

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

applications by **Dunstan Peaks Limited** for:

a **water permit** filed under **CRC011361** to divert, take, store and use surface-water from Omārama Stream and its tributaries for irrigation of 342 ha on Twinburn Station, Dustan Peaks Station and Clifton Dows

a **discharge permit** filed under **CRC011362** to discharge water into Omārama Stream and Twaddles Creek; and

a **land use consent** filed under **CRC011363** to disturb the bed and banks of a river at various locations on Omārama Stream and its tributaries

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

PART B - SITE SPECIFIC DECISION

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1 INTRODUCTION

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

2 THE PROPOSAL

- 2.1 The applicant occupies land approximately 15 kilometres southwest of Omārama, which consists of three stations: Twinburn Station, Dunstan Peaks Station, and Clifton Downs. Water from four tributaries of the Omārama Stream (the upper Omārama, Little Omārama, Middle Gully and Twaddles Creek) is currently used to irrigate a total of 342 hectares (ha) of land from six abstraction locations under existing consents.
- 2.2 The applicant previously held 18 resource consents, which expired in May 2001 for the following activities:
- (a) Water permits - To divert, take and use water from streams within the stations including the Little Omārama Stream, Omārama Stream, Middle Gully and Twaddles Creek, and water races leading from these streams, for the purposes of border dyke and wild flood irrigation, domestic and stock water supply and hydro-electricity generation.
 - (b) Discharge permits – To discharge surplus irrigation water into Omārama Stream and water used for hydro-electricity generation into Twaddles Creek.
- 2.3 The applicant has applied for multiple consents to replace these existing water permits and discharge permits with a new irrigation scheme. As the application was received prior to the expiry of the existing consents, the applicant is continuing to operate under these consents pursuant to s124 of the RMA.
- 2.4 In relation to the activities now proposed for the site, there have been a number of changes to the proposal since the applications were notified. However based on the poor quality of the information provided on behalf of the applicant, we had considerable difficulty understanding the proposal. We therefore issued a minute dated 22 December 2011 requesting further information and clarification from the applicant.
- 2.5 The following description is based on the information received in response to that minute and sets out our understanding of the current proposal. We have grouped the description into five parts (A to E), based on the groupings provided in the final condition set from the applicant. This includes a description of the proposed discharges and works in the bed that make up the overall proposal. The indicative location of the key features of the proposal are illustrated on **Figure 1** attached at the end of this decision.
- 2.6 A key feature of the proposal is that the applicant is proposing to convert from the current border dyke and wild flooding to a more efficient spray irrigation system within five years of the commencement of consent (if granted). On conversion to spray, all takes will be piped from the river, with the exception of the augmentation race. We have provided a summary of the proposed short term border dyke systems in our description of the activity below.
- 2.7 Given the changes to the proposal that have occurred, an important issue for us to consider is whether the changes are within scope of the original applications. We return to this issue below after describing the proposal.

Part A – Twinburn Station

- 2.8 The applicant proposes to carry out border dyke irrigation for up to five years on 107 ha of land on Twinburn Station within the area labelled as "Part A" in Figure 1. Water will be taken from two separate sources, namely Little Omārama Stream (H40: 6346-1667) and Omārama Stream (H40: 6141-1588).

- 2.9 Water is diverted from both locations through radial control gates into irrigation races. Water then flows into two separate storage ponds (one for each intake) where it is held by dams. The dams are concrete and earth structures that were constructed approximately 25 years ago. They are lined with a silty clay material to minimise leakage and can hold up to 45,000 m³ (for Little Omārama Stream diversion) and 20,000 m³ (for Omārama Stream diversion). Water will be released from the ponds into a series of distribution races each containing irrigation strips, which run in a northerly direction across the irrigation area.
- 2.10 The maximum rates and volumes sought by the applicant for the diversion, take and use of water under this border dyke system are as follows. There are no annual volumes proposed for the border dyke irrigation.
- (a) Little Omārama Stream – 170L/s and 4,896 m³/day.
- (b) Omārama Stream – 350L/s and 18,900 m³/day.
- 2.11 On conversion to spray, the diversion of water from Omārama Stream will cease and the diversion from Little Omārama Stream will reduce to a maximum rate of 60 litres per second from the same location. The maximum annual volume of water taken for irrigation from Little Omārama Stream will not exceed 519,000 m³/year.
- 2.12 The water taken will be piped and used for spray irrigation of 86.5 ha within the same command area. This is likely to consist of a pivot irrigator along with k-line or a hard nose gun to irrigate the remaining hectares. The exact location has not yet been determined and depends on final design and gravity available.
- 2.13 The existing intake structures in Omārama and Little Omārama Stream consist of two concrete wing-walls with a mechanically operated slide gate between the walls. The applicant has sought consent for works in the bed to maintain these structures, including complete reconstruction in the event of an exceptional flood. Following conversion, the structure in Omārama Stream will no longer be required and will be removed. However the structure in Little Omārama Stream will remain and will be upgraded to meet fish screen and water metering requirements.
- 2.14 While the border dyke scheme remains, a discharge of excess irrigation water will occur into two separate locations in the Omārama Stream. The maximum rates of the discharge are 170L/s (H40: 6165-1852) and 350 L/s (H40: 6170-1810). The discharges occur below the Twinburn homestead at locations where a race merges into the old channel of the Omārama Stream river bed and there are no physical structures. Following conversion to spray, both of these discharges will cease.

Part B – Dunstan Peaks (Middle Gully)

- 2.15 The applicant proposes to carry out border dyke irrigation for up to five years on 112 ha of land on Dunstan Peaks Station within the area labelled as “Part B” in Figure 1. Water will be taken from Omārama Stream (H40: 6136-1752) at a maximum rate of 290L/s and 11,185 m³/day. No annual volume is proposed for the border dyke irrigation.
- 2.16 On conversion to spray, the rate of take will reduce to 35 L/s from the same location, with a maximum annual volume of 300,000 m³/yr. The water will be piped from the take point and used for spray irrigation of 50 ha within the same command area. Either a centre pivot or hard hose gun will be used.
- 2.17 The existing intake structure in Omārama Stream is the same as that described for Twinburn Station above, with the applicant seeking consent for maintenance and replacement of that structure. Following conversion, the intake structure will remain and will be upgraded to meet fish screen and water metering requirements.
- 2.18 There are two discharges of excess water associated with the border dyke system. The first is a discharge into Middle Gully (between H40: 6122-1864 and 6127-1881) at a rate up to 290L/s where the land merges into the natural depression of the stream. The second is a discharge into an augmentation race, which subsequently discharges into Twaddles Creek on Clifton Downs (H40: 6073-2010) at a maximum rate of 150L/s. Both discharges from this area will cease upon conversion to spray, however the discharge from the augmentation race to Twaddles Creek will continue, as discussed further below (Part E).

- 2.19 We note that the original proposal for this area included an application to use bywash water from the border dyke system for electricity generation. However this will not be possible with spray irrigation as there is no bywash and the applicant has therefore advised that consent is no longer required for this activity.

Part C – Dunstan Peaks (Twaddles Creek)

- 2.20 The applicant proposes to carry out border dyke irrigation for up to five years on 15 ha of land on Dunstan Peaks Station within the area labelled as "Part C" in Figure 1. Water will be diverted, taken and used from Twaddles Creek (H40: 6029-1981) at a maximum rate of 100L/s and 8,640 m³/day. No annual volume is proposed for the border dyke irrigation.
- 2.21 On conversion to spray, the rate of take will reduce to 17 L/s from the same location, with a maximum annual volume of 144,000 m³/day. The water will be piped and used for spray irrigation of 24 ha within the same command area.
- 2.22 The existing intake structure in Twaddles Creek is the same as that described for Twinburn Station above, with the applicant seeking consent for maintenance and replacement of that structure. Following conversion, the intake structure will remain and will be upgraded to meet fish screen and water metering requirements
- 2.23 While the border dyke scheme remains, a discharge of excess irrigation water will occur into Twaddles Creek at the same location as the discharge from the augmentation race (H40: 6073-2010) at a maximum rate of 100L/s (creating a total discharge into Twaddles Creek of 250L/s). This discharge from this area will cease follow conversion to spray.

Part D – Clifton Downs

- 2.24 Once the conversion on Twinburn Station and Dunstan Peaks Station has been completed, the applicant proposes to commence a new take from Omārama Stream (between H40: 6163-1866 and 6139-1922). Water will be piped from the Omārama Stream for the spray irrigation of 181.5 ha of land on Clifton Downs within the area labelled as "Part D" in Figure 1. The maximum rates and volumes of water will be 125 L/s, 10,800 m³/day and 1,089,000 m³/yr.
- 2.25 In order to give effect to this take, a temporary diversion of the Omārama Stream is required for the purpose of installing a submerged gallery intake. The diversion will only occur over a length of no more than 50 metres and shall not impede fish passage.
- 2.26 There is an old pipe in Twaddles Creek that was historically associated with a diversion and take for the irrigation of part of Clifton Downs. However the applicant does not intend to use this structure and proposes to construct a new intake structure in Omārama Stream. This will be either a buried gallery or concrete wing-wall as utilised on several of the existing takes. If a gallery is used, this will involve burying a slotted pipe within the riverbed, approximately 2 x 50 metres in length and with a maximum diameter of 500mm.
- 2.27 There is no discharge currently occurring and no discharge will occur as part of the proposal for this area.

Part E – Augmentation Race

- 2.28 In addition to the above diversions, takes and uses for irrigation purposes, the applicant is currently diverting water from Middle Gully into an open augmentation race at a rate of up to 150L/s. The purpose of this activity is to augment flows and fish passage in the Omārama Stream and maintain minimum flows downstream of Twin Peaks Bridge. Without this diversion, the water remaining in Omārama Stream would disappear subsurface. It is a non-consumptive diversion which does not supply any irrigation.
- 2.29 The applicant proposes to continue this activity, even after conversion to spray. However once the Middle Gully Irrigation Area is converted to spray, there will be no discharge of excess water and there is therefore unlikely to be enough water available to sustain the augmentation race. The applicant has therefore sought consent for a new take from Omārama Stream to supply water to the augmentation race.
- 2.30 The proposed diversion from Omārama Stream would use the same intake structure as described for Clifton Downs above. However the existing intake structure in Middle Gully would also be retained so that the applicant has both options available. Water would be diverted at a

maximum rate and volume of 150L/s and 12,960 m³/yr. As a non-consumptive diversion, it would be discharged back into Twaddles Creek at the same rate and volume and that which it is taken.

Stock water

- 2.31 The applicant originally applied for consents to take and use water for stock water and domestic supply as part of the proposal. However in a letter dated 5 December 2008 responding to information requested by the Council, Ms Begley stated that the applicant was now seeking to rely on their rights prescribed in section 14(3) of the RMA.
- 2.32 The reporting officer noted that the applicant did not formally withdraw the stock water components of the applications and therefore assessed stock water as part of the overall proposal. However we are of the view that Ms Begley's letter seeking to rely on section 14(3) of the RMA effectively amended the applications so that the applicant is no longer seeking consent for stock water. We consider that to give any other interpretation would be to ignore Ms Begley's letter, which was a clear and deliberate action on behalf of the applicant. We also note that the latest material received from the applicant confirms that it is relying on s14(3) of the RMA to take stock and domestic water.
- 2.33 The effect of this is that the take and use of water for stock water sits outside the proposal and we have not considered it further in this decision. When considering the appropriate volumes of water, we have therefore based this solely on the water required for irrigation purposes. As discussed in our Part A decision, the applicant retains the ability to take water for stock and domestic use without the need for resource consent, subject to the limits in section 14(3) of the RMA.

Application details

- 2.34 The proposal was originally lodged as a single application. The proposal was changed into three separate applications in relation to this proposal:
- (a) **CRC011361** – an application for a water permit to divert, dam, take and use surface water pursuant to s14 of the RMA. This covers all proposed diversions, damming, taking and use of water discussed above.
 - (b) **CRC011362** – an application the discharge of contaminants into the environment pursuant to s15 of the RMA. This covers all proposed discharges discussed above.
 - (c) **CRC011363** – an application for an activity in the bed of a lake or river pursuant to s13 of the RMA. This covers all proposed works in the bed discussed above.
- 2.35 Consent is required for these activities under the WCWARP and the NRRP, as discussed further below. The applications were lodged with the Canterbury Regional Council (the Council) on 13 January 2001. The applications were publicly notified and there were a number of submissions that are referred to later in this decision. The applications requested a term of 35 years.

3 PRELIMINARY MATTERS

Scope and jurisdiction

- 3.1 The proposal as described above is quite different to that which was originally notified. This raises an important issue for us to consider, being whether the changes since notification are within scope and whether we have the jurisdiction to consider them.
- 3.2 In order to determine this issue, we have carried out a broad comparison between the notified proposal and the current proposal. There are numerous changes in the details and we do not propose to traverse them all. We have preferred instead to take a wider view of the proposal and identify the key aspects of the activities that may translate into effects on the environment. We have summarised this comparison in Table 1 below.

Table 1: Comparison of notified and current proposal

Component	Notified proposal	Current proposal
Irrigation method	Border dyke, wild flooding	Border dyke for 5 years Subsequent conversion to spray
Irrigation area	342 ha over three properties – Dunstan Peaks Station, Twinburn Station and Clifton Downs	Same total area over same properties. Distribution changed to increase irrigation area on Clifton Downs and decrease on other properties
Annual volume	2,052,000 m ³ /yr	No change in total volume The annual volume of water taken from each stream has changed
Rate of take	Total combined instantaneous rate of take of 1,105L/s	For border dyke, rates are as notified Following conversion, the rate of take from each stream will reduce, with the total combined rate reducing to 387L/s
Location of take	Various take points from Little Omārama Stream, Omārama Stream, Twaddles Creek and Middle Gully	Changes in location of some takes, including removing some take points and moving others further downstream
Works in bed	Maintenance works for intakes in above locations	Maintenance and upgrade of existing structures as per notification. Installation of a new structure in Omārama Stream
Discharges	Discharges into Twaddles Creek and Omārama Stream	Discharges continue for border dyke then cease on conversion to spray (with the exception of the discharge from the augmentation race)

- 3.3 On a side point, we note that several of the activities described above in the column “notified proposal” column, were not included in the applications made by the applicant and/or were not notified by the Council. In particular, this includes the discharge of excess irrigation water into Omārama Stream from all three stations and the diversion, take and use from Middle Gully for Dunstan Peaks Station
- 3.4 Notwithstanding the above, based on the information provided by the applicant it is apparent that these activities are currently occurring on site and are intended to form part of the proposal while the border dyke system remains. We have therefore assessed the effects of these activities and evaluated them against the relevant planning instruments as part of our overall consideration of the proposal. This is consistent with the pragmatic approach adopted by the High Court in similar circumstances, which confirmed that we are able to consider granting consent to an activity even though consent has not been specifically sought¹.
- 3.5 Returning to the issue of scope, 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. Mr Chapman on behalf of the applicant provided further comment on the issue of scope, which confirmed that these are key considerations to take into account. He also referred us to the decision of *Coull v Christchurch City Council*², where the Court adopted the following three part test to determine whether amendments are within scope:
- (a) Do the amendments increase the scale of intensity of the activity;

¹ *Queenstown Lakes District Council v Hawthorn Estate Ltd & Ors* (HC, Christchurch, CIV-2004-485-1441, CIV-2004-485-1445, 17 December 2004, Fogarty J) at para 55

² EnvC C077/06, paragraph 11

- (b) Do the amendments exacerbate or mitigate the impacts of the activity, both in terms of adverse effects and in terms of the Plan and other superior documents; and
 - (c) Would parties who have not made submissions have done so if they were aware of the change?
- 3.6 Mr Chapman then addressed us on each of these tests in relation to the current proposal. Overall we accept Mr Chapman's submissions that the changes are within scope. The key reasons for this conclusion are as follows:
- (a) The total area of land being irrigated and the total amount of water being used remains unchanged, with the instantaneous rate of abstraction reducing significantly on conversion to spray;
 - (b) The points of take generally move further down the catchment, reducing the impacts on the upper reaches of the Omārama Stream;
 - (c) The changes are directed towards achieving greater consistency with the relevant planning documents, in particular the efficiency requirements of the WCWARP by converting to spray;
 - (d) Overall the proposed conversion to spray will result in improved environmental outcomes compared to the notified proposal, particularly in terms of water quality by removing the discharge of excess irrigation water from the border dyke scheme;
 - (e) Given the above, we consider that if the current proposal had been notified, this would be unlikely to have attracted any additional or different submissions to that which were received on the notified proposal.
- 3.7 We also have some sympathy with the amount of time that has passed since this application was first lodged and the number of changes to the legislative and planning framework that has occurred during this time. We consider that in this circumstance it is appropriate to provide the applicant with some latitude to revise the proposal in line with the expectations of the current planning instruments and that no party would be prejudiced by allowing such changes to be made. We are aware that no other parties have had the opportunity to comment on the additional information received from the applicant after the hearing. Although this did give us some cause for concern, on balance we accept that it is appropriate and acceptable to consider the revised proposal given the nature of the changes as discussed above.
- 3.8 This conclusion leaves us in a somewhat unusual position to complete the balance of this decision, as the evidence, reports and submissions presented at the hearing related to the notified proposal rather than the current proposal. Although some of this material remains relevant, particularly to the short term operation of the border dyke scheme, some of it is no longer applicable. However for completeness we have summarised the material received during the hearing in the sections that follow. We have also included a separate section titled "Further Information from Applicant" where we summarise the additional information received from the applicant after the hearing.

Ahuriri Water Conservation Order (AWCO)

- 3.9 Given the location of this proposal, it is subject to the requirements of the AWCO, including ensuring that the minimum flow levels of the Omārama Stream and Ahuriri River are maintained. In accordance with section 217 of the RMA, we may not grant a consent that is inconsistent with the requirements of the AWCO. We discuss the AWCO further in our Part A decision.
- 3.10 Little Omārama stream, Middle Gully and Twaddles Creek are all upper catchment tributaries of the Omārama Stream and tributaries within the Ahuriri River drainage basin. While water is not abstracted from Omārama Stream within the reaches that are subject to the minimum flows in clause 6 of the AWCO, water from the upper reaches of Omārama Stream and tributaries are expected to contribute flow to the downstream reaches of the Omārama Stream.
- 3.11 Based on the above, we must ensure that granting these consents would not result in the minimum flow levels in the AWCO being breached. We are satisfied no breach will occur because these activities have been occurring since the 1960s with no adverse impact on the flows in the Omārama Stream. Furthermore, on conversion to spray the instantaneous rate of abstraction will significantly decrease. We discuss the issue of flows further in our evaluation of effects.

- 3.12 The AWCO also contains controls on discharges into the protected waters and damming of tributaries of the Ahuriri River not forming part of the protected waters. We consider that these provisions are not relevant as the discharge is not occurring into the protected waters and no damming of tributary is proposed. While we acknowledge that dams are part of the proposal, they are associated with holding ponds fed by diversions and are located outside of any stream or tributary.

4 DESCRIPTION OF THE ENVIRONMENT

The Omārama Stream and its tributaries

- 4.1 The Upper Omārama Stream, Little Omārama, Middle Gully and Twaddles Creek are all headwaters of the Omārama Stream and drain the Ewe and Wether Ranges to the east and southwest and the hills and mountains between the Omārama Catchment and the Manuherikia Catchment. It ranges in altitude from about 550 m to about 1830 m at the head of the catchment.
- 4.2 Average annual rainfall in this catchment is estimated to range from about 600 mm to about 1800 mm. This area receives rain from spill-over from the most vigorous westerly quarter systems that are usually at their peak in March, October and December, and from south-easterly quarter storms that bring rain or snow to the surrounding ranges. Strong easterly quarter storms have brought rain to this area but are not common.
- 4.3 The Omārama Stream consists of two distinct areas. The stream is dry for the majority of the year from approximately 500 m downstream of the Twinburn Bridge on Broken Hut Road, and remains dry for 4.5 km downstream for about 3 – 4 months of the year.
- 4.4 The Omārama Swamp has a catchment area of about 40 km² and is fed by flow from Twaddles Creek. The swamp also receives water from one of the Dunstan Peaks discharges of excess border dyke irrigation water. The swamp and the spring fed tributaries that flow into the swamp provide habitat and spawning sites for fish that sustains the Lower Omārama Stream fishery. This area has been recognised as a nursery, which is important to the fishery of the Omārama Stream and Lake Benmore.
- 4.5 The upper reaches of the Omārama (above the dry area) support a resident trout population. Other species of fish include Upland Bullies, Common River Galaxias and other bully and galaxids. Angler activity above the swamp is non-existent as suitable fishing areas and public access is limited.
- 4.6 A site visit to the applicant's property in December 2008 and a search of ECan's GIS database undertaken by ECan staff was used to audit the applicant's description of the affected environment. The following information was also identified as being relevant to understanding the values and sensitivity of the receiving environment in relation to the proposed activity:
- 4.7 The Omārama Stream is recorded on ECan's GIS database as a "Salmonid Habitat" and an important spawning stream. Native vegetation is present in the reach beginning at the confluence of the Little Omārama and Omārama Stream.
- 4.8 There are two existing consents on Little Omārama Stream – CRC960328, to take water from Little Omārama Stream (at NZMS 260 H40:623-195), and CRC960329, to discharge water into Little Omārama Stream (at NZMS 260 H39:617-213). These consents are both held by RC and PE Croft. The abstraction by Berwen Station is located approximately one kilometre downstream of the abstraction by Twinburn Station.

The applicant's property

- 4.9 The irrigation area is located at the head of the Omārama Stream Valley, approximately 8.5 km from State Highway 8 (SH8). The irrigation area is not within a Statutory Acknowledgement Area or a Silent File Area.
- 4.10 The applicant's three properties have a total area of 5,736 ha. Currently these properties are a mixture of freehold and leasehold land. The three stations are located on the western side of Broken Hut Road over a distance of approximately 3 km, and both sides of Broken Hut Road. The property bounded to the east by the Ewe Range, to the south by the St Bathans Range and to the west by the Wether Range.

- 4.11 The applicant had been irrigating the area since the 1960s and the activity is an integral part of the overall farm management, which was mainly a fine wool and lamb finishing operation. There are also a limited number of deer grazed on the property. The irrigated paddocks are used primarily to provide high quality feed for lambs once they have been weaned, allowing the applicant to grow the lambs out to prime weights and further, it allows them to grow sufficient high quality winter feed for their stock.

