable for use of centre pivot irrigators due to natural topography.
  - (f) There shall be no levelling of glacial moraine landforms to enable use of centre pivot irrigation.
9. Water for irrigation shall only be used on or applied to land that is subject to a memorandum of encumbrance that complies with the requirements of the agreement entitled "Agreement in Relation to the Allocation of Water for Irrigation" between Meridian Energy Limited and the Mackenzie Irrigation Company Limited dated the 31<sup>st</sup> of October 2006.
10. The consent holder shall, six months prior to this consent being exercised, provide to the Canterbury Regional Council a certificate from the consent holder's solicitor certifying that the memorandum of encumbrance is registered on the computer registers for the land shown on Plan CRC083609/CRC083609 any other evidence of registration as the Canterbury Regional Council may require (if any).
11. The consent holder shall take all practicable steps to:

- (q) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
  - (r) Avoid leakage from pipes and structures; and
  - (s) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
12. The consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.

### **Water metering**

13. The consent holder shall, within six months of the commencement date of this consent at the point of take:
- (c) 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 is measured , including:
    - i. the total take of water from the Tekapo Stilling Basin; and
    - ii. the total take of water from the Pūkaki Irrigation Company Limited pipeline at the point at which water is supplied to Catherine Fields; and
  - (d) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.
14. The water meter and recording device(s) specified in Condition 13 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:
- (c) 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
  - (d) 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.
15. If the water meter specified in Condition 13(c) 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.
16. The water meter and recording device(s) specified in Condition 13 shall:
- (t) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions; and
  - (u) be maintained throughout the duration of the consent in accordance with the manufacturer's instructions; and
  - (v) be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.
17. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 13 are at all times fully functional and have an accuracy standard of five percent.

18. Within one month of the installation of the measuring or recording device(s) specified in Condition 13 (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:
- (c) the measuring and recording device(s) is installed in accordance with the manufacturer's specifications; and
  - (d) data from the recording device(s) can be readily accessed and/or retrieved in accordance with Condition 14.
19. 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:
- (c) the water meter(s) is measuring the rate of water taken as specified in Conditions 13 to 17 inclusive; and
  - (d) the tamper-proof electronic recording device is operating as specified in Conditions 13 to 17 inclusive.

### **Fish Screen**

20. 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.
21. 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.
22. The fish screen shall be designed and installed to ensure that:
- (e) the majority of the screen surface is oriented parallel to the direction of water flow; and
  - (f) 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
  - (g) 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
  - (h) the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.
23. The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 20 to 22 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.
24. 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 20 to 22 inclusive of this consent.
25. 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

26. For the purposes of interpretation of the conditions of this consent Catherine Fields shall be defined as the areas in certificates of title and Pastoral Lease numbers P 6 RS 41652 BLK 1 Gladstone SD BLK X111 Pūkaki SD-BAL AT 25320/34, which total 435 hectares.
27. The consent holder shall prepare once per year:
  - (w) an Overseer<sup>®</sup> nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
  - (x) a report of the annual farm nutrient loading for Catherine Fields using the model Overseer<sup>®</sup> (AgResearch model version number 5.4.3 or later).
28. When undertaking the modelling outlined in Condition 27, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
29. A copy of the reports prepared in accordance with Condition 27 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
30. 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 27 from Catherine Fields does not exceed 4,432 kg of Nitrogen and 135 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.
31. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the commencement of consent.
32. 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
33. The consent holder shall at all times comply with the mitigation measures set out in section 5 of the Farm Environmental Management Plan (FEMP) for Catherine Fields as provided to Environment Canterbury in November 2010 and attached to these conditions.
34. Subject to Condition 33, the consent holder shall implement, and update annually the FEMP for Catherine Fields. The FEMP shall include:
  - (f) 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).
  - (g) Implementation of Mandatory Good Agricultural Practices ("MGAPS") and requirements to manage in accordance with the Catherine Fields Overseer model inputs.
  - (h) The Overseer parameter inputs report, which shall be supplied to the Canterbury Regional Council.
  - (i) 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.
  - (j) A requirement to review the risk assessment if there are any significant changes in land use practice.
35. 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.