Site visit

- 4.12 We detailed our site visits in Part A and we do not repeat this information here other than to make the following observations. During the land visit we drove as far as the "upper bridge" over the Omārama Stream (upstream of the Dunstan Peaks homestead). We did not venture onto the applicant's property but viewed what we could from Broken Hut Road. We identified "middle bridge", which is adjacent to the Clifton Station homestead and marks the extent of the AWCO "protected water". Lower down in the catchment we crossed Twin Peaks Bridge just below where the diversion from Omārama Swamp re-enters the Omārama Stream

5 PLANNING INSTRUMENTS

- 5.1 As discussed in our Part A decision, there is a wide range of planning instruments that are relevant under the RMA. This includes national and regional policy documents, along with regional and district plans. The key planning instruments relevant to these applications are as follows:
- (a) Waitaki Catchment Water Allocation Plan (WCWARP);
 - (b) Natural Resources Regional Plan (NRRP);
 - (c) Proposed and Operative Canterbury Regional Policy Statement (CRPS); and
 - (d) Waitaki District Plan (WDP / MDP)
- 5.2 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

- 5.3 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.

CRC011361 – Divert, take and use water (s14)

- 5.4 This application is listed in Schedule 2 of the Resource Management (Waitaki Catchment) Amendment Act 2004. Section 88A therefore does not apply and the relevant plan for this activity is the operative WCWARP.
- 5.5 The following rules from the WCWARP are applicable to this application:
- (a) Rule 2 - As all the proposed activities occur upstream of the bridge near the Clifton Downs Station, they are subject to the minimum flow requirements in Table 3, row (xxii) of Rule 2. The applicant is however not proposing to adopt the 5 year 7 day low flow as required by the WCWARP. Instead the applicant is proposing the minimum flows set out in the AWCO, at the Tara Hills Site on the Omārama Stream. This site is located at the bottom of the catchment.
 - (b) Rule 6 – The activity is within the allocation limit of 275 million cubic metres for agricultural activities upstream of Waitaki Dam.
 - (c) Rule 16 – Classifying rule, non-complying activity
- 5.6 Due to the non-compliance with Rule 2, all the abstractions, damming and diversions associated at Twinburn Station, Dunstan Peaks and Clifton Downs are classed as **non-complying** activities under Rule 16 of the WCWARP.

CRC011362 – Discharge water (s15)

- 5.7 This application is listed in Schedule 2 of the Resource Management (Waitaki Catchment) Amendment Act 2004. Section 88A of the RMA therefore does not apply and the relevant plan for determining the status of this activity is the operative NRRP.
- 5.8 The relevant provisions of the NRRP are as follows:
- (a) Rule WQL1 – permits the discharge of water into a river, subject to compliance with a range of conditions
 - (b) Rule WQL48 – provides for the status of a discharge to water where it fails to comply with any of the conditions in WQL1. It will be classified as either a discretionary or non-complying activity, depending on whether it complies with the listed conditions.
- 5.9 Under the above rules, it is not clear whether the discharge of irrigation bywash water will meet the water quality standards for the Alpine-upland water quality management unit, and so we have assessed it as a **non-complying**.

CRC011363 – Disturb the bed (s13)

- 5.10 This application is listed in Schedule 2 of the Resource Management (Waitaki Catchment) Amendment Act 2004. Section 88A of the RMA therefore does not apply and the relevant plan for determining the status of this activity is the operative NRRP.
- 5.11 The relevant provisions of the NRRP are as follows:
- (a) Rule BLR 2 – permits the use and maintenance of structures that were lawfully erected or placed before 1 November 2010, subject to compliance with a range of conditions
 - (b) Rule BLR5 – permits the excavation, drilling, tunnelling, depositing, reclamation, drainage or disturbance in, on, under or over the bed, subject to compliance with a range of conditions
- 5.12 It is possible that these activities could be carried out to meet the permitted activity criteria, however from the information available it is not clear that they will. In particular, conditions 6(b) of Rule BLR2 and conditions 2 and 4 of Rule BLR5 are unlikely to be complied with. The activity is therefore classified as a **restricted discretionary** activity under Rule BLR5.
- 5.13 As a restricted discretionary activity, the matters we can consider are limited to those specifically identified in Rule BLR5 of the NRRP. However these matters are wide ranging and effectively include all of the key issues that we would be considering if the application was fully discretionary, including effects on bank stability, flooding, other activities, water quality and ecosystems.

Overall status of the proposal

- 5.14 Based on the above, the diversion, take, use and discharge of water are non-complying activities, but the works in the bed are restricted discretionary. We set out our approach to “bundling” of consent applications in our Part A decision. In this case, we consider that the proposal should be considered as a whole as the effects of the different activities overlap. We therefore consider that the bundling of the applications for status purposes is appropriate and have assessed the entire proposal as a **non-complying** activity.

6 NOTIFICATION AND SUBMISSIONS

- 6.1 Application CRC011361 was publicly notified on the 6th of December 2003 as part of the MfE call-in of all the applications in the Waitaki Catchment. This consent, along with CRC011362 and CRC011363, was also notified in August 2007 with 200 other applications for similar activities in the Waitaki catchment.

- 6.2 The applicant is seeking a 35 year duration for the take and use applications. As these applications are “replacement consents” this applicant is not, in terms of the MIC agreement with Meridian, required to accept the Meridian lapse date of 2025.
- 6.3 Table 1 is based on the relevant s42A reports and summarises those submissions that directly referenced the take and use application. In addition to those listed, there were other submitters that presented evidence at the hearing that was relevant to this application. None of those submissions made any reference to this discharge and land use application or the effects of the proposed discharge and works in the bed
- 6.4 The relevant evidence from submitters is discussed in more detail later in this decision. Please note that all submissions hold equal importance, even if not specifically listed below.

Table 2. Summary of submissions on applications

Submitter	Reasons	Position
Fish & Game	The AWCO minimum flows should apply to the application to protect the outstanding values in the Omārama Stream.	Oppose
Meridian Energy Ltd	Effects on water quality, water metering, and duration.	Oppose

- 6.5 Overall, the key effects of concern relating to applications within this catchment include those relating to adverse effects on ecosystems, water quality and landscape values, minimum flows and duration.

7 THE SECTION 42A REPORTS

- 7.1 Two separate section 42A reports on the applications and submissions were prepared by the Council’s Consent Investigating Officer, Ms Yvette Rodrigo. One related to the proposed water permit (CRC011361) and the other related to the discharge permits and land use consents (CRC011362, CRC011363).
- 7.2 These primary reports were supported by a number of specialist s42A reports prepared by Messrs Heller, Clothier, Hanson, Schallenberg, Glasson, McNae and Stewart, and Drs Meredith and Freeman. The key issues addressed by these reports were cumulative water quality effects, landscape effects, and environmental flow and level regimes.
- 7.3 All reports were pre-circulated in advance of the hearing in respect of the take and divert applications. We have read and considered the contents of the reports and refer to them as relevant throughout this decision.

Ms Rodrigo

- 7.4 In her report on the water permit, Ms Rodrigo identified the following matters as outstanding which would need to be addressed further during the hearing:
- (a) *80% technical efficiency not achieved* - The applicant is proposing to irrigate land using border-dyke and will flood irrigation methods, which is unlikely to achieve the technical efficiency objectives of the WCWARP.
 - (b) *5 year 7 day low flow not proposed* - The applicant is not proposing to adopt the 5 year 7 day low flow as required by the WCWARP.
 - (c) *Clarification of the activities* – A clear description of the activities at the site and consenting requirements for each application is required.
 - (d) *Surface water quality* - The applicant has not proposed measures to address water quality impacts.
 - (e) *Landscape and amenity* – Confirmation is required that irrigation occurs in a manner that follows the natural shape of the land.

- (f) *Ecosystem effects* – The proposal may result in more than minor impacts on fishery values. The applicant is not proposing to install fish screens at the intakes.
 - (g) *Impacts on other users* – Ms Rodrigo said that the applicant may wish to provide information on the impacts on other users and how any effects will be mitigated. In addition, the applicant may wish to confirm whether the diversion into Omārama Stream will continue, and if so whether consent is required for this activity.
- 7.5 In considering the adverse effects of the land use application, the Ms Rodrigo considered flood-carrying capacity and erosion, water quality and ecosystems, effects on manmade structures and downstream users, amenity values, and tangata whenua values. She concluded that all of the effects were minor.
- 7.6 In terms of the discharge permit, Ms Rodrigo identified the following matters as outstanding which would need to be addressed further during the hearing:
- (a) Clarification on whether all discharges into surface water occurring at the applicant's property requiring consent were applied for;
 - (b) Whether all applications were notified and if not, whether these applications would require the part of application CRC011362 to be re-notified;
 - (c) An assessment of effects associated with all discharges requiring consent;
 - (d) Mitigation measures to avoid, prevent or remediate impacts on the environment as a result of these discharges.
- 7.7 The core issue for the Consents Investigating Officer (Ms Rodrigo) was to do with water quality and ecosystems. Here, she noted that the applicant had applied for discharges of border dyke and wild flood irrigation byway water with two of the water permits. However, she noted a number of other discharges of bywash water from flood and border dyke irrigation had not been included in this application. Those activities, she noted, occur into waterways within the property and have the potential to adversely affect water quality. She was particularly concerned about sensitivity of the downstream environment such as the Omārama Swamp (which had been identified as an important nursery and habitat for fish) and the Omārama Stream. She was concerned that no information was available that confirmed the effects on these waterways resulting from the discharges of contaminants associated with the irrigation system in terms of those effects being acceptable or otherwise.

Mr Dave Stewart

- 7.8 Mr Stewart provided a s42A report that assessed the hydrology of the streams and rivers relevant to this proposal, including an assessment of rainfall and river flows. He referred to a report by Mr de Joux on behalf of the applicants and commented that he agreed with much of it.
- 7.9 Mr Stewart told us that Omārama Stream dries up naturally about 50-750 mm downstream of Twinburn Bridge and remains dry for 3-4 months. He noted that Omārama Swamp is very important to the flows downstream of the swamp outflow at the Tara Hills recorder site, especially during low flow periods, and that the discharge from the augmentation race into the swamp was an efficient way to ensure good flow at the recorder site. If this discharge did not continue, Mr Stewart considered that the flows at the Tara Hills site could be jeopardised and the objectives of the AWCO may not be met.
- 7.10 He provided a summary of the available data on flows for the relevant streams. He noted that the 5Y7DLF for the Tara Hills site was 470L/s, as estimated by Gabites and Horrell. However he noted that he did not have much confidence in this estimate given the difficulties Gabites and Horrell had in deriving it and the complexity of abstractions and underground flow. He considered that a comprehensive study and data collection program was required to gain a better understanding of flows and outputs.
- 7.11 In relation to ongoing monitoring of flows, Mr Stewart consider that the most logical site for monitoring was the Tara Hills recorder site (H39: 624-260) as it met the requirements of the WCWARP and is a long term existing flow recording site in the downstream half of the catchment. He recommended that the flows from the AWCO should apply (between 250L/s and 750L/s depending on the time of year) rather than the 5Y7DLF as required by the WCWARP, as it would not be logical to set higher flows than other existing consents in the catchment.

- 7.12 In addition, he recommended that a minimum flow site should also be imposed upstream of the top Omārama Stream intake at or about H40:612-154 to measure natural flows and identify the flow relationships between the upstream and downstream parts of the catchment. A minimum flow of 160L/s should be imposed for this site, below which all abstractions should cease.

Mr Chris Glasson

- 7.13 Mr Glasson assessed the potential effects of the proposal on landscape values and noted that the site was located at the head of the Omārama Stream Valley, 8.5 km south of SH8. He told us that it was pastoral farmland in a narrow and discrete valley, with very low visibility, low sensitivity to change and high absorption capacity.
- 7.14 However he went on to say that the shape of the application site does not reflect the landform pattern and that the geometrically shaped edges to the proposed irrigation area creates moderate adverse landscape effects which require mitigation. He considered that if mitigation measures were proposed such as integrating the site edges with landform patterns and respecting the riparian buffer along the streams then the adverse effects will be less than minor.

8 THE APPLICANT'S CASE

- 8.1 Legal counsel for the applicant, Ewan Chapman, presented opening submissions and called three witnesses as follows:
- (a) Ms Cathy Begley – Consultant
 - (b) Mr Richard de Joux - Hydrologist
 - (c) Mr Andrew Craig – Landscape Architect.
- 8.2 In addition, general briefs of evidence were provided by Mr Robert Batty (Planner) and Mr Andrew McFarlane (farm management consultant) on behalf of all UWAG applicants.
- 8.3 As noted above, much of the following discussion relates to the original notified proposal rather than the current proposal. However we have retained this discussion for completeness. We discuss the further information provided by the applicant on the current proposal later in this decision.

Opening legal submissions

- 8.4 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.
- 8.5 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.
- 8.6 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.
- 8.7 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.
- 8.8 Mr Chapman then addressed us on the issue of allocation of assimilative capacity. Relevantly, for this application in terms of the Ahuriri, he told us the assimilative capacity is exceeded. He contended the approach taken by MWRL that essentially resulted in some farming units mitigating for the nutrient loss of other farming units, was inappropriate. He submitted a more appropriate method of allocation is on the basis of productive use of land. The productive use of

the land he said represents the level of nutrient discharge of each farming unit and that should be used; and that the method of allocation based on dividing allocation on a per hectare basis should not be utilised.

- 8.9 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.
- 8.10 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.
- 8.11 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.

Ms Cathy Begley – Consultant

- 8.12 Ms Begley said that the applicant had been irrigating the area since the 1960s; irrigation of land had become an integral part of the farming operation. Ms Begley believed that these applications could be considered as straight replacements, in that they sought the ability to take the same rate and volume of water to irrigate the same area of land as they had been irrigating since the 1960's.

Water Source

- 8.13 Ms Begley said that the proposed takes were from the upper reaches of the Omārama Stream catchment. While there was very little information on the aquatic values associated with these smaller tributary streams, she noted that the lower reaches of the Omārama Stream (i.e. that below the Clifton Downs Bridge) was recognised as an important stream for fish species especially brown trout, which use the stream for spawning. Ms Begley said that Young (1987) had stated that the Omārama Stream was one of the most important spawning tributaries of the Ahuriri. Young (1987) goes on to state that the Omārama Stream supported a moderately diverse community of invertebrates in high density and a search of ECan's GIS Database indicated that brown trout, long finned eels and Brook Char had been found in Omārama Stream.

Effects on other water users

- 8.14 Ms Begley said that this application sought the ability to divert, take and use water from a number of streams, all of which were tributary streams of the lower Omārama Stream. There were no other surface water abstractors either up or downstream of the proposed points of take from either Twaddles Creek or Middle Gully, due to the fact that the land through which these streams flow (from their source to the confluence with Omārama Stream & Clifton Downs Swamp) was controlled by the applicant. There was an existing user (CRC960328 – Mr & Mrs Croft) located downstream of the take on the Little Omārama Stream. The applicant gained the written approval for their proposal from Mr & Mrs Croft in 2002.
- 8.15 Ms Begley also understood that there were a number of water permit holders, other than Mr & Mrs Croft, within the Omārama Stream catchment. The majority of these water permit holders were located within the area subject to the Ahuriri River Water Conservation Order (AWCO) and as such were subject to specific minimum flows and allocation regimes set out within the AWCO. The "protected waters", as defined by the AWCO, for the Omārama Stream did not extend past the Twin Peaks Station Bridge. This point was downstream of the applicant's proposed takes.
- 8.16 The applicant proposed to adhere to the Omārama Stream minimum flow as set out within the AWCO, along with being a part of the water users group which was established on the Omārama Stream and operated a flow sharing regime during periods of low flows.
- 8.17 As outlined by Mr de Joux (discussed below) there were a number of issues with setting minimum flows for this application. Rule 2, Table 3 (xxii) of the WCWARP required that a minimum flow site was located at the bottom of the catchment. As there was an existing permanent flow recorder

located at Tara Hills it would seem appropriate for this site to be where minimum flows were monitored.

8.18 A 5 year, 7 day low flow for this site (Tara Hills) has been estimated at 470 L/s. However, as set out within both Mr de Joux's and Mr Stewart's evidence, they have very little confidence that this flow (the 470 L/s) accurately reflects the 5 year, 7 day low flow. Given the lack of confidence, both Mr de Joux and Mr Stewart recommend that in this particular situation the AWCO minimum flow would be appropriate. This minimum flow regime would require the applicant to cease taking water whenever the flow:

- (a) At the Tara Hills water level recorder reaches 250 L/s during November to April and 750 L/s the remaining parts of the year; and
- (b) At the Omārama Station Bridge reaches 500 L/s during November to April and 1,200 L/s the remaining parts of the year.

8.19 Further, she noted that the CRC's current "standard" Omārama Stream minimum flow condition (as set out within Ms Penman's 2A report) also requires all takes subject to the Omārama Stream minimum flow to reduce the rate of take/daily volume by half whenever the flow reaches 800 L/s. This condition also provides for the establishment of a water users group which operates to ensure the flow in the Omārama Stream remains above 500 L/s as measured at the Omārama Station Bridge. When this water users group was activated, it was considered that the taking of water complied with the minimum flows.

8.20 She noted that Ms Rodrigo and Mr Stewart agree that the AWCO minimum flow for this application would be appropriate. Further both Ms Rodrigo and Mr Stewart make comment that the applicant has held consents to divert water from the Omārama Stream and discharge this water into Twaddles Creek. The purpose of these consents was to augment the flows in the lower reaches of the Omārama Stream. Both Ms Rodrigo and Mr Stewart indicated that retaining this augmentation of flows was important for maintaining the existing permit holder's reliability of supply. Therefore, it would appear important for this augmentation to be maintained.

8.21 However, Mr Stewart and Ms Rodrigo then go on to recommend an additional minimum flow of 160 L/s be attached to this consent. This flow was to be measured upstream of the upper most Dunstan Peaks intake on the Omārama Stream. In Ms Begley's view, neither Mr Stewart nor Ms Rodrigo provided any rationale as to why the additional minimum flow was required. Further it appears that Ms Penman (Report 2A, paragraph 110) was recommending yet another alternative minimum flow condition. In particular, that the applicant cease taking whenever the flow in the Omārama Stream was less than 900 L/s between Nov – Apr and 916 L/s for the remainder of the year. The rationale provided by Ms Penman was to ensure that existing permit holders were protected.

8.22 In Ms Begley's view, whether such additional minimum flows (other than the Omārama Stream AWCO minimum flow) would protect other permit holders from the imposition of such conditions was not justified for the following reasons:

- (a) There were no other permit holders on either Twaddles Creek or Middle Creek.
- (b) There was one other permit holder located on the Little Omārama Stream (just downstream of the applicant's current intake). The applicant has gained the written approval of this user and as such the effects on this user can no longer be considered.
- (c) There were no other surface water permit holders who take from the Omārama Stream between the applicant's point of take and where the Omārama Stream emerges from the Clifton Downs Swamp. This could be as a result of this reach of the stream (especially the reach below the TwinBurn Downs Bridge) going subsurface which makes this reach of the river unreliable as a water source.
- (d) The proposed conditions would elevate the degree of protection for the downstream users by requiring the applicant to cease taking well before any other user within the Omārama Stream Catchment.
- (e) As a renewal consent, the principal of non-derogation from others rights does not apply – according to Ms Begley. To do so would severely disadvantage the first renewal since they would effectively be required to cut off at a higher flow regime to safeguard the takes of other irrigators not in the same renewal sequence.

- 8.23 Ms Begley noted that this application was to replace a number of existing water permits that have been in existence for a number of years. She appreciated that there was no automatic right of renewal. However the takes have been occurring unfettered for some time and as such have shaped these downstream users' reliability of supply. Therefore, granting the proposed application could result in existing users' reliability of supply increasing rather than decreasing. This was because the applicant was going to use the water available to them more efficiently than has occurred in the past, and they will be subject to minimum flows which they have not been subject to in the past. These efficiency measures, along with allowing the applicant to augment the flows in the Clifton Downs Swamp, would ensure that existing users' reliability of supply was maintained, if not improved.

Effects on in-stream values

- 8.24 Table 3 of the WCWARP does not set a specific minimum flow regime for the Little Omārama Stream, the Omārama Stream, Middle Gully or Twaddles Creek. Rather it provides a formula by which the applicant is able to determine an appropriate minimum flow. This formula requires the minimum flow to be the 5-year, 7-day low flow and should be set at the downstream end of the catchment.
- 8.25 As outlined in Mr de Joux's evidence (paragraph 5.17) and confirmed by Mr Dave Stewart (ECan Hydrologist), a 5-year 7-day low flow for the Omārama Stream of 470 L/s at Tara Hills has been calculated, however they have no confidence that this value is correct and as such neither are recommending this flow be adopted. Rather, both are recommending the Omārama Stream AWCO minimum flow.
- 8.26 Ms Begley considered it would be inappropriate to dismiss the values that are being protected by the AWCO, as the values the AWCO aims to protect are echoed in the objectives and policies of the WCWARP. In Ms Begley's view it appears to be a case of where two statutory documents, which are trying to achieve the same outcomes, are not as integrated as would be desirable.
- 8.27 Table 3 of the WCWARP indicates that minimum flows should be set at the downstream end of the catchment. In this situation, there is an existing minimum flow recorder located at Tara Hills, so it would seem logical for any minimum flow to be measured at this point. However, at this point there is an existing minimum flow regime which has been set to ensure that the taking of water for irrigation is done in a manner which protects the in-stream values of the Omārama Stream.
- 8.28 Unfortunately the WCWARP is silent on specific policies for the Ahuriri Catchment. In the explanation (page 42 of the WCWARP) it is stated that there are no specific policies for this catchment as the AWCO sets the allocation limits and minimum flows for the taking, using, damming and diverting of water. Given this, adhering to the AWCO would ensure that the in-stream values of the mid to lower reaches of the Omārama Stream are protected.
- 8.29 Ms Begley considered that the issue appears to be whether the 160 L/s, measured upstream of the abstractions, as proposed by Mr Stewart and Ms Rodrigo protects the in-stream values in the upper reaches of the Omārama Stream and its tributaries. In this particular situation, she opined, there is an additional complication in that the Omārama Stream between Waldrons Road Bridge and the Clifton Downs Bridge goes subsurface for a stretch of some 6 km. The effect of the upstream abstractions on the frequency and extent to which the stream fails to flow is unknown. However, it is known that this reach does go dry naturally.
- 8.30 Given this, along with the fact that the minimum flows set out within the AWCO aim to ensure that the aquatic habitat of the Omārama Stream is protected (which is consistent with the objectives and policies of the WCWARP) imposing the AWCO minimum flow should ensure that the proposed takes do not have a more than minor effect on the aquatic ecosystem.

Fish Screening

- 8.31 Ms Begley said there are existing intake structures on all the streams and that currently there are no fish screens in place upon either the point at which water is diverted from the stream or where irrigation water is taken from the diversion race or header pond. The applicant is proposing a mitigation measure which will determine whether a fish screen is required and that if a screen is required, one will be designed, installed and certified to ensure that any necessary screens as is practicable exclude fish and are in general accordance with the report Fish Screening: good practice guidelines for Canterbury, NIWA Client Report: CHC2007.092, October 2007.

Effects of inefficient water use

- 8.32 Ms Begley said that traditionally two methods have been used to determine whether the use of water for irrigation is efficient. The first method is ensuring that the peak application rate is no more than half the water holding capacity of the soil. The second method is by the implementation of an annual volume using one of the two methods set out in Policy 16(c) of the WCWARP.
- 8.33 For the Twinburn applications the applicant currently is applying 77 mm (gross) per 10 days. However, border dyke irrigation methods can be between 40–60 % efficient. Assuming the system is 60% efficient the applicant would be applying 31 mm/10 days. This is still more than 50% the water holding capacity for the very light soils located on-site, but it is not more than 50% of the water holding capacity of the “heavier” soils located on-site.
- 8.34 For the Dunstan Peaks applications the applicant currently is applying between 84.6 and 68 mm (gross) per 10 days. Border dyke irrigation methods can be between 40–60% efficient. However, given that currently there is a portion of wild flood irrigation the efficiency of the method of irrigation is likely to be at best 40% efficient for the border dyke and wild flooding area and 60% efficiency for the pure border dyke irrigation. Given this efficiency the applicant anticipates that they would be applying between 51 mm and 40 mm per 10 days. As with the Twinburn applications, this is still more than 50% of the water holding capacity for the very light soils located on-site, but it is not more than the water holding capacity of the “heavier” soils located on-site.
- 8.35 With respect to the Clifton Downs takes the applicant proposes to apply 38 mm per 10 days which is less than 50% of the water holding capacity of the soil.
- 8.36 It should also be noted that the applicant is proposing an annual volume based upon 600 mm/ha/year. If the applicant were to use their peak rate of take for 24 hours per day, for the Twinburn and Dunstan Peaks takes, the proposed annual volume would only allow them to take for a maximum of between 23 and 48 days per year. With respect to the border dyke methods of irrigation, in order for them to maximise the number of days they are able to irrigate, they may change the method of irrigation from border dyke to spray. However, due to financial reasons this may not occur straight away.
- 8.37 With respect to the area of flood irrigation, the applicant is proposing to move away from this method of irrigation and implement a spray irrigation method likely to be K-line. Due to financial reasons, this is unable to occur straight away, but it is proposed to occur within a 5 year timeframe.
- 8.38 This application proposes annual volumes based upon the applicant applying up to 600 mm/ha/year. Using the methodology set out in Policy 16(c)(ii) an annual volume of more than that proposed by the applicant would be acceptable. The latter annual volume is based upon mean rainfall of the area and the various soil types of the area.
- 8.39 When determining whether or not the proposed use of water is efficient, Policy 28 of the WCWARP states that the consent authority should take into account (a) whether the applicant has made reasonable attempts to meet the efficiency expected of the Plan, and (b) the value of the investment made by the existing consent holder. In this particular situation, while the peak application rates may result in more water being applied than would be considered acceptable for a new irrigation system, they are proposing annual volumes which are less than that which is considered reasonable using the methodology set out within Policy 16(c)(ii) of the WCWARP. Therefore, the applicant is making a reasonable attempt to meet the efficiency expectations of the Plan.
- 8.40 Policy 21 of the WCWARP requires all water takes to be metered. To ensure that this application is consistent with this policy, the applicant proposes to meter their take.

Effects of the use of water on water quality

- 8.41 Ms Begley said that the MWRL Water Quality Study stated that the areas to be irrigated are located within the Lake Aviemore and Lake Waitaki Catchments. This study goes on to calculate N and P thresholds for the property.

- 8.42 We note that the above statement is incorrect and as the FEMP correctly states, the irrigation area is within the Omārama Stream surface water catchment and the Omārama Stream and the Ahuriri River groundwater catchments.
- 8.43 The calculated nutrient mitigation requirement of the receiving environments determined in the MWRL Study has identified the N and P thresholds for the property. These are shown in the table below.
- 8.44 Ms Begley told us OVERSEER® has been run by a qualified person to model the N and P outputs from the proposed farming system. The results of the model have been incorporated into the table below. This table shows that the applicant can meet the property thresholds which are the most restrictive.

	Nitrogen Threshold (Kg/Farm)	Phosphorus Threshold Kg/Farm)
MWRL Water Quality Study Property Thresholds	28,109	534
Overseer® Outputs	15,032	380

- 8.45 We note there is a discrepancy between Ms Begley’s evidence and the equivalent numbers in the FEMP tabled on 25 November 2010. The FEMP (Table 5) states that the modelled N and P outputs were 19146 kg and 617 kg, respectively. We note that these are still within the MWRL nominated threshold. We also note that in the November 2010 FEMP the N and P thresholds were changed to 20,964 kg and 675 kg, respectively.
- 8.46 Ms Begley said the applicant is committed to implementing the “Mandatory Good Agricultural Practices” set out within the Farm Environmental Management Plan (FEMP). Implementing these practices ensures that the OVERSEER® results are validated. This along with ensuring that the property thresholds of the WQS (set out in the table above) are not exceeded will ensure that the cumulative effects of the use of water for irrigation on water quality are no more than minor.
- 8.47 Whilst the applicant is able to comply with the thresholds outlined within the MWRL Water Quality Study, this study also identified that the applicant still has to consider specific on-farm effects and the impacts these activities could have on the local receiving environment. These mitigations are documented in the final FEMP.
- 8.48 At a workshop held in Twizel in August 2009, the applicants met with Dr Melissa Robson of GHD Limited. A “desktop” on farm risk assessment was undertaken. This is considered to be the “starting point” of the Farm Environmental Risk Assessment (FERA).
- 8.49 The workshop identified potential on-farm risks specific to each farm along with possible mitigation measures. The on-farm risks identified during the desktop risk assessment need to be verified by an appropriately qualified person who has carried out a site visit. It is anticipated that this would occur should the application be granted.
- 8.50 For Dunstan Peaks Ltd, the desktop risk assessment identified the following potential risks:
- (a) The large number of surface water bodies that flow through the property;
 - (b) Extensive tracking;
 - (c) Use of full cultivation.
- 8.51 The applicant has 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.
- 8.52 Given that the N and P thresholds from the MWRL Study can be met, and the applicant’s commitment to addressing on-farm risks with the implementation of the FEMP, Ms Begley considered the effects of the use of water on water quality for both the local receiving environment and cumulative effects to be minor.

Effects on Tangata Whenua Values

- 8.53 Te Runanga O Ngāi Tahu submitted on all applications in the catchment, seeking that all applications be declined. The primary reasons for this were that the applications were considered to be inconsistent with the policies and objectives of the WCWARP, and also at odds with the cultural objectives of the RMA.
- 8.54 It is acknowledged that Te Runanga O Ngāi Tahu have a significant relationship with the Waitaki Catchment, and as such, appropriate minimum flow conditions and management of water quality effects are proposed by the applicant to ensure that the potential effects on the environment as well as on tangata whenua values are minor.

Effects on People, Communities and Amenity Values

- 8.55 Ms Begley concluded that given the applicant's commitment to ensuring efficient use of water on their properties and that the take is within allocation limits set to protect in-stream values and other users, effects on people and communities will be minor.

Effects of Dam Failure on Surrounding Properties

- 8.56 Ms Begley told us that these applications seek the ability to dam up to 45,000 m³ in each of two existing header ponds. These two ponds have been in place since 1982 (some 27 years) and are used to store water prior to using it for the irrigation of land via a border dyke irrigation scheme. This application does not seek the ability to dam either the Little Omārama Stream or the Omārama Stream as both of these ponds are located outside the beds to these waterways.
- 8.57 Ms Begley said that to fill these two ponds, water is diverted from both Little Omārama Stream and the Omārama Stream into races used to fill these ponds. This means that the applicant has a high degree of control over how much water is stored within these ponds at any one time.
- 8.58 She then explained that when a dam fails it can cause a wave of water to flow down the gradient. This sudden appearance of moving water can mean that people downstream of the failed dam experience significant losses of property, stock, and even life. Also if the dam is located within a waterway, the ecosystem downstream of the dam can be significantly damaged. As set out above, in this particular situation both the ponds are not located within the bed of a waterway, and as such they had not assessed the possible ecological effects of dam failure.
- 8.59 Also these two ponds were constructed some time ago (at least 27 years ago). The dams themselves consist of earth walls that are no more than 3m in height with the faces of these ponds are grassed. Both of these ponds are located at the top of the border dyke irrigation scheme that is owned and operated by the applicant.
- 8.60 The pond filled from the Little Omārama Stream is located approximately 1.7 km upstream of the Twinburn homestead. The pond being filled from the Omārama Stream is located approximately 2 km upstream of the same homestead. Between these ponds and the homestead is an existing border dyke irrigation scheme which includes a number irrigation races that are used not only to convey irrigation water around the scheme but also used to collect any excess by-wash water so that where possible this water can be reused to irrigate additional areas of land.
- 8.61 The fall of the land leads to water flows in a north-westerly direction, or parallel to the existing road which is an extension to Broken Hutt Road. The closest neighbouring property is located to the north of the existing road. As the pond that is filled from the Little Omārama Stream is located within a close proximity to this boundary, should this pond fail it could impact upon any dwelling or building located within a close proximity. Ms Begley was unaware of any dwellings or buildings located on the neighbouring land, within a close proximity of this particular pond.
- 8.62 Ms Begley said that the other potential effect is that the dams could be overtopped. This is of particular concern when such ponds are filled via sheet flow or overland flow within natural depressions occurring post heavy and/or prolonged rain events. But in this situation the dams are not located within natural gullies and are filled using dedicated diversion races. This means that the applicant has a high degree of control over how much water is diverted into these dams. Given this, the risk of the proposed dams being overtopped due to overfilling she considered to be minor.

Effects of discharges

- 8.63 Ms Begley said that this application sought the ability to discharge water into Omārama Stream and Twaddle Creek that have been taken from the various streams and used for the border dyke irrigation of crop and pasture.
- 8.64 In that situation the water being discharged into Twaddles Creek from the irrigation system has travelled over the paddocks, picking up contaminants such as animal faeces, suspended sediments and nutrients. Therefore, it is possible that the quality of the water contained within the discharge could be degraded. The discharge of this degraded water into the receiving water (of a higher quality) could have a negative impact upon the aquatic ecosystem present in the waterway.
- 8.65 Further, section 107(1) of the Act requires discharges, after reasonable mixing, must meet a number of water quality standards. These standards include, amongst other things "...any significant adverse effects on aquatic life..." and "...conspicuous oil or grease films, sums or foams or floatable or suspended materials...". Ms Begley told us that these issues have been identified as environmental farm risks and will be addressed as part of the environmental farm management plan, which will ensure that the effects of the discharge after reasonable mixing are minor.
- 8.66 She said that while there are a number of users downstream of the applicants discharge, the water contained within Twaddles Creek has to flow through the Clifton Downs swamp prior to entering the Omārama Stream. The Clifton Downs swamp tends to "clean" the water that flows through it, thereby ensuring that the water quality of the lower reaches of the Omārama Stream is maintained.
- 8.67 In relation to the potential effects of the discharge on erosion of the bed and banks, Ms Begley said that when water is discharged into a waterway, the flow, and potentially the velocity, of the receiving water body is increased, thereby increasing the rate at which the bed of the waterway is eroded. However in this instance, the discharge from the various races into the lower reaches of the Omārama Stream and Twaddles Creek has been undertaken for a number of years without the bed of these streams being eroded.

Effects of works in bed

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

- 8.68 Ms Begley told us that this application seeks the ability to maintain existing intake and diversion structures within the beds of Little Omārama Stream, Omārama Stream, Middle Gully and Twaddles Creek. She said that these intakes have been in place for a number of years, and this application simply seeks the ability to maintain them and facilitate the diversion of water to them.
- 8.69 Ms Begley said that the works required to facilitate the diversion of water into the intakes involves minor in-stream works to keep water flowing into the intake, the removal of flood debris including gravel from the bed of the river and diversion channel, and rock armoring on the banks of the stream around the intake structures. As these streams are small mountain streams we were told that they are subject to high flows at specific times of the year (i.e. spring during snow melt). These streams also have a gravel bed which, at these times of year, can be highly mobile. Ms Begley said that this means that prior to irrigating, the applicant may have to undertake the works outlined above to enable them to irrigate.
- 8.70 Ms Begley said that works within the bed of these waterways could impact upon how the stream reacts during a flood event. In particular, where there are structures within the bed such as dams/weirs, these can reduce the floodwater carrying capacity of the waterway resulting in flooding of adjacent land. In this particular situation, Ms Begley told us that the works simply aim to remove excess gravel build-up and do not propose to install any weirs/dams/etc within the beds of the waterways. Given this, she considered that it was unlikely that the proposed works will reduce the flood carrying capacity of the waterway.

Effects of the works on water quality

- 8.71 Ms Begley said that when works are undertaken within flowing water, the works may cause a temporary discolouration of the water. This discolouration is as a result of the water within the waterway containing higher than "normal" suspended sediments. Higher than normal suspended

sediments can have a number of negative impacts upon the aquatic ecosystem of the waterway, such as "cementing" spawning gravels downstream of where the works are occurring, and they can also have a negative physical impact upon fish (in that high levels of suspended solids can irreparably damage fish gills).

- 8.72 Ms Begley told us that the most common approach is to avoid undertaking works within flowing water, and thereby avoiding the possibility of increasing levels of suspended sediment contained within the waterway. In this particular instance, Ms Begley said that it was simply not practicable for the construction of the bund to occur "in the dry" or outside the flowing water.
- 8.73 Ms Begley considered that one way of mitigating the effects of undertaking works within the waterway is to limit the amount of time the work is within the waterway. Further, measures such as ensuring that the works occur outside spawning season (if the waterway is known as a spawning river) can ensure that the works do not have a significant impact on the water quality and therefore on the aquatic ecosystem. Ms Begley provided details of the measures proposed by the applicant to address this issue.

Effects on bank erosion and stability

- 8.74 Ms Begley told us that when works occur in the beds of rivers, the incorrect placement of such structures can lead to bank erosion and decrease bank stability. This is due to the fact that structures can direct water towards a bank, thereby increasing the erosion and instability of that bank.
- 8.75 In this particular situation, Ms Begley said that the purpose of the works is to facilitate the diversion of water into the intake structures and ensure that these structures are not undermined (or eroded). This means that it is in the applicants interest to actively monitor the bed and banks of the waterways to ensure that their structures are not causing erosion and if they are, or if erosion occurs, that it is fixed as soon as is practicable. Further, these structures have been in place for a number of years (at least 40) without significantly increasing the rate at which the bed and banks of the various waterways erode. Given this, Ms Begley considered that allowing the applicant to undertake the proposed works is unlikely to have more than a minor impact upon these waterways.

Effects on other artificial structures

- 8.76 When works occur in the beds of rivers within close proximity to existing artificial structures, structures like the one proposed can have a negative impact upon the existing structure. Ms Begley was unaware of any artificial structures, which are not either owned or maintained by the applicant within a 1.4 km radius of the existing structures. Given this, she considered that the placement of the weir with the bed of the various streams is considered to be minor.

Mr de Joux - Hydrology

- 8.77 Mr de Joux was commissioned by Dunstan Peaks Station to investigate the hydrology of the upper reaches of Omārama Stream including assessing any previous reports and estimations of flow rates to determine appropriate minimum flow rates and monitoring sites for the abstractions that were the subject of this application.
- 8.78 Mr de Joux said that Omārama Stream was a tributary of the Ahuriri River. The Stream drained the slopes of the Wether, St Bathans, Ewe and Cuthbert Ranges. The main tributaries were the Little Omārama, Omārama Stream, Omārama Swamp Outfall, and Cattle Creek. Water from the Ahuriri River was also periodically discharged into the lower reaches of the Omārama Stream from irrigation/transfer races operated by Omārama Station and Tara Hills Station.
- 8.79 Mr de Joux provided a summary of previous reports and estimations of flow rates, including Young (1987), Gabites and Horrell (2005) along with other measured and anecdotal information. He also provided a brief discussion of the AWCO and noted that the Omārama Stream downstream of the "middle bridge" (opposite Clifton homestead) on Broken Hut Road (NZMS 260 H39:6094-2343) was included in the "protected waters" with a specified minimum flow. However the AWCO did not include the upper reaches of the Omārama Stream within the protected waters, and did not specify any minimum flow regime for the upper reaches.
- 8.80 Mr de Joux then provided a discussion on the appropriate minimum flow site and said that Table 3, Rule 2 of the WCWARP required that a minimum flow was to be set at the "downstream end of

the catchment". A minimum flow based at Dunstan Peaks was upstream of the abstractions and therefore was not consistent with Table 3(xxii) Rule 2.

- 8.81 Mr de Joux said that the abstractions by Dunstan Peaks Limited were from reaches of the Omārama Stream that were outside (upstream) of the "protected waters" and were therefore technically not included within the AWCO. The abstractions were from water bodies specified in Table 3(xxii) Rule 2 of the WCWARP. They were required to cease abstraction when a minimum flow equal to the 5- year 7 day MALF "set at the downstream end of the catchment" was reached.
- 8.82 Mr de Joux then said that a minimum flow site based on the flow at Twin Peaks was consistent with Table 3(xxii) Rule 2, but that site was located within the "protected waters" of the Ahuriri Conservation Order, therefore the environmental flow regime set out in the Order applies. It was also noted that the 5yr 7DMALF at Twin Peaks (370 L/s) was more restrictive than the 250 L/s flow specified within the Order.
- 8.83 There was an underlying assumption that any surface flow within the upper Omārama Stream would either flow directly into the lower Omārama Stream, or would be intercepted as underflow by the Omārama Swamp. Accordingly, it was presumed that any abstraction of water from the upper reaches of Omārama Stream and its tributaries would reduce the volume of water entering Omārama Swamp which, in turn, would reduce the flow in the middle and lower reaches of Omārama Stream.
- 8.84 Until such time as a better understanding was gained of the natural flow losses within the upper reaches of Omārama Stream Mr de Joux considered that it was logical to restrict the taking of water by Dunstan Peaks in accordance with the Ahuriri Conservation Order flow sharing regime. His reasons for this included:
- (a) Any abstraction of water within the upper catchment reduced the volume of water entering the Omārama Swamp and ultimately impacted on the rates of flow within the lower Omārama Stream. It appeared to be an anomaly that the upper Omārama Stream was not included within the "protected waters" specified in the Ahuriri Conservation Order.
 - (b) Consistency with other abstractions on Omārama Stream. Resource consent CRC960328, which authorises the taking of water from Little Omārama Stream by Berwen Station had conditions specifying the Conservation Order flow regime. Consent CRC960328 was adjacent the Dunstan Peaks intake on Little Omārama Stream.
 - (c) Logically, Dunstan Peaks Limited had an interest in ensuring as much water as possible reached the Omārama Swamp, as this would reduce the frequency at which abstractions must cease.
 - (d) It would be inequitable to impose a more restrictive minimum flow on the Dunstan Peaks abstractions than required by other downstream users. To do so would require this abstraction to cease while allowing downstream users to continue abstract the resulting residual flow.

Mr Andrew Craig - Landscape

- 8.85 Mr Craig said that the site setting comprised a relatively small valley that opened out into the southern reaches of the Mackenzie Basin. The valley quickly narrowed toward its head at the base of the Hawkdun Range. It was well defined and enclosed by the surrounding Ewe and Wether Ranges, which topographically contrast with the flatness of the valley floor. This was farmed and displays a relatively high level of improvement that was normally associated with pastoral activity. The farming activity contrasts with the more natural character of the surrounding ranges that enclose it.
- 8.86 Mr Craig said that the Omārama Stream and its relatively minor tributaries draining the surrounding ranges run through the valley. Wetlands were also present at the point where the valley enters the Mackenzie Basin.
- 8.87 Vegetative land cover in the wider application setting was predominantly pastoral grassland, although scrubland was prevalent in the upper reaches of the valley and up into the tributaries. Shelter belts were also a feature of the valley setting as were tree copses around various buildings.

- 8.88 Overall, the valley surroundings display natural character similar to the surrounding mountain ranges, in that they were not apparently modified to any great extent. The valley floor on the other hand was modified as a consequence of the pastoral farming regime. The boundary between the two environments was generally abrupt, and the contrast between them was readily apparent.

The landscape character of the site

- 8.89 Mr Craig said that being on a valley floor; the application site landform was generally flat although the extent of this was not great. Most of the land in the valley floor was improved and was currently border dyke irrigated.
- 8.90 Apart from the pastureland, other modifications include the usual farming infrastructure of fencing, farm roads, power lines, buildings, water troughs and such like. Because of these and the extensive cultivation, the application sites were clearly modified. Consequently they convey the appearance of a working farm environment.
- 8.91 Overall the landscape of the site and its wider setting was typically pastoral in a predominantly natural mountainous setting. The landform and land use pattern derived from it was consistent with those that prevail throughout the district. Mr Craig said that as a consequence, a contrast was evident between these two predominant landscapes, where in a sense one defines the other.

Visibility and View Effects

- 8.92 Mr Craig said that the irrigation site was visually remote and could not be seen from the nearest vantage point of SH8. Because the site could not be seen from this or any other publicly accessible vantage point, he would not consider it a focal point. Irrigation and its effects would not detract from important views. The current vegetation regimes would essentially not change as the land was currently irrigated. Thus there would be no additional visual effects.
- 8.93 There would be no derogation from existing visual character and amenity. Nor would there be any other adverse landscape effects arising from the proposed activity.