36. 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 32 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.
37. Changes may be made to the Catherine Fields Overseer model inputs, provided that written certification is provided that the change is modelled using Overseer, and that the result of that modelling demonstrates that the NDAs are not exceeded. A copy of that certification plus a copy of the resultant Overseer parameter report shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, prior to the implementation of that change.

### **Subdivision**

38. 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 435 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 30. 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 30. 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**

39. 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.
40. 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.
41. For land based spreading of fertiliser:
  - (c) 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
  - (d) 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.
42. Nitrogen fertiliser shall not be applied to land between 31<sup>st</sup> May and 1<sup>st</sup> September.
43. 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.
44. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
45. 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.
46. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
47. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.

48. Where practicable, the consent holder shall:

- (y) use direct drilling as the principal method for establishing pastures; and
- (z) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

### **Irrigation Infrastructure**

49. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:

- (aa) 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
- (bb) 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.

50. Within two months of the testing referred to in Condition 49(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.

51. 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:

- (cc) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
- (dd) This report shall be obtained within three months of the first exercise of the consent.
- (ee) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
- (ff) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

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

52. The water quality of the Haldon (Northern) Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:

- (j) Locations:
  - iii. Haldon (Northern) Arm, Map reference: NZMS 260 H39:8823-3531 (NZTopo50 CA16:7828-7366)
  - iv. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371 (NZTopo50 CA16:7808-6205)
- (k) Depths: depth integrated 0-10m, 25m, 50m
- (l) Water quality variables:
  - x. total nitrogen;
  - xi. ammonia;
  - xii. nitrate;



- xiii. nitrite;
  - xiv. total Kjeldahl nitrogen;
  - xv. total phosphorus;
  - xvi. dissolved reactive phosphorus;
  - xvii. Secchi disc depth; and
  - xviii. chlorophyll *a*.
- (m) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
- v.  $TLc = 2.22 + 2.54 \log(\text{chlorophyll } a)$
  - vi.  $TLp = 0.218 + 2.92 \log(\text{total phosphorus})$
  - vii.  $TLn = -3.61 + 3.01 \log(\text{total nitrogen})$
  - viii.  $TLI = \Sigma (TLc + TLp + TLn)/3$
- (n) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (o) 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.
- (p) 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.
- (q) 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.
- (r) 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.
53. If the monitoring undertaken in accordance with Condition 52 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Haldon 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:
- (c) the NDA, as specified in Condition 30, 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 under irrigation (i.e. 200 irrigated hectares divided by the total farm area of 435 hectares); and
  - (d) 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.

54. If a reduction in nutrient loading is required under Condition 53(c) 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:
- (c) 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.
  - (d) is less than 2.75, then for the subsequent season, the full NDA for the property, as specified in Condition 30, shall be restored.
55. If the monitoring undertaken in accordance with Condition 52 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Haldon 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
- (c) the NDA, as specified in Condition 30, 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 (i.e. 200 irrigated hectares divided by the total farm area of 435 hectares); and
  - (d) 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.
56. If a reduction in nutrient loading is required under Condition 55(c) 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 Haldon Arm monitoring site or the Lower Benmore monitoring site over the period December to April:
- (d) 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.
  - (e) 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.
  - (f) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 30 shall be restored.
57. The nutrient load reductions and investigation referred to in Conditions 53 to 56 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**

58. 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 any cumulative adverse effects on a waterway arising from abstractions.

## Lapse

59. 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 52, 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.*
- *This proposal will affect recorded archaeological sites. Works affecting archaeological sites is subject to a consent process under the Historic Places Act 1993. An authority (consent) from Historic Places Trust must be obtained for the work prior to commencement. It is an offence to damage or destroy a site for any purpose without an authority. The Historic Places Act 1993 contains penalties for unauthorized site damage. The consent holder is advised to contact the New Zealand Historic Places Trust for more information.*
- *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.*