Land Status and Its Effect on Landscape Outcomes

- 8.94 Mr Craig said that the application site land was zoned 'Rural Scenic' within the Waitaki District Plan. Within that zone irrigation was a permitted activity, and so the landscape effects were anticipated by the Plan. There were no controls in the Plan affecting the location, extent and form of irrigation activity. Therefore there was no requirement for avoidance, remediation or mitigation of effects.
- 8.95 The application site was not located in an area identified as a high natural character water body in the WCWARP. Nor was it subject to any other overlays that have the potential to affect landscape outcomes.

Response to Mr Glasson's Recommendations

- 8.96 Mr Craig said that Mr Glasson concluded that the adverse effects would be minor due to the discrete location and low visibility of the site, and so there was a high absorption capability. However, he also concluded that because of its geometrically shaped edges, the site fails to conform to landform patterns, and therefore creates moderately adverse landscape effects. Because of this he recommended a shaped area that better conforms to the landform patterns.
- 8.97 Mr Craig said that firstly, he agreed with Mr Glasson that the site was discrete and had low visibility. Further, and as described, it was a long way from any publicly accessible vantage point, and could not be seen by the public. Because the site was relatively remote, being at least 8 km from SH8, irrigation activity was not going to adversely affect visual amenity.
- 8.98 Secondly, the proposed irrigation activity was the replacement of existing activity. The application site in its location, extent and shape would not be altered, and so there would be no change in visual or landscape effects.
- 8.99 Finally, the subject land was flat and was currently divided into a geometric pattern, as was commonly the case in such terrain where farming activity was undertaken. The irrigated area would of necessity reflect existing geometric patterns. Consequently no change would occur with

regard to existing land use pattern, and in his opinion therefore, it was not necessary to alter the shape of the application site.

- 8.100 Mr Craig concluded that essentially there would be very little change, if any, to the irrigation site and its surrounds resulting from the proposed activity. Consequently there would be minimal adverse effects on the landscape at Dunstan Peaks resulting from the proposed replacement irrigation activity. Because of this it was Mr Craig opinion that there was no need for any form of landscape mitigation.

Mr Robert Batty, planner

- 8.101 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.

- 8.102 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.

- 8.103 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

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

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

- 8.106 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.

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

- 8.108 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.

- 8.109 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.

9 SUBMITTERS

- 9.1 Set out below is the summary of the issues raised by submitters who appeared before us. We emphasise that we have read and considered all submissions made, both in support and in

opposition to the application, as well as reviewing and carefully considering evidence advanced before us.

Fish and Game

- 9.2 Mr Graeme Hughes, Fish and Game Officer, Fish & Game Central South Island Fish & Game Council, told us that the Omārama Stream has gained in popularity in recent years and is fished. Often public access is limited with most anglers relying on the good will of land owners to gain access to much of Omārama Stream.
- 9.3 Mr Frank Scarf, hydrologist, Central South Island Fish & Game Council, addressed the applications to take or divert water upstream of Twin Peak Bridge, the upper most control site in terms of the AWCO, and about 2 km downstream from the 'Protected Waters' boundary at Clifton Downs.
- 9.4 The applications as such are outside the AWCO boundary and assumed to default to 'All other rivers and streams category'. He told us that Gabites and Horrell have assessed the MALF for the Twin Peak Bridge site to be 546 L/s which suggests that the 1:5 yr LF for this site is 375 L/s.
- 9.5 He noted that at the Tara Hills site de Joux and Stewart estimated the 1:5 year low flow to be 470 L/s, and in his view that the two figures appear compatible given that Manuka Creek makes no contribution (mainly subsurface) between the two sites. Mr Scarf opined that these estimates are reasonably sound.
- 9.6 Mr Scarf noted that the Dunstan Peak Station applications are complex and involve many diversions and takes for both stock water and irrigation. He recommended that any approval should include a condition requiring the applicant to cease taking water for irrigation when the flow at Twin Peak Bridge is less than 375 L/s, assessed to be 1:5 yr LF for this site.
- 9.7 Mr Scarf recommended however that the diversion for stockwater portion (up to a maximum of say 15 L/s from tributary to tributary and in storage at the rate specified by consent should be exempt from that minimum flow restriction.

Meridian Energy Ltd

- 9.8 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.
- 9.9 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.
- 9.10 All three of the Dunstan Peak Station applications were included in the Meridian Energy Ltd list of consent applications of concern. The principle concern in respect of the sub-catchment concern was in quantifying the nutrient thresholds to ensure that a TLI in Lake Benmore did not exceed 2.75, based on a summer average.
- 9.10 Meridian Energy submitted that consents which are granted be given a duration that is consistent with the MEL consent which ends 30 April, 2025.

Mackenzie Guardians – Ms Di Lucas

- 9.11 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.

- 9.12 In terms of this particular “take” application, she identified it as being within her Ahuriri System. Within her written evidence the application did not receive any attention. In her graphic materials she identified the site as Site #40.
- 9.13 Quite possibly because it is categorised in her evidence as an existing activity, she did not give it any great attention. Nevertheless, we adopted the standpoint that Mackenzie Guardians were opposed to this grant.
- 9.14 We note when Ms Lucas undertook the analysis contained within her attachments, the site did not “register” as a geo-preservation site but nor did it register as a site with significant inherent values, nor did it have a high natural landscape rating. We noted from her Attachment 16, she had identified the site as being with an existing cultivated area. She had also classified the site as not being visible or having a viewshed from State Highways. We also noted from her attachments, particularly Attachment 19, the subject site was not noted as being available to view from public land and public access and/or public viewpoints.

Mackenzie Guardians – Dr Susan Walker (ecologist)

- 9.15 We note that Dr Walker gave comprehensive evidence on the cumulative effects of irrigation on vegetation on the Mackenzie Basin. This evidence is discussed in Part A. Her evidence being Basin-wide included that a more in-depth investigation of the individual sites was required. However, she did loosely provide us with Attachment 15, which contained her more particularised reviews in respect of each site.
- 9.16 In terms of her assessment as per Attachment 15, Dr Walker assessed the application site as being approximately 60% converted. She considered that the potential effects of irrigation on terrestrial biodiversity were high. She told us that a tenure review had been completed and the biodiversity values mapped. In terms of her comments on existing biodiversity and reasons for concern she noted that the site was partly developed but overlaps areas of significant inherent values recently identified within the tenure review.

Tangata whenua

- 9.17 In Part A we set out an overview of evidence received on tangata whenua values and cultural issues. We do not repeat this information here. In relation to these applications, we received no specific evidence from Ngāi Tahu witnesses.
- 9.18 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, he said, Ngāi Tahu has generally placed emphasis upon the new 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.
- 9.19 Mr Horgan told us that Ngāi Tahu had adopted two focal points against which they assessed the applications; the Ahuriri Delta was one of these as it would be one of the most acute receiving environments for the discharge of nutrients from the irrigation proposals. He told us it was also an area where Ngāi Tahu proposes to undertake mahinga kai habitat restoration.
- 9.20 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 consents.

10 UPDATES TO THE SECTION 42A REPORTS

- 10.1 In her addendum report, Ms Rodrigo provided the following comment on outstanding issues that had not been resolved.

Efficiency

- 10.2 Ms Rodrigo told us the existing methods of irrigation by border-dyke or wild flooding are unlikely to achieve the 80% technical efficiency requirements of the WCWARP. She said that the annual volumes applied for are likely to restrict the operation at the site and act as a potential driver to improve irrigation efficiency. However she noted that the applicant has not confirmed when conversion to spray irrigation is likely to occur.

Minimum flows

- 10.3 Ms Rodrigo noted that the applicant is not proposing to adopt the 5 year 7 day low flow as recommended in the WCWARP, and is proposing to use the AWCO minimum flow for Omārama Stream. Although she agreed that the water permit should be subject to the AWCO minimum flow, she reiterated her view that the 5 year 7 day low flow of 160 L/s measured at Dunstan Peaks Station should be adopted to protect the values of the upper tributaries of the Omārama Stream.

Surface water quality

- 10.4 Ms Rodrigo stated that for the take and use consent that Dr Freeman in his addendum considers that there is a high level of uncertainty about potential adverse effects, and given the scale of the activity and consequences of these adverse effects, that the application should not be granted. In addition Mr McNae in his s42A report identified a number of inputs used in the OVERSEER model for the site that require clarification in order to confirm the validity of the results of the model.
- 10.5 Dr Meredith in his addendum grouped Dunstan Peak in the group, that on currently available information are associated with a high level of uncertainty. In the case of Dunstan Peaks he considered it should not be granted, the key issues were the nutrient threshold and adverse effects on Omārama Stream.

Landscape

- 10.6 In the addendum report from Mr Glasson he noted that the landscape assessment had been undertaken by Andrew Craig and the proposed elements include K-line and pivot irrigation. His recommendation was "the site is acceptable for irrigation in its proposed form".

Fish Screens

- 10.7 Ms Rodrigo was not satisfied that the proposed conditions submitted by the applicant gave sufficient assurance that the fish screens at the intake sites will be designed in accordance with the NIWA guidelines. She recommended that the conditions proposed by Ms Vesey in relation to fish screens should be included if consent is granted.

Other users

- 10.8 An outstanding issue post notification related to impacts on other users and the diversion of water into the Clifton Downs (Omārama Swamp) and the importance of that diversion for maintaining flows on the Omārama Stream.
- 10.9 Ms Begley in her evidence considered that the current applications (and notification) should allow for this diversion; however Ms Rodrigo stated it was unclear how this can be achieved. Ms Rodrigo in her addendum states that the applicant previously held consent to divert, take and use up to 350 L/s from Omārama Stream and 350 L/s from Middle Gully via a water race for irrigation, domestic use, stock water and to supplement flows into Twaddles Creek (which flows into the swamp). A further 150 L/s was taken from Middle Gully for stock water and to supplement flows into Twaddles Creek.
- 10.10 The applicant subsequently amended the application to 290 L/s to be diverted from the Omārama Stream and 60 L/s from Middle Gully. Ms Rodrigo said that it is unclear therefore how the flows in Twaddles Creek will be supplemented given the reduction in the amount of water requested. Derogation approval from Meridian Ltd was only given to the applicant for the reduced amount of water.

Discharge Permits

- 10.11 Ms Rodrigo attached a table to her addendum to clarify what has been applied for in relation to the water and discharge permits. She noted that some of the discharges have either never been applied for or were not notified, but believed they do form part of the application and the scope of these discharges have now been adequately described by the applicant.
- 10.12 Ms Rodrigo noted that Ms Begley is relying on the FEMP to ensure surface water quality effects resulting from the discharge of surplus irrigation and by-wash water are minor, however no

details on these mitigations or the effectiveness of these measures to ensure that effects will be minor had been provided.

- 10.13 Ms Rodrigo noted that Ms Begley had stated that the Clifton Downs (Omārama) Swamp acts to “clean” the discharges prior to water entering the Omārama Stream, but that no information was provided by the applicant to confirm this assumption.
- 10.14 Ms Rodrigo advised us that the Omārama Stream already exceeded the ANZECC water quality guidelines and that the applicant had not provided any information to confirm that the contribution of contaminants from the irrigation operations are likely to only result in minor impacts on downstream water quality. She was therefore not satisfied that the impact on surface water as a result of the discharges would be minor.
- 10.15 In a separate document dated 12 February 2010, Mr Rodrigo provided further comment on the water quality of the Omārama Stream in response to questions from the Commissioners. She noted that the reference for her conclusion that ANZECC guidelines were exceeded was a report prepared by GHD for MWRL dated August 2009. This report concluded that the observed mean dissolved reactive phosphorus concentration of 0.01 mg/L exceeded the ANZECC guideline of 0.0009 mg/L, and the medium nitrate nitrogen concentration (n=11) of 0.18 mg/L exceeded the ANZECC guideline of 0.167 mg/L.

11 APPLICANT’S RIGHT OF REPLY

Conversion of wild flood to spray

- 11.1 During the hearing we asked for UWAG to table information on the feasibility of converting the existing wild flooding irrigation to spray. Mr Chapman had an irrigation consultant look into that aspect and it was possible and feasible. He attached an indicative budget associated with this conversion.
- 11.2 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.

Minimum flows

- 11.2 Mr Chapman said that Ms Penman in her addendum report acknowledged that this was a replacement, and as such the minimum flow did not need to be higher than what is in the Order to protect existing users. However, both Penman/Rodrigo are still recommending the AWCO and a minimum flow of 160 L/s upstream of Dunstan’s intakes. The 160 L/s is a 5 year 7 day low flow at that point (i.e. at the upstream end of the catchment rather than at the downstream end of the catchment as required by Table 3 row xxii. Mr Chapman said that both Ms Penman and Ms Rodrigo seem to have failed to take into account policy 28 when recommending minimum flows. Policy 28 (c) states:

“maintain the inclusion of the consent, if granted, in any allocation regimes and priority bands on the water body concerned”.

- 11.3 All other takes from the Omārama Stream have had the AWCO minimum flow imposed upon them thereby creating a priority band. By imposing a higher minimum flow, in this case requiring Dunstan Peaks to cease taking at 160 L/s above the points of take, Ms Chapman considered that this will put Dunstan Peaks to a different, less reliable priority band than:
- (a) they are currently in; and
 - (b) than all other water users within the catchment.
- 11.4 Mr Chapman said that the minimum flow regime proposed by the Council Officers is inconsistent with Policy 28 (c). Whereas the minimum flow regime proposed by the applicant (which is the AWCO minimum flow regime) would ensure that they are included within the priority band that exists for the Omārama Stream.

Water quality

- 11.5 Mr Chapman challenged Dr Freeman’s Table 5, contained within his first addendum report dated 12 January 2010. Mr Chapman contended the list was flawed because applications are placed in the red category solely by virtue of their location within the Ahuriri Catchment. Mr Chapman

considered the correct approach for the ranking of the applications was to determine where they sit in relation to the existing environment.

- 11.6 He noted there had been much emphasis on nutrient management but he contended we should also be considering sustainability of the erosion-prone fragile soils within the catchment. He also submitted we should take note that district plans encourage farming, including irrigation, within these environments; and the tenure review undertaken by the Crown encourages intensification of land use retained in freeholding ownership in order to release more vulnerable pastures to be set aside under Crown ownership.
- 11.7 Mr Chapman addressed us on the MWRL proposition in terms of the Ahuriri River, namely a needs plus a buffer approach. Mr Chapman made it clear that the UWAG applicants in the Ahuriri, which includes this application, at the time of reply had only just received information relating to each individual farm's NDA, but noted this approach was of critical concern.
- 11.8 We did subsequently receive from Mr Chapman generic conditions and revised FEMPs applicable to all the UWAG applicants.

12 FURTHER INFORMATION FROM APPLICANT

- 12.1 As discussed above, in our 34th minute dated 22 December 2011, we requested further information from the applicant to enable us to clearly understand and assess the proposal. We received a response to this direction on 31 January 2012, including the following documents:
- (a) Memorandum of Counsel from Mr Chapman;
 - (b) A legal opinion from Mr Chapman on the issue of scope;
 - (c) Report from Ms McCabe of Irricon Resources;
 - (d) A series of maps and photos;
 - (e) A revised farm environmental management plan;
 - (f) Revised consent conditions (received 8 March 2012).
- 12.2 We have summarised much of the above material earlier in this decision as part of our description of the proposal and discussion of preliminary issues. The following provides a summary of the further information received that has not already been discussed.

Mr Chapman

- 12.3 Mr Chapman's memorandum provided an overview of the further information provided by the applicant in response to our minute. He also provided some introductory comments, outlined the overriding principles for changes to irrigation systems and addressed a number of discrete issues emerging out of the further information.
- 12.4 Mr Chapman explained that the consent applications were initially framed as renewals of the historic consents for the properties. However the annual volumes notified were based on spray irrigation, meaning that continuation of the historic irrigation would have been unworkable and impractical. In addition, during the course of the hearing it became apparent that the consents applied for would not meet the standards now prescribed in the WCWARP and the NRRP.
- 12.5 For the above reasons, the applicant decided to convert to spray systems for the properties, recognising that this results in changes to the method of irrigation and farm specific layout. Mr Chapman accepted that the applications would have been drafted differently to avoid the need for these changes had there not been the long delay between the application and the hearing dates.
- 12.6 As further explanation for the changes, Mr Chapman told us that there had been a change in consultant following the initial presentation of the application. Following her appointment, the applicant took on the advice of Ms McCabe to represent the proposal to achieve an outcome which had workable irrigation methods, reflected the water efficiency requirements of the WCWARP, and gave consideration to localised water quality concerns.

- 12.7 We have discussed the detail of the changes to the proposal earlier in this decision. In broad terms, Mr Chapman described the changes as follows:
- (a) Redefine the mode of irrigation to align to water efficiency guidelines set out in officer reports;
 - (b) Reconfigure the irrigation within the applicant's property boundaries; and
 - (c) Provide for a 5 year conversion programme whereby there would be an ability to continue with existing systems – as spray irrigation is practically implemented.
- 12.8 Mr Chapman emphasised that continuation of irrigation by the applicant is vital to the overall viability of the properties. Viability affected the livelihood of the owners and their families. He said that the changes to the applications were not motivated by the need to "grab more resources" but to simply end up with consents that are practical to implement on the properties. He also told us that the decision to convert to spray and implement the FEMP requirements comes at significant cost.
- 12.9 He told us that the renewal of irrigation rights has been made more critical following tenure review and the surrender of high hill country back to the Crown. In particular, virtually all of the Twinburn property was purchased by the Crown in 2008, with the Dunstan Peaks farmed area reducing by approximately 2,000 ha. This was predicated on the basis that the land released from Crown ownership could be developed. In addition, the retirement of hill and high country property has meant that 650 ha of land which used to be fertilised is no longer, reducing fertiliser applications by 30% with consequential implications for nutrient management.
- 12.10 Mr Chapman noted that the notification of all take and use applications under one umbrella applications leads to some confusion. He told us that the outcome the applicant is seeking is for consents to be issued on a property-by-property basis rather than a single consent for all of the applicant's properties.
- 12.11 In relation to rates and volumes of water to be taken, Mr Chapman said that higher flow rates will be taken prior to conversion consistent with a border-dyking operation. These flow rates would be conceded on conversion to spray for each respective take. In relation to annual volumes, Mr Chapman said that the spray volumes were determined purely on 600mm/ha/yr, which is equal to or less than what WQN9v2 would allocate.
- 12.12 In relation to Mr Chapman's opinion on scope, we have taken that into account and summarised the salient points under our discussion of the preliminary issues earlier in this decision.

Ms McCabe

- 12.13 Ms McCabe provided a report that set out a detailed account of the different aspects of the proposal, including comparisons between existing activities, the notified proposal and the current proposal. The existing irrigation activities were based on a series of flow gauging completed by Irricon Resources Solutions on 24-25th of January 2012.
- 12.14 We have used the information in Ms McCabe's report to inform the description of the proposal earlier in this decision and do not repeat this here. Ms McCabe summarised her key points as follows:
- (a) No more areas is being irrigated than currently consented and notified;
 - (b) The flow rate notified and used by existing irrigation activities will decrease dramatically under the current proposal; and
 - (c) No more volume of water will be used than notified (and much less than existing irrigation activities) under the current proposal.

Revised FEMP

- 12.15 The revised FEMP (January 2012) included "Stage 4 mitigation measures chosen for when the conversion to spray is undertaken." These measures are:

- (a) When any new spray irrigation area is established– all permanently flowing waterways within the irrigation area are to be fenced within a minimum of 5m setback from the waterway edge
- (b) When any new spray irrigation area is established– all irrigation areas will have a setback of a minimum of 5m from any permanently flowing waterway
- (c) Any permanently flowing waterways that stock or vehicles will need to regularly cross around the new irrigation areas will be culverted and fenced to restrict stock access
- (d) A 25m irrigation setback from the Omārama Stream will be established when the Twinburn conversion is undertaken
- (e) Runoff from any sloped spray irrigation area will be monitored and reported

12.16 These mitigation measures are consistent with others where new areas of spray irrigation have been proposed and we consider they will be useful at minimising nutrient loss to surface waters.

13 STATUTORY CONTEXT

13.1 The relevant statutory context for a **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

14 EVALUATION OF EFFECTS

14.1 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) Inefficient use;
- (c) Environmental flows
- (d) Ecosystems;
- (e) Landscape values;
- (f) Tangata whenua values
- (g) Effects of damming;
- (h) Effects of works in the bed;
- (i) Effects of discharges; and
- (j) Positive effects.

Water quality

- 14.2 The 342 ha irrigation system of border-dyke and wild flood applications will result in nutrient losses to the waterways and races that traverse the irrigation command area that drain to groundwater of the Omārama Swamp.
- 14.3 The Omārama Stream dries up naturally and remains dry in normal and dry summers for at least 3-4 months from Twinburn homestead downstream for a distance of approximately 4.5 km. The fate of the water that goes to ground is not clear. Mr Stewart told us that Twaddle Creek is the major source of surface water for the Omārama Swamp, but the bulk of the water in the swamp comes from groundwater, some from Manuka Creek and that Omārama Stream may also be contributing. The swamp also receives water from Dunstan Peaks diversion of border dyke excess water, which appears to increase the swamp outflow and in dry summers when the swamp provides virtually all of the flow at the Tara Hills recorder site.
- 14.4 Omārama Swamp drains into the Omārama Stream below the Twin Peaks Bridge which is a tributary of the Ahuriri River.
- 14.5 We heard that the applicant considered that the Omārama Swamp acts to “clean” the discharges prior to water re-entering the Omārama Stream below the Twin Peak Bridge. We have not received evidence that confirms that this is the case.
- 14.6 Ms Rodrigo advised us that the Omārama Stream already exceeds the ANZECC water quality guidelines and that the applicant has not provided any information to confirm that the contribution of contaminants from the irrigation operations at the three stations included in these applications (discharge consents) are likely to only result in minor impacts on downstream water quality.
- 14.7 The applicant has been involved with the study by Mackenzie Water Research Ltd (MWRL) on cumulative effects within the catchment. The applicant has adopted the MWRL approach to mitigate the effects of the irrigation activity on water quality through the use of FEMPs and the modelling of OVERSEER to the property. We address the report by MWRL in Part A of our decision and our findings guide our consideration of the effects of this activity on water quality.
- 14.8 An Overseer assessment indicated that the applicant could comply was able to comply with the thresholds outlined within the MWRL Water Quality Study. However as discussed in Part A of this decision, we were not convinced that the proposed MWRL thresholds would protect some receiving waters some unacceptable deterioration.
- 14.9 In Part A of this decision we rejected the MWRL proposition that all consents sought in this hearing could be granted (with conditions) and without causing cumulative water quality effects. It is incumbent upon us, therefore, to consider (as far as is possible) whether granting this application, in combination with other water permits we grant, will lead to unacceptable water quality effects. In this case it means considering the potential effects of granting this application (in combination with others we grant) on:
- (a) The trophic state of the Ahuriri Arm of Lake Benmore;
 - (b) Groundwater chemistry and in particular the MWRL-proposed threshold of 1 mg/L NO₃-N; and
 - (c) Periphyton growths and other ecological effects in Omārama Stream and the Ahuriri River
- 14.10 The applicant has proposed mitigation measures to lessen the risk of their activities contributing to cumulative water quality effects. We need to consider whether the proposed mitigations, are in our view, sufficient to avoid significant water quality effects occurring, and/or whether refinements to the measures proposed are required.
- 14.11 A starting point for the consideration of effects on points (a)-(c) above is the FEMP. Evidence on the FEMP was given by Ms Begley, but for consistency with other decisions we have undertaken an independent audit. Key points arising from our audit and additional to Ms Begley’s evidence are summarised below:
- (a) The soils within the irrigation command are described in the FEMP as a mixture of rich peat soils and silt loams. No information is provided on the PAWs of the soils of their distribution;

- (b) Because the Ahuriri Arm of Lake Benmore is the receiving environment, moderately severe nutrient mitigations are required compared to good agricultural practice (the standard referenced in OVERSEER). i.e. An additional 10.70 kg N/ha/y are required to be prevented from leaching (or otherwise lost from the system) and 1.1 kg P/ha/y compared with that achieved using good agricultural practice.
- (c) The mitigations proposed in addition to those assumed in OVERSEER are listed as:
 - (i) No winter application of fertiliser on the irrigation area;
 - (ii) N fertiliser applications split to under 50 kg N/application;
 - (iii) No P fertiliser within three weeks of irrigation;
 - (iv) Olsen P of below 30 maintained;
 - (v) Reduce annual volumes of water on border dyke systems to 600 mm/y.
- (d) The above mitigations (except for (v)) appear to us to be quite standard and are practices that we would view as conforming to Good Agricultural Practice.

14.12 The reduction of annual volumes to 600 mm on border dyke systems is a significant mitigation measure in terms of current practice.

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

- (a) Establish a minimum of 5 m vegetation buffer between the Clifton Downs swamp, Twaddles Creek, and all other permanently flowing waterways and the cultivated/cropped land at Clifton Downs;
- (b) Proposed conversion plan to spray irrigation;
- (c) 20 metre layback from any waterway when applying fertiliser by land based application e.g. bulk spreader;
- (d) Monitor and manage stock access, stock type and stock number from all permanently flowing waterways within other non-irrigated intensively farmed areas;
- (e) Plant and maintain a filter strip/settling area prior to the discharge into the Omārama Stream from the Twinburn border-dykes. This will need to be completed only if the conversion plans for Twinburn border-dykes are not going to be completed within 2 years, e.g., spray system by 2012 irrigation season;
- (f) Twaddles Creek irrigation area – a minimum setback of 5 m between the irrigation area and Twaddles Creek will be established. This needs to be fenced to allow for regeneration of the vegetation to act as a filter;
- (g) When any new spray irrigation area is established – all permanently flowing waterways within the irrigation area are to be fenced within a minimum of 5 m setback from the waterway edge;
- (h) Any permanently flowing waterways that stock or vehicles will need to regularly cross around, the new irrigation areas will be culverted and fenced to restrict stock access;
- (i) A 25 m irrigation setback from the Omārama Stream will be established when the Twinburn conversion is undertaken; and
- (j) Run-off from any sloped spray irrigation area will be monitored and reported.

14.14 The conversion from border-dyke to spray irrigations proposed within the FEMP will make a large difference in minimising nutrient loss from the irrigated area. Together with the other mitigation measures offered, these represent a comprehensive package, which will give us confidence that offsite nutrient losses will be minimised and the health of stream flowing through the properties will be enhanced.

- 14.15 In addition the reduction of irrigation of the border dykes (first 5 years) to 600 mm should reduce the volume of any discharge and the quality of that discharge (as discussed by Ms Rodrigo). We also note that the revised FEMP (January 2012) includes provision to plant and maintain a filter strip/settling area prior to the discharge into the Omārama Stream from the Twinburn borderdykes, if the conversion plans for Twinburn borderdykes is not going to be completed within 2 years. Therefore the quality and volume of any discharge water will reduce (improve) within 2 years of granting the consent.
- 14.16 The critical issues for us for are:
- (a) Is the predicted nutrient load from the three properties realistic?
 - (b) What effect will the predicted nutrient load (alone and in combination with other applications before us) have on the surface waters making reasonable assumptions about flow paths?
 - (c) Can the effects be avoided, remedied or mitigated?

Predicted load realistic

- 14.17 The inputs to OVERSEER were audited by Mr McNae. In his final addendum report he reported as a 'live' issue that the applicants preferred to stay with the developed setting in OVERSEER following advice from Mr McFarlane that a highly developed status would never occur. We accept Mr McFarlane's point on this but not that our interpretation of Dr Snow's evidence (Part A) was that she advocated use of the highly developed setting on shallow soils, not because they were likely to reach that status, but rather as a pragmatic response to reflect that OVERSEER would significantly underestimate nitrogen losses on shallow soils. The applicant did not provide information that allowed us to gauge whether such shallow soils are prevalent on the properties. However because they have been irrigated for at least 40 years we have assumed that there is reasonable soil development and that the developed setting in OVERSEER should provide a reasonable estimate of nutrient losses. There being no other issues in Mr McNae's opinion that would affect the accuracy of OVERSEER predictions, we accept that the loads predicted are reasonable.

Effects on waterbodies

Ahuriri Arm of Lake Benmore

- 14.18 In part A we determined that the Ahuriri Arm of Lake Benmore was already close to the oligotrophic-mesotrophic boundary. MWRL agreed with this assessment, but submitted that through improvements to replacement consents and significant nutrient mitigation of new consents, all consents could be granted without causing the oligotrophic-mesotrophic boundary to be breached. We disagreed with the MWRL submission for the reasons given in Part A. Therefore we need to assess each application on its own merits, but taking into account other applications before us.
- 14.19 Dr Freeman's addendum (on behalf of the Regional Council) gave a useful summary of estimated total property nitrogen loads to the Ahuriri Arm associated with irrigation development proposals, together with their priority as determined by Professor Skelton on the basis of the date the application was deemed to be notifiable. Dr Freeman's (Table 7) figures (based on modelling using the developed setting only) gave the total predicted nitrogen load lost from the properties as 15,032 kg N/y), which represents a ~8.5% of the current load estimated for the Ahuriri Arm (see Part A, Section 9).
- 14.20 As this is a replacement for an activity that has been going on for ~40 years then it will be contributing to the current trophic state of the Ahuriri Arm. As the applicant's proposed changes in their irrigation system will not increase the total land area irrigated (342ha) and they propose a comprehensive mitigation package, our view is that their contribution to the nutrient load on the Ahuriri Arm will decrease. Based on Dr Robson's evidence (Part A) we estimate this decrease in nutrient footprint could be ~ 10-20%.

Periphyton growths in Omārama Stream and Ahuriri River

- 14.21 Dr Coffey's evidence (MWRL, Part A) included information on periphyton surveys in Ahuriri River. He reported periphyton biomass below levels of concern at all the sites he visited (upper, SH8 bridge, and node). He also reported that the quality of macroinvertebrates declined from good to

fair with distance down the river. We note that bed of the Ahuriri River is hard and dominated by cobbles, which would be susceptible to nuisance periphyton growths should nitrogen and/or phosphorus concentrations in the river be above that limiting periphyton growth (under stable flow conditions).

- 14.22 Dr Coffey also reported localised “nuisance” growths of periphyton occurred along the shallow margins of the riverbed at Sampling Site Omārama Lower (Node) and that existing irrigation occurred between this node and the Omārama Upper node. There is insufficient information from which to assess whether these localised nuisance growths could be attributed to the applicant’s activities. Dr Coffey also noted that the Little Omārama Stream had low growths of periphyton
- 14.23 In Part A we rejected the MWRL proposal that the threshold for periphyton growth should be a 25% increase in maximum annual biomass calculated from modelled ‘current’ nutrient concentrations. We found instead, that MfE periphyton guidelines are applicable and should be used to protect streams from nuisance periphyton growths.
- 14.24 Since these are replacement consents, we can assume (based on the few measurements done to date) that the applicant’s activities are not causing NZ periphyton guidelines to be exceeded in the Ahuriri River, but they may be in the Omārama Stream. However, the mitigation measures proposed by the applicant, particularly the change from border dyke/wild flooding to spray, together with the 25 m setback from the Omārama Stream should, in our view, decrease the incidence of nuisance periphyton growths in the stream.

Avoided, remedied or mitigated

- 14.25 We acknowledge that the applicant has proposed a comprehensive package of mitigation measures in the FEMP to minimise the effects of their activities. In our view, the most significant of these measures is elimination of wild flooding/border dyke and the replacement with more efficient spray irrigation systems. Such measures will, in our view, significantly reduce the nutrient load on the Omārama Stream, Ahuriri River and the Ahuriri Arm of Lake Benmore provided that the area irrigated does not increase.
- 14.26 In his closing legal submissions, Mr Chapman stated that while some of his applicants may choose to participate in the lock-step approach, many of his clients could not. This is certainly the case for UWAG clients seeking replacement consents such as is the case for Dunstan Peaks Ltd. We have noted in decisions for new irrigation that the lock-step approach is not a substitute for a robust Assessment of Environmental Effects and evidence in which the state of the existing environment is well defined. This also applies to replacement consents, where (as in this case) it is incumbent on the applicants to assess the effects of their existing activities. As discussed in Part A we are of the view that the MWRL WQS falls short of the standard expected for a proposal (the total consents for irrigation before us) of this magnitude.
- 14.27 In summary, our view is that the adverse effects on water quality from the proposed activity are more than minor, but that with the package of mitigation measures proposed by the applicant we find them acceptable.

Inefficient use

- 14.28 In terms of efficiency, we need to consider both the short term border dyke operation and the longer term spray system.
- 14.29 For the border dyke system, higher rates of abstraction are proposed from the various streams with no maximum annual volumes proposed. The applicant has assessed the efficiency of the border-dyke irrigation operation within these properties in Canterbury, technical efficiencies range from 40 – 60%. Because of the very low soil water holding capacity of soils within the three stations (less than 100 mm), high application rates are required to maintain soil moisture levels.
- 14.30 It is clear that the existing border dyke system is much less efficient than spray irrigation. This is evidenced by the discharge of excess water as a consequence of more water being diverted than is necessary for irrigation. However, consistent with other decisions we have issued, we consider it is appropriate to allow this to occur to a limited period to enable the conversion to spray to occur. We see no need to impose maximum annual volumes during this period as the activity has been operating for a considerable period of time with no such restriction and will be subject to annual volumes once converted to spray within five years.

- 14.31 Upon conversion to spray, the rates of abstraction will significantly reduce and maximum annual volumes have been proposed. The applicant provided details on the annual volumes applied for, which have been based on the volume adopted by Mackenzie Irrigation Company of 6000 m³ per hectare per year and a seasonal application depth of 600 mm.
- 14.32 The applicant's evidence demonstrated that the proposed annual volumes requested on the various stations owned by the applicant were less than that calculated using WQN9v2. In the revised application, Mr Chapman stated that the proposed volumes remain less than WQN9v2. In addition, we note that the total irrigation area and the total annual volume proposed are unchanged (see Table 1 above). We therefore accept that the annual volumes requested are appropriate and will ensure an efficient use of water.
- 14.33 We return to the issue of efficiency below where we discuss the objectives and policies of the relevant planning instruments, particularly the WCWARP.

Environmental flows

- 14.34 In relation to the minimum flows for the proposed activity, all parties agreed that the appropriate downstream minimum flow site was the Tara Hills recording site (H39: 624-260). We accept that this is an appropriate location as it meets the requirements of the WCWARP and is a long term existing flow recording site in the downstream half of the catchment.
- 14.35 The WCWARP requires that the minimum flow for this activity should be the 5 year 7 day low flow at this location. However the hydrological experts (Messrs Stewart and de Joux) agreed that little confidence could be placed in the current estimate of 470L/s given the difficulties in deriving it. Both experts agreed that the appropriate minimum flow values were those provided in the AWCO, which provided different minimum flows for different times of the year. This is consistent with other existing takes in the catchment and we accept that it is appropriate for this circumstance.
- 14.36 The key issue of debate in relation to minimum flows was whether there was any need for an upstream monitoring site (above all take points) in addition to downstream monitoring. Mr Stewart and Ms Rodrigo recommended that upstream monitoring should take place with a minimum flow of 160L/s below which all abstractions should cease. The proposed purpose of this was to measure natural flows and identify the flow relationships between the upstream and downstream parts of the catchment.
- 14.37 In contrast, upstream monitoring was opposed by the applicant who considered that the reporting officers had not adequately justified the need for this monitoring. The principal reason of opposition, as emphasised in Mr Chapman's closing, was that it would impose additional restrictions on the applicant that did not apply to other existing users in the catchment, which were only constrained by a downstream minimum flow. This would effectively place the applicant in a lower priority band and require that they cease taking water well before any other users. Mr Chapman considered this to be contrary to Policy 28 of the WCWARP.
- 14.38 We agree with the applicant's submission that no cogent reasons have been provided to support the need for upstream monitoring. Although it may well provide a greater understanding of flow relationships, we do not see the benefit in linking this monitoring to an additional minimum flow condition. We are also mindful of Mr Chapman's submission that to impose such a condition may disadvantage the applicant compared to other consent holders in the catchment and may be contrary to Policy 28 of the WCWARP.
- 14.39 For these reasons, we have decided against imposing upstream monitoring and minimum flows in this case and have imposed the minimum flow conditions proposed by the applicant. This includes monitoring using existing recorders at Tara Hills and Omārama Station Bridge and is consistent with the approach used for other consent holders in the catchment.
- 14.40 Another issue in relation to environmental flows relates to the function of the augmentation race that diverts water from Omārama Stream and ultimately discharges the water into Omārama Swamp via Twaddles Creek. Mr Stewart and the applicant's experts considered that this activity was important to maintain flows in Omārama Stream at the Tara Hills recorder site. We accept that this existing activity has important benefits for downstream flows, including the reliability of supply for downstream users.
- 14.41 In relation to effects on other water users, we note that this is an existing activity and that following conversion, the rate and volume of water being taken will significantly reduce. On this

basis and provided that appropriate minimum flow conditions are imposed, we are satisfied that granting consent to the proposal would not adversely affect other existing water users.

Ecosystems

- 14.42 The upper tributaries of Omārama Stream have been recorded as providing spawning habitat and supporting populations of fish. The stream is ephemeral for at least a part of the year, and fish passage is naturally impeded due to a lack of flow for a distance of approximately 4.5 km. However, connection of surface water at times of high flow and or flood between the Upper and Middle Omārama Stream permits downstream fish passage. In addition, we received evidence that the augmentation race helps to provide fish passage in the event of low flows.
- 14.43 There are many water courses traversing the command irrigation area on the three properties, we have not been provided with a detailed assessment of the ecosystems resident in these waterways and the presence of fish. We note that the water diversion structures do not have fish screens installed. Ms Begley told us the activities including diversion and, damning and abstraction of water have been occurring on these properties for sometime and therefore it is likely that the ecosystems have adjusted overtime to these conditions.
- 14.44 Although we recognise the existing nature of the activities, we consider that it is appropriate for the diversions and takes to be fitted with fish screens on conversion to spray to protect in-stream ecosystems. On this issue we have preferred the condition recommended by Ms Vesey in her addendum report (WP09) to that proposed by the applicant. The condition was the outcome of a fish screen working party and we consider it is the most appropriate condition to ensure that the intake complies with the NIWA fish screening guidelines.

Landscape values

- 14.45 In relation to the potential effect of the proposal on landscape values, all of the evidence we received related to the original proposal rather than that we are currently considering. The most important change as far as landscape is concerned is that the current proposal now involves a significant increase in the irrigation area on Clifton Downs (increased from 12 ha to 181.5 ha, with the use of pivots for irrigation right up to the boundary with Broken Hut Road.
- 14.46 In relation to the original proposal, we note that Mr Craig and Mr Glasson appeared to agree that the site was suitable for the proposed development in terms of landscape and visual impacts without the need for mitigation. They reached this conclusion on the basis that the application site was discreet and was not located in a sensitive or highly visible setting. They also noted that the immediate environs are already well developed as a consequence of existing agricultural activity and that the irrigation activity has been occurring on site for many years. On this basis whatever landscape effects have arisen are effectively part of the existing environment.
- 14.47 Many of these conclusions hold true for the current proposal. In particular, we accept that the site is not highly visible and sits within a highly modified working landscape. However due to the changes to the proposal, there will be a change in the visual effects of the activity, principally the presence of irrigation and greening on the Clifton Downs landscape when viewed from Broken Hut Road. Notwithstanding this change, we are satisfied that the effects of the proposal on landscape values are acceptable and no further mitigation is required. We reach this conclusion based on the modified nature of the environment, its discrete location and limited visibility.
- 14.48 In terms of impacts on terrestrial biodiversity, Dr Walker (on behalf of Mackenzie Guardians) considered that the potential impacts were high based as some parts of the Stations overlapped with areas of significant inherent values recently identified within the tenure review. However she provided no specific information about the location of these biodiversity values or whether they overlapped with the proposed irrigation areas.
- 14.49 The evidence of the above mentioned landscape witnesses was that the proposed irrigation areas are highly modified working landscapes. In addition, we note the Mr Chapman told us that as part of the recent tenure review, large areas of Twinburn Station and Dunstan Peaks Station were purchased by the Crown, which was predicated on the basis that the land released from Crown ownership could be developed. Taking these matters into account and based on the lack of site specific evidence to the contrary, we consider that the potential effects of the proposal on terrestrial biodiversity are acceptable.

Tangata whenua values

- 14.50 Ngāi Tahu formally opposed the granting of all consents for irrigation at this hearing. However during the course of the hearing Mr Horgan reiterated the position stated in the CIA which was that Ngāi Tahu supports water being made available to provide security of supply for landowners but is concerned at the possible conversion to dairying. This application fits into the category of providing security of supply for landowners.
- 14.51 Ngāi Tahu qualified their support for small scale replacement consents with the proviso that such applicants did not significantly intensify their farming operation and undertook mitigation measures to reduce nutrient impacts on waterways. We note that Dunstan Peaks meet the first proviso as the application is for the continuation of an existing activity and if granted will not involve the discharge of additional nutrients.
- 14.52 The Ngāi Tahu evidence highlighted a strong cultural association with the Ahuriri River both pre and post Lake Benmore being formed, and the suitability of the Ahuriri Delta for mahinga kai restoration.
- 14.53 In our assessment of the irrigation proposals that drain to the Ahuriri Delta and Arm, we find that there is little capacity for the Ahuriri Arm to assimilate additional nutrients without losing its oligotrophic status. Any degradation of the existing water quality in the Delta will have an adverse effect on the cultural and mahinga kai restoration aspirations of Ngāi Tahu.
- 14.54 Ngāi Tahu told us that elvers are being released into the Omārama Stream which in its lower reaches currently provides a good juvenile nursery.
- 14.55 With mitigation proposed by the applicant and conversion to spray irrigation there will be a reduction in nutrients being discharged from the Dunstan Peaks, Twinburn and Clifton Stations irrigation activities.
- 14.56 We consider that the proposed activity with mitigation will have a minor effect on the cultural values and mahinga kai restoration proposals of Ngāi Tahu.

Effects of damming

- 14.57 Damming is part of the existing activities and is proposed to continue in association with the irrigation of Twinburn Station. In discussing evidence relating to damming earlier within this decision we considered potential effects of dam failure. We accept Ms Begley's evidence particularly the point that the dams are not located within natural gullies and the process by which they are filled provides the applicant with a high degree of control. Thus the effects of a dam collapse are minimal and the risk of a dam overtopping is, we think, minor.

Effects of works in the bed

- 14.58 We accept that there is no evidence that the existing diversion structures have contributed to adverse effects on the erosion or flood-carrying capacity at the respective sites and structures.
- 14.59 Ms Rodrigo noted that the proposal will necessitate that works occur in flowing water, albeit on an infrequent basis, perhaps once or twice a year. Ms Rodrigo considered that appropriate mitigation measures are required to ensure effects on water quality are minimised as far as possible.
- 14.60 Overall, provided that appropriate conditions are included which avoid, remedy or mitigate potential effects of the activities carried out within the rivers, we are satisfied that the granting of these consents is appropriate. This includes the proposed installation of a new structure in Omārama Stream associated with the irrigation of Clifton Downs.
- 14.61 In addition, in terms of works in the bed of rivers because no sites of historic or cultural significance have been identified coupled with a proposed condition relating to accidental discovery of wāhi tapu and wāhi taonga, we are satisfied that the effects on cultural values will be no more than minor.

Effects of discharges

- 14.62 In relation to the proposed discharge associated with the short term border dyke scheme, the key effect of concern relates to the effect of the discharge on the water quality of Omārama

Stream. We discuss this issue above under the heading of water quality. This issue aside, we are satisfied that the effects of the proposed discharges will be minor.

Positive Effects

- 14.63 The granting and exercising of these consents will have positive economic effects, both for the applicant, and the district. The irrigation provides the applicant with the ability to finish young stock and grow good quality supplements and winter feed.
- 14.64 In addition, as discussed above we accept that the augmentation of the Omārama Swamp through the current system of water management races and diversions has a beneficial effect on the middle and lower sections of the Omārama Stream.

Key conclusions on effects

- 14.65 In relation to the actual and potential effects of the proposal, our key conclusions are as follows.
- 14.66 We have concluded that the current effects of irrigation are more than minor, but with the package of mitigation measures proposed by the applicant, they will become minor as conversion to spray is completed. There may still be adverse effects on periphyton growths in the Upper Omārama system but we are of the view that any such effects can be managed through monitoring and consent conditions.
- 14.67 Whilst the existing border-dyke system is inefficient, the conversion to spray within a five year period will remedy that inefficient use of water. We consider it is appropriate to allow the inefficient border dyke irrigation to continue for a limited period to enable the conversion to spray to occur.
- 14.68 In terms of flows we are satisfied for the reasons advanced that a grant of consent will not breach the minimum flow requirements of the AWCO and also the WCWARP. We consider that the monitoring of flows at the Tara Hills recording site using the levels specified in the AWCO is adequate and appropriate without the need for additional upstream monitoring.
- 14.69 Based on the evidence of Mr Glasson and Mr Craig, which we accept, the effects, both locally and at cumulative level on landscape and amenity, will be no more minor.
- 14.70 We have concluded that the effects on water quality are minor. Thus, we are satisfied that the effects on tangata whenua values will also be minor.
- 14.71 The granting of these consents would result in the preservation of the economic benefits currently accruing to the applicant, as well as economic benefits to the District.

15 EVALUATION OF RELEVANT PLANNING INSTRUMENTS

- 15.1 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.
- 15.2 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.
- 15.3 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

- 15.4 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).

- 15.5 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.
- 15.6 We have determined that granting these consents with conditions (particularly those set out in the FEMP) combined with the conversion from border dyke to spray irrigation will help to minimise nutrient loss from the irrigated area. This gives us confidence that the off-site nutrient losses will be minimised and the health of streams flowing through the properties will be enhanced. We are also satisfied that the applicant's proposed changes in the irrigation system will not increase the total land area being irrigated and given that they propose a comprehensive mitigation package our view is that its contribution to the nutrient load on Lake Benmore/Ahuriri Arm will decrease.
- 15.7 In terms of potential periphyton growths in Omārama Stream and Ahuriri River, we received limited evidence on this from Dr Coffey. However, given that this is modified replacement consent for existing activities, we consider that the change in irrigation system and proposed mitigation measures should decrease the incidence of nuisance periphyton growths in these water bodies.
- 15.8 Overall, we can conclude that given the change in irrigation systems from border dyke to spray and mitigation measures proposed that those measures will reduce the nutrient load on Lake Benmore, Omārama Stream and Ahuriri River. Thus we are able to conclude that a grant of consent would be consistent with Objective 1(b) and 1(d) WCWARP.
- 15.9 Objective 1(c) requires us to manage waterbodies in a way that maintains natural landscape and amenity characteristics and qualities that people appreciate and enjoy. Given our findings in terms of effects on water quality and periphyton growths combined with a condition in terms of periphyton annual biomass not exceeding MfE guidelines during summer low-flow conditions, then our view is that granting consent would be consistent with Objective 1(c).
- 15.10 We note that Objectives 2, 3, 4, and 5 are "in the round" deal with and provide for the allocation of water. The critical qualification is that water can be allocated provided that to do so is consistent with Objective 1. Given the findings we have made about Objective 1 we conclude that allocating water in terms of the balance objectives would be consistent with the overall scheme of the WCWARP. We reach this view taking into account the national and local costs and benefits (environmental, social, cultural and economic) of the proposal, as required by Objective 3.
- 15.11 Policy 13 links the WCWARP to the PNRRP (as it existed at the time) by requiring us to have regard to how the exercise of the consent could result in water quality objectives of the PNRRP not being achieved. As we explained in our Part A decision, we have considered the objectives of the PNRRP and the now operative NRRP in relation to the current proposal. However we have generally given greater weight to the NRRP provisions on the basis that they represent the current approach for achieving the common goal of protecting water quality.
- 15.12 Under the NRRP Omārama Stream, Little Omārama Stream, Twaddles Creeks and the Ahuriri River are all classified as "Alpine Upland". Objective WQL1.1 of the NRRP seeks to ensure that the water quality of such rivers is managed to at least achieve the outcomes specified in Table 5. A key indicator for these applications is that maximum chlorophyll-a should be less than 50 mg /m² (periphyton guideline for safeguarding aquatic biodiversity and also recreation). This water quality management unit also has water quality standards for DRP and DIN that apply via Schedule WQL1 and associated rules of 0.005 and 0.08 mg/L respectively.
- 15.13 We must have regard to the current provisions of the NRRP and therefore we have given considerable thought to the situation that applies to the Omārama Stream and the Ahuriri River. We note the following:
- (a) Dr Coffey's (MWRL) evidence that despite some existing irrigation draining to Omārama Stream there were only localised nuisance growths along shallow margins of the riverbed at the Lower Omārama sampling site and periphyton biomass below nuisance levels at all Ahuriri sites.
 - (b) The cobbly bottomed substrate of the Little Omārama Stream, Upper Omārama Stream and the Ahuriri River and their suitability for nuisance growths of periphyton.

- (c) The categorisation of lower tributaries of the Little Omārama Stream, significant tributaries of the Upper Omārama Stream and the mainstem of the Lower Omārama Stream (near Omārama township) as 'Hill-fed – lower' with an Objective WQL1 specified maximum periphyton outcome of 200 mg/m² chlorophyll *a* and Schedule WQL nutrient 'standards' for DRP and DIN of 0.006 and 0.47 respectively.
- (d) The New Zealand Periphyton Guidelines, that we were provided with at the hearing and heard were a critical source for the NRRP specified outcome, provide for 50 mg/m² chlorophyll *a* as a guideline for oligotrophic streams with diverse "clean-water" benthic invertebrate communities.
- (e) Objective WQL1.1 of the NRRP which calls for maintenance of the outcomes in Table WQL5 where they are currently being achieved, and progressive improvement in the quality of the water and bed where they are not.

15.14 After considering all the above factors we consider that the early warning trigger for the Upper Omārama Stream should be 50 mg/m² chlorophyll *a* together with water quality standards for DRP and DIN of 0.005 and 0.08 mg/L respectively, and the standard trigger should be 90 mg/m² chlorophyll *a* with water quality standards for DRP and DIN of 0.007 and 0.18 mg/L, respectively. Whilst this is a compromise between the recommended condition set and the now operative NRRP plan provisions, our view is that it achieves an appropriate balance and its enforcement will achieve the intent of the NRRP classification.

15.15 Lake Benmore (including the Ahuriri Arm) is classified as an "Artificial On-River Lake" under the NRRP. Objective WQL1.2 of the NRRP seeks to ensure that the water quality of the lake is managed to at least achieve the outcomes specified in Table 6, including a maximum Trophic Level Index ("TLI") of 3 (i.e. oligotrophic-mesotrophic boundary). For the reasons discussed above, we consider that granting consent to the proposal would be consistent with this objective and would not (in combination with others we grant) caused the TLI maximum to be breached.

15.16 Overall then having regard to the scheme of the WCWARP and the NRRP we reach a conclusion that granting consent in this case to the proposal as a whole would not be consistent with the key objectives and policies of both of these plans relating to water quality.

Environmental flow and level regimes

15.17 Policies 3 and 4 of the WCWARP refer to the setting of environmental flow and level regimes to achieve the objectives of the WCWARP. This is reflected in the rules of the PNRRP, which specify minimum flows and levels for waterbodies and allocation limits for specific activities.

15.18 In relation to this application, the hydrological experts agree that little reliance can be placed on the estimate of 5-year, 7-day low-flow as required by the WCWARP and recommend that the minimum flow values provided in the AWCO, which provided different minimum flows for different times of the year be adopted. This is consistent with other existing takes in the catchment and we accept that it is appropriate for this circumstance.

Efficient and effective use

15.19 As we read the objectives of the WCWARP there is a focus on efficient use of water.

15.20 Objective 3 in particular, in terms of allocating water, requires us to recognise the beneficial and adverse effect on the environment and the national and local costs and benefits of allocating water. We consider that if water is allocated inefficiently, then this results in adverse effects on the environment in terms of water quality and also relates to increased costs and lower benefits. On the other hand, if water is allocated in a manner that ensures its efficient use, the reverse is likely to be true.

15.21 Objective 4 requires us to promote the achievement of a high level of technical efficiency in the use of allocated water. That can be achieved in this instance by converting the current border dyke and wild flooding systems, which are technically inefficient, to spray irrigation.

15.22 Policies 15 – 20 deal with efficient and effective use of water and are applicable to this application. The Policies provide for an efficient use of water so that net benefits are derived from its use and are maximised and waste minimised. We are satisfied that the rates and annual volumes sought by the applicant reflect an efficient and effective use of water once the conversion to spray is complete, and at that point of time, the reasonable use test will be met.

The annual volume requested for spray is less than the amount estimated using the method prescribed in Policy 16(c)(ii) of the WCWARP (WQN9v2). Overall, we consider that the proposed irrigation will comply with the reasonable use provisions of the WCWARP.

- 15.23 Relevant in this circumstance because we are here considering a replacement application, is Policy 28. Under this policy we need to consider when we are determining whether or not to grant or refuse applications for replacement of existing consents whether the applicant has made all reasonable attempts to meet the efficiency expectations of this plan. We must recognise the value of investment that the existing consent holder has and we must maintain the inclusion of the consent if granted in any allocation limits and priority plans on the waterbody concerned.
- 15.24 In terms of whether or not all reasonable attempts to meet the efficiency expectations of the Plan have been undertaken, we consider that the applicant's proposal to convert the entire scheme to piped spray irrigation within a five year period is consistent with this requirement. It is also consistent with Policy 19, which requires the piping or dealing of distribution systems.

Landscape and amenity

- 15.25 We discussed the relevant objectives and policies for landscape in our Part A Decision. In summary these are primarily found in the Proposed and Operative CRPS and the NRRP. In broad terms these provisions seek the protection of outstanding natural landscapes from inappropriate use and development. In considering these provisions we are informed by the provisions of the Waitaki District Plan which identifies the applicant's property as a classified Rural Scenic Zone.
- 15.26 Given our conclusion on effects above, we consider that granting consent to this proposal will not result in inappropriate use or development in the existing landscape context and will be consistent with the relevant objectives and policies relating to landscape.

Tangata whenua

- 15.27 Objective 1(a) of the WCWARP relates to the integrity of mauri and is closely linked to Objective 1(b). Mr Mikaere (for MWRL) submitted that there are two aspects of mauri; the tangible and the intangible and that we could only properly deal with tangible. His view was that the tangibles are able to be addressed if mauri is considered as representing the health of the particular water body in question. Given that we consider that by granting these consents with conditions and with the mitigation measures proposed by the applicant that sustainable water quality outcomes can be achieved, it follows that the integrity of the mauri will be attained.
- 15.28 Objective WQN1 from Chapter 5 NRRP seeks to enable present and future generations to access the region's surface-water and groundwater resources to gain cultural, social, recreational, economic, and other benefits while (c) safe-guarding their value for providing mahinga kai for Ngāi Tahu and (d) protecting wāhi tapu and other wāhi taonga of value to Ngāi Tahu. This Objective aligns with one of the principal aspirations expressed by Ngāi Tahu during the hearing of enhancing mahinga kai resources and supporting ecosystems. Our finding is that there is unlikely to be deterioration in water quality of the Ahuriri Delta as a consequence of this proposal and that this application is consistent with this Objective.
- 15.29 Objective WTL1(a) and (d) from Chapter 7 NRRP seeks to achieve no overall reduction in the contribution wetlands make to the relationship of Ngāi Tahu and their culture and traditions with their ancestral lands, water, mahinga kai sites, wāhi tapu, and wāhi taonga. The traditional relationship that Ngāi Tahu are seeking to maintain through restoration of mahinga kai and kaitiakitanga practices relate in this case to the Ahuriri Delta, wetlands in the Lower Ahuriri and the Omārama Stream. We find that this proposal is within the acceptable thresholds for water quality and would be consistent with this Objective.

Works in the bed

- 15.30 The key objectives and policies that are relevant to this activity can be found in Chapter 6 of the NRRP, which relates to activities in the beds of lakes and rivers. The chapter contains one objective and two related policies.
- 15.31 Objective BLR1 aims to ensure that works in the beds and banks of lake, rivers and streams can be undertaken while minimising effects, including flood-carrying capacity, natural character, ecosystems, other structures, erosion, Ngāi Tahu values. Given the conclusions we have reached on these matters above, we consider that, subject to appropriate conditions, the activity will be consistent with this objective.

- 15.32 Policies BLR1 and BLR2 aim to control activities associated with the erection, placement, use and maintenance of structures within the bed of rivers to ensure that Objective BLR1 is achieved. This may include restricting activities so that they do not affect flood carrying capacity, erosion or create plant infestations. For the reasons discussed above, with the imposition of appropriate conditions, we consider the proposed activity is consistent with these policies.

Discharges

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

Key conclusions on planning instruments

- 15.34 For all of the above reasons we consider that, with the imposition of appropriate conditions granting consent would be consistent with the objectives and policies of the relevant plans. We have reached this conclusion taking into account the relevant planning provisions in respect of water quality, efficiency, environmental flows, landscape, tangata whenua values, works in the bed and discharges.

16 EVALUATION OF OTHER RELEVANT S104 MATTERS

- 16.1 Under s104(2)(a) RMA we are required when considering an application affected by s124 RMA to have regard to the value of the investment of the existing consent holder. Although we did not receive quality evidence in relation to the value of investment that the existing consent holder has in terms of the irrigation infrastructure, we have nonetheless taken this matter into account as part of our overall consideration whether or not to grant consent.

17 SECTION 104D JURISDICTIONAL HURDLES

- 17.1 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 section should be read in combination with our Part A decision which sets out how we have applied the threshold tests in s104D.
- 17.2 The first threshold test is whether the adverse effects of the activity would be minor. As discussed in our evaluation of effects, we are satisfied that with appropriate mitigation measures and taking into account the proposed conversion to spray, the adverse effects of the proposal will be minor and the first jurisdictional hurdle has been met.
- 17.3 The second threshold test is whether the activity would be contrary to the objectives and policies of the relevant plan. In this case 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 and concluded that the proposal will not be contrary to the relevant objectives and policies. The second jurisdictional hurdle has therefore also been met.
- 17.4 For the reasons identified above, we have determined that both of the jurisdictional hurdles are 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.

18 PART 2 RMA

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

Section 6 – Matters of National Importance

- 18.2 Section 6 identifies matters of national importance that we must “recognise and provide for” when making our decision, including in particular preserving the natural character of lakes and rivers (s6(a)), protecting outstanding natural features and landscapes (s6(b)) and the relationship of Māori with the environment (s6(e)).

- 18.3 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 and implementation and development of spray irrigation on the site, the grant of consent recognises and provides for the preservation of the natural character of lakes and rivers.
- 18.4 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.
- 18.5 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.
- 18.6 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.
- 18.7 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

- 18.8 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:
- 18.9 Sub-section (a) refers to kaitiakitangā. We consider that the proposed activity with mitigation measures and conditions sits within the acceptable environmental parameters outlined by Ngāi Tahu such that that it will not cause distress to the function of kaitiakitangā.
- 18.10 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 and the methodology of its conveyance and distribution, particularly after conversion to spray irrigation, results in the efficient use and development of the water resource.
- 18.11 Sub-section (c) refers to the maintenance and enhancement of amenity values. Maintenance and enhancement of amenity values will be achieved in this instance through utilising mitigation measures such as those provided in the FEMP. These steps will ensure the maintenance and enhancement of amenity values.
- 18.12 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.
- 18.13 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.
- 18.14 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

- 18.15 Finally, section 8 requires that we shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).
- 18.16 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.

- 18.17 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

- 18.18 Turning now to the overall purpose of the RMA, that is, “*to promote the sustainable management of natural and physical resources*”.
- 18.19 The proposal will allow development of land to occur, which may provide for the economic and social well-being of the community. The applicant has confirmed that the measures proposed in the application are adequate to “avoid, remedy or mitigate” the potential impacts on surface-water quality and landscape values as required in Section 5(2)(c) RMA.

19 OVERALL EVALUATION

- 19.1 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.
- 19.2 One of the key issues that we have grappled with this application (and the reasons why this decision has taken so long to issue) is the degree of change between the original proposal and that now proposed by the applicant. Although this did give us some cause for concern, we are satisfied that the revised proposal is within scope for the reasons discussed earlier in this decision.
- 19.3 Overall we consider that the revised proposal will provide significantly improved environmental outcomes compared to the activities currently occurring on site. The conversion to spray within a five year period and the cessation of outdated border dyke and wild flooding irrigation will result in a much more efficient use of water and improved water quality outcomes. In combination with the various other mitigation measures imposed, we consider that the activity is appropriate for its location and will provide benefits to the applicant and the wider district by enabling continued productive use of the land.
- 19.4 Having reviewed the application documents, all the submissions, taking into account the evidence to the hearing and taking into account all relevant provisions of the RMA and other relevant statutory instruments, we have concluded that the outcome which best achieves the purpose of the Act is to grant consent, subject to conditions.

20 DURATION

- 20.1 The applicant has sought a duration of 35 years for the take and use consent (CRC011361). However Meridian through Mr Turner suggested that there are benefits in having a common expiry date of April 2025 for all consents to take water within the catchment to do with assessing cumulative effects.
- 20.2 To determine this issue we have referred to and applied the approach set out within the NRRP, Chapter 1, Section 1.3.5, which sets out some considerations that impact on duration. In particular we have placed weight on the following matters there referred to:
- (a) the nature and sensitivity of the affected environment, including:
 - (i) the degree to which the sensitivity of the affected environment may become more sensitive over time; and

- (ii) the probability of future adverse effects arising from the consented activity; and
 - (iii) the level of knowledge about the affected environment;
- 20.3 Section 1.3.5 contains a range of other guidance criteria, which includes the consent holder's capital investment in a pre-existing activity. However, we think that the nature and sensitivity of the affected environment plus the three criteria we have listed above are the most significant.
- 20.4 Given our findings in relation to the current TLI status of the Ahuriri Arm of Lake Benmore and the degree to which the sensitivity of the affected environment, namely the Ahuriri Arm, may become more sensitive over time and the probability or possibility of future adverse effects arising from this consented activity and others, and the level of knowledge about the affected environment, we do support Mr Turner's call for a common expiry date.
- 20.5 We do recognise this will have impacts upon the consent holder's interests. In particular, the consent holder's need to ensure that there are permanence and economic life of the activity. However, in that regard we do note that provided the consent holder seeks to renew its consent in accordance with the RMA, there is a level of permanence and economic life for the activity. We also think that the term of the grant, which will be approximately 13 years, does provide for a level of permanence and economic life of the activity. A term of this duration would provide benefits to the community and would enable the consent holder to achieve some level of return on capital investment involved.
- 20.6 In terms of the application for works in the bed (CRC011363), we have decided to grant this consent for a period of 35 years notwithstanding the shorter term of the take and use consent. The key reason for this is that the effects of the activity are very minor and there is not the same uncertainty about change in the sensitivity of the receiving environment over time. As such, we consider that there is no resource management basis for a shorter term.
- 20.7 In relation to the discharge consent (CRC011362), all of the proposed discharges (with the exception of that from the augmentation race) will cease upon conversion to spray. As this conversion must occur within five years, it is appropriate that the duration of the discharge consent be similarly limited. The discharge from the augmentation race should be allowed to continue for the full 35 year period, as it serves a beneficial purpose and will not cease on conversion to spray. We have provided for this outcome in the conditions of that consent.

21 CONDITIONS

- 21.1 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 in March 2012. We have adopted the approach set out in those conditions where the proposed water permit (CRC011361) is split into different parts based on the particular property it relates to.
- 21.2 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.
- 21.3 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

- 21.4 In Part A we rejected the MWRL proposition that we could grant all the applications before us with conditions.
- 21.5 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.

- 21.6 In rejecting the MWRL case, which relied upon existing irrigators lessening their nutrient load so that there would be assimilative capacity for new irrigators, we need to record our approach to ensuring that consents we grant do not cumulatively result in the trophic level index (TLI) of the Ahuriri Arm of Lake Benmore exceeding 2.75, or the TLI of the Wairepo Arm of Lake Ruataniwha exceeding 4.00. As we recorded in Part A our view if that the difference between current nutrient load, and the load resulting in unacceptable increases in the TLI of these waterbodies is so small that it would be risky to try and allocate that new load.
- 21.7 For those applications that we are inclined to grant, we have assessed their 'cumulative effects' in priority order, taking careful note of the complete package of mitigation measures they propose on their property. These mitigation measures may be in relation to a separate application before us but on the same property and therefore 'captured' in the FEMP.
- 21.8 We have kept a check on new irrigation resulting in additional nitrogen and phosphorus loads proposed by applicants in relation to those mitigation measures and not granted consents that would, in our view, lead to a significant net increase.
- 21.9 This approach will, in our view, ensure that the TLI of the critical lake ecosystems does not rise as a result of our granting these applications, and may even decline. This approach is, we believe, consistent with the NRRP, which has as an objective and maintenance or improvement of water quality. It also has the advantage, in our view, of taking the pressure off cumulative effects monitoring with all the ensuing uncertainties and difficulties discussed in Part A.
- 21.10 Recognising that streams and rivers in the catchment are nutrient limited by nitrogen and/or phosphorus, and that the NZ (MfE) Periphyton Guidelines provide appropriate thresholds for managing nuisance periphyton growths does, we believe, provide another monitoring tool for not only ensuring that streams and rivers are suitable for recreation and provide suitable habitat for invertebrates and fish, but also provide another defence to downstream lake ecosystems. The reporting of breaches in periphyton guidelines together with correction mitigation actions, provide a tool to prevent excess nutrients reaching the lakes.
- 21.11 We recognise that that where leachate enters groundwater that does not discharge to streams or rivers prior to entering Lake Benmore, periphyton monitoring is not appropriate. However for the majority of the applications before us, there is a stream or river downstream that provides a logical focus for offsite monitoring efforts. In cases where this is not the case we have imposed other monitoring requirements such as lysimeter or piezometer networks, and/or contributing to lake monitoring.
- 21.12 The advantage of stream water quality and periphyton monitoring is that it puts more emphasis on local monitoring and less emphasis on uncertain (given our findings on the WQS) modelling. We are of the view that as far as possible, consent monitoring should be related directly to the applicant's activities. In this case, we agree with the applicant's proposed monitoring locations for Omārama Stream and have included them in the conditions of consent. We also note that two of the monitoring sites (H40: 614-161 and H39: 606-246) are the same as those imposed on the consents for Killermont Station (CRC041798) and Twin Peaks Station (CRC063564) and that there is the opportunity for these consent holders to work co-operatively in relation to these monitoring requirement.
- 21.13 In relation to lake monitoring, we did consider deleting the agreed conditions relating to lake TLI monitoring on the grounds that it was marginal whether trigger response conditions were relevant to replacement consents. The critical issue for us was whether the effects of replacement consents could be considered less than minor (with respect to lake water quality).
- 21.14 However upon reflection we have decided that (in the case of the Ahuriri Arm of Lake Benmore, and the Wairepo Arm of Lake Ruataniwha) the existing TLI is very close to the agreed trigger point, and the TLI may increase even without the grant of new consents (due to groundwater lag effects). We are reasonably confident however that this will not occur because by and large these activities have been 'on foot' for a long period of time and we think this is reflected in the current TLI. However, we cannot be completely certain and it seemed to us rather than leave the matter we should do something about it to at least provide a mechanism to respond to groundwater lag effects, if they occurred.
- 21.15 Thus, if TLI were to increase above the agreed trigger points then the lake monitoring conditions would serve a resource management purpose; particularly in conjunction with the condition to ratchet back existing irrigation. On balance, we have decided to retain the agreed lake monitoring conditions for Lake Benmore and the Wairepo Arm of Lake Ruataniwha.

- 21.16 An advantage of the approach discussed above is that it rewards applicants (through the granting of consents) prepared to convert from inefficient border dyke systems to modern pivot irrigators. Not only are there efficiency gains to be made by such conversion, but significant reductions in nutrient losses will also result.

22 DECISION

- 22.1 Pursuant to the powers delegated to us by the Canterbury Regional Council; and
- 22.2 For all of the above reasons and pursuant to sections 104, 104B and 104D of the Resource Management Act 1991, we **GRANT** the following applications by Dunstan Peaks Limited:

CRC011351(A-E) to divert, take, store and use water from the Omārama Stream and its tributaries for the irrigation of 342 ha of land on Twinburn Station, Dunstan Peaks Station and Clifton Downs

CRC011362 to discharge water into Omārama Stream and Twaddles Creek

CRC0311363 to disturb the bed and banks of a river at various locations on Omārama Stream and its tributaries

- 22.3 Pursuant to section 108 RMA, the grant of consent is subject to the conditions specified at **Appendices A-G**, which conditions form part of this decision and consent.
- 22.4 The duration of consent CRC011351(A-E) shall be until the 30th April 2025, subject to the conditions of those consents. The grant of consents CRC011362 and CRC0311363 shall be 35 years from the commencement of this consent, subject to the conditions of those consents.

DECISION DATED AT CHRISTCHURCH THIS 23RD DAY OF MAY 2012

Signed by³:

Paul Rogers



Dr James Cooke

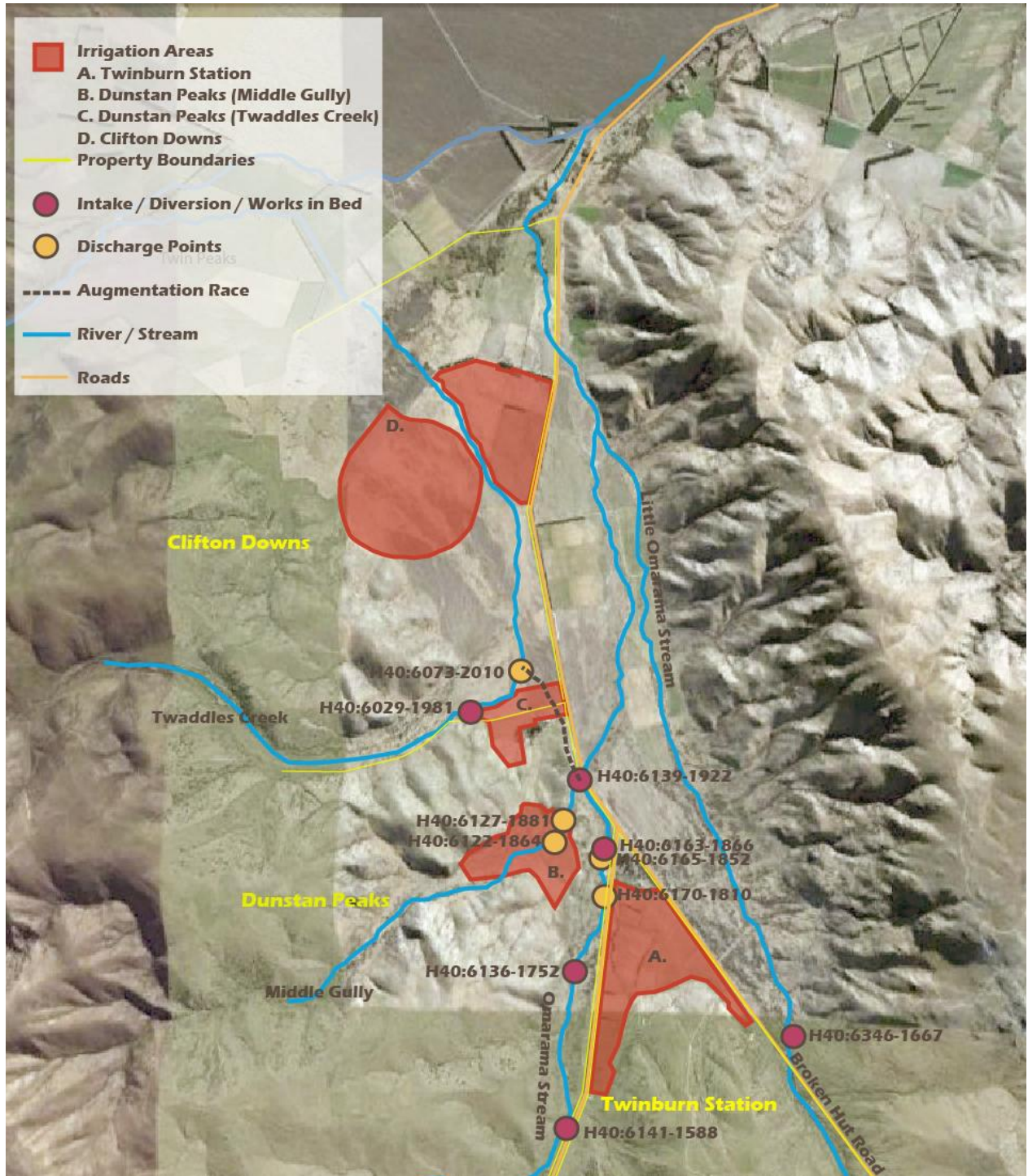


Edward Ellison



³ This decision has been signed as a majority decision of the three named Commissioners due to the death of Commissioner Mike Bowden.

FIGURE 1: INDICATIVE LOCATION MAP



Diversion and take of water – Little Omārama Stream

1. For the period up until conversion to spray irrigation or five years from the commencement of this consent, whichever occurs first:
 - (a) Water shall only be diverted from the Little Omārama Stream at or about map reference NZMS 260 H40: 6346-1667 at a rate not exceeding 170 litres per second for irrigation, with a volume not exceeding 4,896 cubic metres per day.
 - (b) Diverted water shall be dammed by a storage header pond at a maximum volume of 45,000 cubic metres located at or about map reference NZMS 260 H40: 6310-1683.
 - (c) Water shall be taken and used for irrigation from the storage pond at a rate not exceeding 170 litres per second, with a volume not exceeding 4,896 cubic metres per day.
2. On conversion to spray irrigation or at five years from the commencement of this consent, whichever occurs first:
 - (a) The diversion shall reduce to 60 litres per second from Little Omārama Stream at or about map reference NZMS 260 H40: 6346-1667.
 - (b) Water shall be taken and used for spray irrigation from the storage pond at a rate not exceeding 60 litres per second, with a volume not exceeding 4,896 cubic metres per day.
 - (c) The total volume taken for spray irrigation, shall not exceed 519,000 cubic metres between 1 July and the following 30th June.

Diversion and take of water – Omārama Stream

3. For the period up until conversion to spray irrigation or five years from the commencement of this consent, whichever occurs first:
 - (a) Water shall only be diverted from the Omārama Stream at or about map reference NZMS 260 H40: 6141-1588 at a rate not exceeding 350 litres per second for irrigation and stock water and with a volume not exceeding 18,900 cubic metres per day.
 - (b) Diverted water shall be dammed by a storage header pond at a maximum volume of 20,000 cubic metres located at or about map reference NZMS 260 H40: 6156-1619.
 - (c) Water shall be taken and used for spray irrigation from the storage pond at a rate not exceeding 350L/s litres per second, with a volume not exceeding 18,900 cubic metres per day.
4. On conversion to spray irrigation or at five years from the commencement of this consent, whichever occurs first, this take, dam and use shall cease.

Use of water

5. Water taken shall be used for the border dyke irrigation of 107 hectares and once converted to spray irrigation, for 86.5 hectares of crops and pasture, within the area of land marked as "Twinburn Irrigation Area" on the attached **Plan CRC011361** that forms part of this consent.
6. The combined irrigation area under consents CRC011361A, B, C & D shall not exceed 342 hectares at any one time.
7. For the exercise of all spray irrigation systems, there shall be a minimum 5 metre setback, where there is no irrigation, from any permanently flowing waterways within all of the irrigation areas marked on **Plan CRC011361**.

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

Conversion

10. The consent holder shall within a period of 5 years from the commencement date of this consent, convert to spray irrigation the existing systems at Twin Burn and Dunstan Peaks and advise the Canterbury Regional Council as to the staging of any conversion.
11. The spray system at Clifton Downs cannot be completed prior to the conversion to spray irrigation at Dunstan Peaks and Twin Burn
12. Any rights to continue border dyke or other non-spray method of irrigation shall cease 5 years from the date of this consent.
13. The consent holder shall advise the Canterbury Regional Council of the completion of the conversion prior to the commencement and use of the new completed spray system.
14. The consent holder shall provide to the Canterbury Regional Council annually upon request:
 - (a) An update on the conversion programme set out in these conditions;
 - (b) An irrigation design plan of the areas to be converted under this consent within the next 12 months; and
 - (c) Verification of the post conversion irrigation areas for the previous 12 month period.

Minimum flow

15. Subject to Condition 16:
 - (a) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream, as estimated by the Canterbury Regional Council, at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	500
Tara Hills Recorder	NZMS 260 H39:624-260	250

- (b) for the period 1 May to 31 October the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream as estimated by the Canterbury Regional Council at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	1200
Tara Hills Recorder	NZMS 260 H39:624-260	750

- (c) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall be reduced to half the maximum rate noted in condition (1) above, whenever the flow in the Omārama Stream at the Omārama Station Bridge recorder site (at or about map reference NZMS 260 H39:678-306), as estimated by the Canterbury Regional Council, is at or below 800 litres per second.

16. Whenever the Canterbury Regional Council, in consultation with the Water Users Group representing all water users who are subject to this condition, has determined upon a water sharing regime which restricts abstraction from the Omārama Stream in accordance with the minimum flow of 500 litres per second at the Omārama Station Bridge recorder site, then the taking of water in accordance with that determination shall be deemed to be a compliance with Condition 15.

Water metering

17. The consent holder shall, upon conversion of an existing intake proposed to be utilised for the spray irrigation system and for new intakes, install:

- (a) water meters that have an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a locations that will ensure the total take of water from Little Omārama Stream and Omārama Stream is measured; and
- (b) a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.

18. If the water meter specified in Condition 17(a) is not an electromagnetic or ultrasonic meter, the consent holder shall, prior to the first exercise of this consent install or make available an easily accessible straight pipe(s) at a location where the total water take is passing through, with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system, to allow the Canterbury Regional Council to conduct independent measurements.

19. The measuring and recording device(s) specified in Condition 17 shall:

- (a) 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);
- (b) 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;
- (c) unless certified by a suitably qualified person that telemetry is not feasible, 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.
- (d) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions;
- (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.

20. No data in the recording device(s) shall be deliberately changed or deleted.

21. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 17 are at all times fully functional and meet the accuracy standard stated in that condition.

22. Within one month of the installation of the measuring or recording device(s) specified in Condition 17 (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 these conditions.
23. 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 these conditions; and
 - (b) the tamper-proof electronic recording device is operating as specified in these conditions.

Fish Screen

24. The consent holder shall, within a period of 5 years from the commencement date of this consent and on conversion to spray irrigation (whichever occurs earlier) install a fish screen with a maximum mesh width and height size of 3 millimetres or slot width and height of 2 millimetres across the intake to ensure that fish and fish fry are prevented from passing through the intake screen.
25. 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.
26. 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.
 - (e) The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 24 to 26 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.
27. 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 24 to 26 inclusive of this consent.
28. 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

29. For the purposes of interpretation of the conditions of this consent the DPL Properties (which includes Twin Burn Station, Dunstan Peaks Station and Clifton Downs) shall be defined as the areas shown on Maps A-D in Section 2 of the Farm Environmental Management Plan attached to these conditions and marked **CRC011361-A** .
30. The consent holder shall prepare once per year:
- (a) an Overseer[®] nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
 - (b) a report of the annual farm nutrient loading for the DPL Properties using the model Overseer[®] (AgResearch model version number 5.4.3 or later).
31. When undertaking the modelling outlined in Condition 30, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
32. A copy of the reports prepared in accordance with Condition 30 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
33. Following conversion the consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs)) as estimated in accordance with Condition 30 from the DPL Properties does not exceed 20,964 kg of Nitrogen and 675 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.
34. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the earlier of the first full year (1 July to 30 June) following completion of the irrigation conversion or five years from the commencement of consent.
35. 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
36. The consent holder shall at all times comply with the Farm Environmental Management Plan (FEMP) for the DPL Properties in particular, the mitigation measures and monitoring set out in section 5 of the FEMP, a copy of which is attached to these conditions and marked **CRC011361-A** and forms part of these conditions.
37. Subject to Condition 36, the consent holder shall implement, and update annually the FEMP for the DPL Properties. 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 DPL Properties 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.

38. 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.
39. 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 35 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.
40. Changes may be made to the DPL Properties 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

41. 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 7,017 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 33. 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 33. 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

42. 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.
43. 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.
44. 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.
45. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September.
46. 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.
47. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
48. 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.

49. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
50. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.
51. Where practicable, the consent holder shall:
- (a) use direct drilling as the principal method for establishing pastures; and
 - (b) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

Irrigation Infrastructure

52. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:
- (a) designed and certified by a suitably qualified independent expert holding a National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request; and
 - (b) tested within 12 months of the first installation of the new irrigation infrastructure and afterwards every five years in accordance with the 'Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007' (code of practice) by a suitably qualified independent expert.
53. Within two months of the testing referred to in Condition 52(b) the expert shall prepare a report outlining their findings and shall identify any changes needed to comply with the code of practice. Any such changes shall be implemented within five years from the date of the report. A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.
54. If existing irrigation infrastructure is being used, the consent holder shall obtain an evaluation report prepared by a suitably qualified person, on the following terms:
- (a) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
 - (b) This report shall be obtained within three months of the first exercise of the consent.
 - (c) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
 - (d) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

River water quality monitoring and response

55. The water quality of Omārama Stream shall be monitored within six months of the first exercise of this consent as follows:
- (a) The location for monitoring of Omārama Stream shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
 - i. Map reference: NZMS 260 H40: 614-161 immediately upstream of all irrigation takes on Omārama Stream.
 - ii. Map reference: NZMS 260 H40 614-193 and H39: 606-246 downstream of the discharge.
 - (b) Water quality variables monitored shall include:
 - i. dissolved inorganic nitrogen (DIN);

- ii. dissolved reactive phosphorus (DRP);
 - iii. dissolved oxygen;
 - iv. conductivity;
 - v. turbidity;
 - vi. periphyton biomass as chlorophyll *a* per square metre (chl *a*); and
 - vii. *E. Coli*.
- (c) This monitoring may be carried out on an individual basis, or may be prepared in collaboration with other consent holders, or on a collective basis by a suitable independent body appointed by all relevant consent holders in the sub catchment.
- (d) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (e) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring river water quality and periphyton biomass. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
- (f) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person who demonstrates that they understand the appropriate methods to use for surface water quality sampling, including preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
- (g) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ.
- (h) The results of all sampling shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
56. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of the monitoring sites specified in Condition 55 over the period December to April is greater than 0.08 mg/L of DIN; or 0.005 mg/L DRP; or 50 mg chl *a*/ m² (early warning trigger) but does not exceed 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the early warning trigger.
57. The reports referred to in Condition 56 and 61 shall:
- (a) be prepared by an expert review panel consisting of two qualified and experienced independent scientists. One of the scientists shall be nominated by the Canterbury Regional Council, and the other shall be appointed by the consent holder; and
 - (b) include the experts' conclusion on whether the exceedance(s) were as a result of natural influences, one off events, or in whole or part by nutrient loss associated with the irrigation authorised by this consent; and
 - (c) include an assessment as to whether the exceedance measured by the monitoring is likely to continue; and
 - (d) be completed by 30 July following the sampling; and
 - (e) be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.

58. If both the authors of the report prepared in accordance with Condition 57 conclude, after considering all the relevant available information (including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council) that either:

- (a) the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent; or
- (b) that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the relevant monitoring site,

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

59. If Condition 58 is not satisfied, then:

- (a) the NDA, as specified in Condition 33, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the total authorised irrigation area developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
- (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.

60. In relation to the Remedial Action Plan referred to in Condition 59(b) and 63(b)(b):

- (a) It shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the early warning trigger is returned as soon as practicable to and maintained below the average sample results of 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger) for the relevant monitoring site, over the period December to April.
- (b) It shall be prepared by a suitably qualified and experienced person using Overseer or an equivalent method to demonstrate that the actions to be undertaken will achieve the necessary nutrient reductions as soon as practicable.
- (c) If the Remedial Action Plan is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment a common Remedial Action Plan shall be deemed to comply with this condition.
- (d) Any actions required by the Remedial Action Plan shall be incorporated into the consent holder's FEMP. The amended FEMP shall be implemented as soon as physically possible.
- (e) The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.

61. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of monitoring sites specified in Condition 55 over the period December to April is greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the environmental standard trigger. This report shall satisfy the requirements specified in Condition 57.

62. If both the authors of the report prepared in accordance with Condition 61 conclude, after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, that the cause of the breach of the environmental standard trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent, then no further action needs to be undertaken by the consent holder.

63. If the report prepared in accordance with Condition 61 concludes that the environmental standard trigger has been exceeded because of farm land use practices, then:

- (a) the NDA, as specified in Condition 33, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedance) under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
64. If a required reduction in nutrient load is in effect under Condition 59(a) or 63(a) and monitoring for that period shows that the average sample results for any of the monitoring sites over the period December to April is:
- (a) greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then there shall be a further NDA reduction of 10% x IPF for the subsequent irrigation season.
 - (b) less than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), but greater than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) less than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then for the subsequent season no NDA reduction shall be required under this condition, and the full NDA for the property, as specified in Condition 33 shall be restored.

Lake water quality monitoring and response

65. The water quality of the Ahuriri Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:
- (a) Locations:
 - i. Ahuriri Arm, Map reference: NZMS 260 H39:8027-2667
 - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371
 - (b) Depths: depth integrated 0-10m, 25m, 50m
 - (c) Water quality variables:
 - i. total nitrogen;
 - ii. ammonia;
 - iii. nitrate;
 - iv. nitrite;
 - v. total Kjeldahl nitrogen;
 - vi. total phosphorus;
 - vii. dissolved reactive phosphorus;
 - viii. Secchi disc depth; and
 - ix. chlorophyll *a*.
 - (d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
 - i. $TLI_c = 2.22 + 2.54 \log(\text{chlorophyll } a)$

- ii. $TLp = 0.218 + 2.92 \log (\text{total phosphorus})$
 - iii. $TLn = -3.61 + 3.01 \log (\text{total nitrogen})$
 - iv. $TLI = \Sigma (TLc + TLp + TLn)/3$
- (e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (f) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring lake water quality. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
- (g) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person that demonstrates that they understand the appropriate methods to use for lake water quality sampling, including depth integrated sampling, and preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
- (h) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ and shall be capable of analysing the variables listed in subparagraph c above with detection limits generally recognised by the scientific community as appropriate for oligotrophic lakes.
- (i) The results of all sampling including the calculated average summer TLI, shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
66. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then:
- (a) the NDA, as specified in Condition 33, 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. 342 irrigated hectares divided by the total farm area of 7,017 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.
67. If a reduction in nutrient loading is required under Condition 66(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 - 10 m depth integrated samples for the monitoring site over the period December to April:
- (a) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of $5\% \times$ 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 33 shall be restored.
68. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 33, shall be reduced by $10\% \times$ 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. 342 irrigated hectares divided by the total farm area of 7,017 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.
69. If a reduction in nutrient loading is required under Condition 68(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April:
- (a) continues to be greater than 3.0 then there shall be a further NDA reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season.
- (b) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
- (c) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 33 shall be restored.
70. The nutrient load reductions and investigation referred to in Conditions 66 to 69 inclusive shall not be required if a two person expert scientist panel (with one expert nominated by the Canterbury Regional Council) both conclude after considering all the relevant available information (including catchment resource consent compliance, FEMP compliance monitoring pertaining to this consent and audit reports made available by the Canterbury Regional Council) that the cause of the breach of the early warning trigger or environmental standard (as applicable) was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.

Review of conditions

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

Lapse

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

Advice notes:

- *In relation to the lake monitoring required under Condition 65, it is anticipated that all consent holders subject to this condition would coordinate and cooperate together to ensure that the lake water quality monitoring is undertaken and the costs of that monitoring is shared between those consent holders. The Canterbury Regional Council may provide resources to facilitate that coordination and recover the costs of that facilitation from the relevant resource consent holders as a cost of supervising and administering the resource consents. Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders and may be the subject of enforcement proceedings.*
- *If any additional land use consents are required to carry out the proposed activity, those consents must be obtained before giving effect to this consent.*

Diversion and take of water

1. For the period up until conversion to spray irrigation or five years from the commencement of this consent, whichever occurs first, water shall only be diverted, taken and used for border dyke irrigation from Omārama Stream at or about map reference NZMS 260 H40: 6136-1752 at a rate not exceeding 290 litres per second and with a volume not exceeding 11,185 cubic metres per day.
2. On conversion to spray irrigation or at five years from the commencement of this consent, whichever occurs first:
 - (a) the divert, take and use shall reduce to 35 litres per second from Omārama Stream at or about map reference NZMS 260 H40: 6136-1752; and
 - (b) the total volume taken for spray irrigation, shall not exceed 300,000 cubic metres between 1 July and the following 30th June.

Use of water

3. Water taken shall be used for the border dyke irrigation of 112 hectares and once converted to spray irrigation, for 50 hectares of crops and pasture, within the area of land marked as "Dunstan Peaks (Middle Gully) Irrigation Area" on the attached **Plan CRC011361** that forms part of this consent.
4. The combined irrigation area under consents CRC011361A, B, C & D shall not exceed 342 hectares at any one time.
5. For the exercise of all spray irrigation systems, there shall be a minimum 5 metre setback, where there is no irrigation, from any permanently flowing waterways within all of the irrigation areas marked on **Plan CRC011361**.
6. The consent holder shall take all practicable steps to:
 - (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
7. For so long as any water races remain, the consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.

Conversion

8. The consent holder shall within a period of 5 years from the commencement date of this consent, convert to spray irrigation the existing systems at Twin Burn and Dunstan Peaks and advise the Canterbury Regional Council as to the staging of any conversion.
9. The spray system at Clifton Downs cannot be completed prior to the conversion to spray irrigation at Dunstan Peaks and Twin Burn
10. Any rights to continue border dyke or other non-spray method of irrigation shall cease 5 years from the date of this consent.
11. The consent holder shall advise the Canterbury Regional Council of the completion of the conversion prior to the commencement and use of the new completed spray system.
12. The consent holder shall provide to the Canterbury Regional Council annually upon request:

- (a) An update on the conversion programme set out in these conditions;
- (b) An irrigation design plan of the areas to be converted under this consent within the next 12 months; and
- (c) Verification of the post conversion irrigation areas for the previous 12 month period.

Minimum flow

13. Subject to Condition 16:

- (a) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream, as estimated by the Canterbury Regional Council, at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	500
Tara Hills Recorder	NZMS 260 H39:624-260	250

- (b) for the period 1 May to 31 October the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream as estimated by the Canterbury Regional Council at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	1200
Tara Hills Recorder	NZMS 260 H39:624-260	750

- (c) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall be reduced to half the maximum rate noted in condition (1) above, whenever the flow in the Omārama Stream at the Omārama Station Bridge recorder site (at or about map reference NZMS 260 H39:678-306), as estimated by the Canterbury Regional Council, is at or below 800 litres per second.

14. Whenever the Canterbury Regional Council, in consultation with the Water Users Group representing all water users who are subject to this condition, has determined upon a water sharing regime which restricts abstraction from the Omārama Stream in accordance with the minimum flow of 500 litres per second at the Omārama Station Bridge recorder site, then the taking of water in accordance with that determination shall be deemed to be a compliance with Condition 15.

Water metering

15. The consent holder shall, upon conversion of an existing intake proposed to be utilised for the spray irrigation system and for new intakes, install:

- (a) water meters that have an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a locations that will ensure the total take of water from Omārama Stream is measured; and
- (b) a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.

16. If the water meter specified in Condition 17(a) is not an electromagnetic or ultrasonic meter, the consent holder shall, prior to the first exercise of this consent install or make available an easily accessible straight pipe(s) at a location where the total water take is passing through,

with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system, to allow the Canterbury Regional Council to conduct independent measurements.

17. The measuring and recording device(s) specified in Condition 17 shall:
 - (a) 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);
 - (b) 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;
 - (c) unless certified by a suitably qualified person that telemetry is not feasible, 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.
 - (d) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions;
 - (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.
18. No data in the recording device(s) shall be deliberately changed or deleted.
19. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 17 are at all times fully functional and meet the accuracy standard stated in that condition.
20. Within one month of the installation of the measuring or recording device(s) specified in Condition 17 (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 these conditions.
21. At five yearly intervals or at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying that:
 - (a) the water meter(s) is measuring the rate of water taken as specified in these conditions; and
 - (b) the tamper-proof electronic recording device is operating as specified in these conditions.

Fish Screen

22. The consent holder shall, within a period of 5 years from the commencement date of this consent and on conversion to spray irrigation (whichever occurs earlier) install a fish screen with a maximum mesh width and height size of 3 millimetres or slot width and height of 2 millimetres across the intake to ensure that fish and fish fry are prevented from passing through the intake screen.

23. The fish screen shall be positioned to ensure that there is unimpeded fish passage to and from the waterway and to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the screen face.
24. The fish screen shall be designed and installed to ensure that:
- (a) the majority of the screen surface is oriented parallel to the direction of water flow; and
 - (b) where practicable, the screen is positioned in the water column a minimum of 300 millimetres above the bed of the waterway and a minimum of one screen radius from the surface of the water; and
 - (c) the approach velocity perpendicular to the face of the screen shall not exceed 0.06 metres per second if no self-cleaning mechanism exists or 0.12 metres per second if a self-cleaning mechanism is operational; and
 - (d) the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.
 - (e) The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 24 to 26 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.
25. 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 24 to 26 inclusive of this consent.
26. 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

27. For the purposes of interpretation of the conditions of this consent the DPL Properties (which includes Twin Burn Station, Dunstan Peaks Station and Clifton Downs) shall be defined as the areas shown on Maps A-D in Section 2 of the Farm Environmental Management Plan attached to these conditions and marked **CRC011361-A** .
28. The consent holder shall prepare once per year:
- (a) an Overseer[®] nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
 - (b) a report of the annual farm nutrient loading for the DPL Properties using the model Overseer[®] (AgResearch model version number 5.4.3 or later).
29. When undertaking the modelling outlined in Condition 30, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
30. A copy of the reports prepared in accordance with Condition 30 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
31. Following conversion the consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs)) as estimated in accordance with Condition 30 from the DPL Properties does not exceed 20,964 kg of Nitrogen and 675 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.
32. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the earlier of the first full year (1 July to 30 June)

following completion of the irrigation conversion or five years from the commencement of consent.

33. 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
34. The consent holder shall at all times comply with the Farm Environmental Management Plan (FEMP) for the DPL Properties in particular, the mitigation measures and monitoring set out in section 5 of the FEMP, a copy of which is attached to these conditions and marked **CRC011361-A** and forms part of these conditions.
35. Subject to Condition 36, the consent holder shall implement, and update annually the FEMP for the DPL Properties. 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 DPL Properties 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.
36. 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.
37. 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 35 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.
38. Changes may be made to the DPL Properties 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

39. 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 7,017 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 33. 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 33. 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

40. 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.
41. 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.
42. 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.
43. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September.
44. 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.
45. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
46. 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.
47. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
48. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.
49. Where practicable, the consent holder shall:
 - (a) use direct drilling as the principal method for establishing pastures; and
 - (b) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

Irrigation Infrastructure

50. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:
 - (a) designed and certified by a suitably qualified independent expert holding a National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request; and
 - (b) tested within 12 months of the first installation of the new irrigation infrastructure and afterwards every five years in accordance with the 'Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007' (code of practice) by a suitably qualified independent expert.
51. Within two months of the testing referred to in Condition 52(b) the expert shall prepare a report outlining their findings and shall identify any changes needed to comply with the code of practice. Any such changes shall be implemented within five years from the date of the report.

A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.

52. If existing irrigation infrastructure is being used, the consent holder shall obtain an evaluation report prepared by a suitably qualified person, on the following terms:

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

River water quality monitoring and response

53. The water quality of Omārama Stream shall be monitored within six months of the first exercise of this consent as follows:

- (a) The location for monitoring of Omārama Stream shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
 - i. Map reference: NZMS 260 H40: 614-161 immediately upstream of all irrigation takes on Omārama Stream.
 - ii. Map reference: NZMS 260 H40 614-193 and H39: 606-246 downstream of the discharge.
- (b) Water quality variables monitored shall include:
 - i. dissolved inorganic nitrogen (DIN);
 - ii. dissolved reactive phosphorus (DRP);
 - iii. dissolved oxygen;
 - iv. conductivity;
 - v. turbidity;
 - vi. periphyton biomass as chlorophyll *a* per square metre (chl *a*); and
 - vii. *E. Coli*.
- (c) This monitoring may be carried out on an individual basis, or may be prepared in collaboration with other consent holders, or on a collective basis by a suitable independent body appointed by all relevant consent holders in the sub catchment.
- (d) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (e) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring river water quality and periphyton biomass. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
- (f) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person who demonstrates that they understand the appropriate methods to use for surface water quality sampling, including preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in

accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.

- (g) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ.
 - (h) The results of all sampling shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
54. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of the monitoring sites specified in Condition 55 over the period December to April is greater than 0.08 mg/L of DIN; or 0.005 mg/L DRP; or 50 mg chl *a*/ m² (early warning trigger) but does not exceed 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the early warning trigger.
55. The reports referred to in Condition 56 and 61 shall:
- (a) be prepared by an expert review panel consisting of two qualified and experienced independent scientists. One of the scientists shall be nominated by the Canterbury Regional Council, and the other shall be appointed by the consent holder; and
 - (b) include the experts' conclusion on whether the exceedance(s) were as a result of natural influences, one off events, or in whole or part by nutrient loss associated with the irrigation authorised by this consent; and
 - (c) include an assessment as to whether the exceedance measured by the monitoring is likely to continue; and
 - (d) be completed by 30 July following the sampling; and
 - (e) be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
56. If both the authors of the report prepared in accordance with Condition 57 conclude, after considering all the relevant available information (including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council) that either:
- (a) the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent; or
 - (b) that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the relevant monitoring site,
- then no further action needs to be undertaken by the consent holder.
57. If Condition 58 is not satisfied, then:
- (a) the NDA, as specified in Condition 33, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the total authorised irrigation area developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
58. In relation to the Remedial Action Plan referred to in Condition 59(b) and 63(b)(b):
- (a) It shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the early warning trigger is returned as soon

as practicable to and maintained below the average sample results of 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger) for the relevant monitoring site, over the period December to April.

- (b) It shall be prepared by a suitably qualified and experienced person using Overseer or an equivalent method to demonstrate that the actions to be undertaken will achieve the necessary nutrient reductions as soon as practicable.
 - (c) If the Remedial Action Plan is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment a common Remedial Action Plan shall be deemed to comply with this condition.
 - (d) Any actions required by the Remedial Action Plan shall be incorporated into the consent holder's FEMP. The amended FEMP shall be implemented as soon as physically possible.
 - (e) The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
59. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of monitoring sites specified in Condition 55 over the period December to April is greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the environmental standard trigger. This report shall satisfy the requirements specified in Condition 57.
60. If both the authors of the report prepared in accordance with Condition 61 conclude, after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, that the cause of the breach of the environmental standard trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent, then no further action needs to be undertaken by the consent holder.
61. If the report prepared in accordance with Condition 61 concludes that the environmental standard trigger has been exceeded because of farm land use practices, then:
- (a) the NDA, as specified in Condition 33, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedance) under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
62. If a required reduction in nutrient load is in effect under Condition 59(a) or 63(a) and monitoring for that period shows that the average sample results for any of the monitoring sites over the period December to April is:
- (a) greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then there shall be a further NDA reduction of 10% x IPF for the subsequent irrigation season.
 - (b) less than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), but greater than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) less than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then for the subsequent season no NDA reduction shall be required under this condition, and the full NDA for the property, as specified in Condition 33 shall be restored.

Lake water quality monitoring and response

63. The water quality of the Ahuriri Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:
- (a) Locations:
 - i. Ahuriri Arm, Map reference: NZMS 260 H39:8027-2667
 - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371
 - (b) Depths: depth integrated 0-10m, 25m, 50m
 - (c) Water quality variables:
 - i. total nitrogen;
 - ii. ammonia;
 - iii. nitrate;
 - iv. nitrite;
 - v. total Kjeldahl nitrogen;
 - vi. total phosphorus;
 - vii. dissolved reactive phosphorus;
 - viii. Secchi disc depth; and
 - ix. chlorophyll *a*.
 - (d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
 - i. $TLc = 2.22 + 2.54 \log(\text{chlorophyll } a)$
 - ii. $TLp = 0.218 + 2.92 \log(\text{total phosphorus})$
 - iii. $TLn = -3.61 + 3.01 \log(\text{total nitrogen})$
 - iv. $TLI = \Sigma (TLc + TLp + TLn)/3$
 - (e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
 - (f) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring lake water quality. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
 - (g) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person that demonstrates that they understand the appropriate methods to use for lake water quality sampling, including depth integrated sampling, and preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
 - (h) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ and shall be capable of analysing the variables listed in subparagraph c above with detection limits generally recognised by the scientific community as appropriate for oligotrophic lakes.

- (i) The results of all sampling including the calculated average summer TLI, shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
64. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then:
- (a) the NDA, as specified in Condition 33, 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. 342 irrigated hectares divided by the total farm area of 7,017 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.
65. If a reduction in nutrient loading is required under Condition 66(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the monitoring site over the period December to April:
- (a) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (b) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 33 shall be restored.
66. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 33, 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. 342 irrigated hectares divided by the total farm area of 7,017 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.
67. If a reduction in nutrient loading is required under Condition 68(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April:
- (a) continues to be greater than 3.0 then there shall be a further NDA reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season.
 - (b) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 33 shall be restored.
68. The nutrient load reductions and investigation referred to in Conditions 66 to 69 inclusive shall not be required if a two person expert scientist panel (with one expert nominated by the Canterbury Regional Council) both conclude after considering all the relevant available information (including catchment resource consent compliance, FEMP compliance monitoring

pertaining to this consent and audit reports made available by the Canterbury Regional Council) that the cause of the breach of the early warning trigger or environmental standard (as applicable) was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.

Review of conditions

69. The Canterbury Regional Council may, once per year, on any of the last five working days of March or July serve notice of its intention to review the conditions of this resource consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the resource consent and which it is appropriate to deal with at a later stage, including (but not limited to):

- (a) any cumulative adverse effect on a waterway arising from abstractions
- (b) amending the flow in Omārama Stream at which abstraction is required to be reduced or discontinued.

Lapse

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

Advice notes:

- *In relation to the lake monitoring required under Condition 65, it is anticipated that all consent holders subject to this condition would coordinate and cooperate together to ensure that the lake water quality monitoring is undertaken and the costs of that monitoring is shared between those consent holders. The Canterbury Regional Council may provide resources to facilitate that coordination and recover the costs of that facilitation from the relevant resource consent holders as a cost of supervising and administering the resource consents. Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders and may be the subject of enforcement proceedings.*
- *If any additional land use consents are required to carry out the proposed activity, those consents must be obtained before giving effect to this consent.*

Diversion and take of water

1. For the period up until conversion to spray irrigation or five years from the commencement of this consent, whichever occurs first, water shall only be diverted, taken and used for border dyke irrigation from Twaddles Creek at or about map reference NZMS 260 H40: 6029-1981 at a rate not exceeding 100 litres per second and with a volume not exceeding 8,640 cubic metres per day.
2. On conversion to spray irrigation or at five years from the commencement of this consent, whichever occurs first:
 - (a) the divert, take and use shall reduce to 17 litres per second from Omārama Stream at or about map reference NZMS 260 H40: 6029-1981; and
 - (b) the total volume taken for spray irrigation, shall not exceed 144,000 cubic metres between 1 July and the following 30th June.

Use of water

3. Water taken shall be used for the border dyke irrigation of 15 hectares and once converted to spray irrigation, for 24 hectares of crops and pasture, within the area of land marked as "Dunstan Peaks (Twaddles Creek) Irrigation Area" on the attached **Plan CRC011361** that forms part of this consent.
4. The combined irrigation area under consents CRC011361A, B, C & D shall not exceed 342 hectares at any one time.
5. For the exercise of all spray irrigation systems, there shall be a minimum 5 metre setback, where there is no irrigation, from any permanently flowing waterways within all of the irrigation areas marked on **Plan CRC011361**.
6. The consent holder shall take all practicable steps to:
 - (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
7. For so long as any water races remain, the consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.

Conversion

8. The consent holder shall within a period of 5 years from the commencement date of this consent, convert to spray irrigation the existing systems at Twin Burn and Dunstan Peaks and advise the Canterbury Regional Council as to the staging of any conversion.
9. The spray system at Clifton Downs cannot be completed prior to the conversion to spray irrigation at Dunstan Peaks and Twin Burn
10. Any rights to continue border dyke or other non-spray method of irrigation shall cease 5 years from the date of this consent.
11. The consent holder shall advise the Canterbury Regional Council of the completion of the conversion prior to the commencement and use of the new completed spray system.
12. The consent holder shall provide to the Canterbury Regional Council annually upon request:

- (a) An update on the conversion programme set out in these conditions;
- (b) An irrigation design plan of the areas to be converted under this consent within the next 12 months; and
- (c) Verification of the post conversion irrigation areas for the previous 12 month period.

Minimum flow

13. Subject to Condition 16:

- (a) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream, as estimated by the Canterbury Regional Council, at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	500
Tara Hills Recorder	NZMS 260 H39:624-260	250

- (b) for the period 1 May to 31 October the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream as estimated by the Canterbury Regional Council at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	1200
Tara Hills Recorder	NZMS 260 H39:624-260	750

- (c) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall be reduced to half the maximum rate noted in condition (1) above, whenever the flow in the Omārama Stream at the Omārama Station Bridge recorder site (at or about map reference NZMS 260 H39:678-306), as estimated by the Canterbury Regional Council, is at or below 800 litres per second.

14. Whenever the Canterbury Regional Council, in consultation with the Water Users Group representing all water users who are subject to this condition, has determined upon a water sharing regime which restricts abstraction from the Omārama Stream in accordance with the minimum flow of 500 litres per second at the Omārama Station Bridge recorder site, then the taking of water in accordance with that determination shall be deemed to be a compliance with Condition 15.

Water metering

15. The consent holder shall, upon conversion of an existing intake proposed to be utilised for the spray irrigation system and for new intakes, install:

- (a) water meters that have an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a locations that will ensure the total take of water from Twaddles Creeks is measured; and
- (b) a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.

16. If the water meter specified in Condition 17(a) is not an electromagnetic or ultrasonic meter, the consent holder shall, prior to the first exercise of this consent install or make available an easily accessible straight pipe(s) at a location where the total water take is passing through,

with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system, to allow the Canterbury Regional Council to conduct independent measurements.

17. The measuring and recording device(s) specified in Condition 17 shall:
- (a) 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);
 - (b) 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;
 - (c) unless certified by a suitably qualified person that telemetry is not feasible, 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.
 - (d) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions;
 - (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.
18. No data in the recording device(s) shall be deliberately changed or deleted.
19. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 17 are at all times fully functional and meet the accuracy standard stated in that condition.
20. Within one month of the installation of the measuring or recording device(s) specified in Condition 17 (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 these conditions.
21. At five yearly intervals or at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying that:
- (a) the water meter(s) is measuring the rate of water taken as specified in these conditions; and
 - (b) the tamper-proof electronic recording device is operating as specified in these conditions.

Fish Screen

22. The consent holder shall, within a period of 5 years from the commencement date of this consent and on conversion to spray irrigation (whichever occurs earlier) install a fish screen with a maximum mesh width and height size of 3 millimetres or slot width and height of 2 millimetres across the intake to ensure that fish and fish fry are prevented from passing through the intake screen.

23. The fish screen shall be positioned to ensure that there is unimpeded fish passage to and from the waterway and to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the screen face.
24. The fish screen shall be designed and installed to ensure that:
- (a) the majority of the screen surface is oriented parallel to the direction of water flow; and
 - (b) where practicable, the screen is positioned in the water column a minimum of 300 millimetres above the bed of the waterway and a minimum of one screen radius from the surface of the water; and
 - (c) the approach velocity perpendicular to the face of the screen shall not exceed 0.06 metres per second if no self-cleaning mechanism exists or 0.12 metres per second if a self-cleaning mechanism is operational; and
 - (d) the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.
 - (e) The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 24 to 26 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.
25. 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 24 to 26 inclusive of this consent.
26. 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

27. For the purposes of interpretation of the conditions of this consent the DPL Properties (which includes Twin Burn Station, Dunstan Peaks Station and Clifton Downs) shall be defined as the areas shown on Maps A-D in Section 2 of the Farm Environmental Management Plan attached to these conditions and marked **CRC011361-A** .
28. The consent holder shall prepare once per year:
- (a) an Overseer[®] nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
 - (b) a report of the annual farm nutrient loading for the DPL Properties using the model Overseer[®] (AgResearch model version number 5.4.3 or later).
29. When undertaking the modelling outlined in Condition 30, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
30. A copy of the reports prepared in accordance with Condition 30 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
31. Following conversion the consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs)) as estimated in accordance with Condition 30 from the DPL Properties does not exceed 20,964 kg of Nitrogen and 675 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.
32. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the earlier of the first full year (1 July to 30 June)

following completion of the irrigation conversion or five years from the commencement of consent.

33. 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
34. The consent holder shall at all times comply with the Farm Environmental Management Plan (FEMP) for the DPL Properties in particular, the mitigation measures and monitoring set out in section 5 of the FEMP, a copy of which is attached to these conditions and marked **CRC011361-A** and forms part of these conditions.
35. Subject to Condition 36, the consent holder shall implement, and update annually the FEMP for the DPL Properties. 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 DPL Properties 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.
36. 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.
37. 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 35 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.
38. Changes may be made to the DPL Properties 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

39. 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 7,017 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 33. 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 33. 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

40. 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.
41. 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.
42. 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.
43. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September.
44. 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.
45. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
46. 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.
47. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
48. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.
49. Where practicable, the consent holder shall:
 - (a) use direct drilling as the principal method for establishing pastures; and
 - (b) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

Irrigation Infrastructure

50. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:
 - (a) designed and certified by a suitably qualified independent expert holding a National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request; and
 - (b) tested within 12 months of the first installation of the new irrigation infrastructure and afterwards every five years in accordance with the 'Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007' (code of practice) by a suitably qualified independent expert.
51. Within two months of the testing referred to in Condition 52(b) the expert shall prepare a report outlining their findings and shall identify any changes needed to comply with the code of practice. Any such changes shall be implemented within five years from the date of the report.

A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.

52. If existing irrigation infrastructure is being used, the consent holder shall obtain an evaluation report prepared by a suitably qualified person, on the following terms:
- (a) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
 - (b) This report shall be obtained within three months of the first exercise of the consent.
 - (c) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
 - (d) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

River water quality monitoring and response

53. The water quality of Omārama Stream shall be monitored within six months of the first exercise of this consent as follows:
- (a) The location for monitoring of Omārama Stream shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
 - i. Map reference: NZMS 260 H40: 614-161 immediately upstream of all irrigation takes on Omārama Stream.
 - ii. Map reference: NZMS 260 H40 614-193 and H39: 606-246 downstream of the discharge.
 - (b) Water quality variables monitored shall include:
 - i. dissolved inorganic nitrogen (DIN);
 - ii. dissolved reactive phosphorus (DRP);
 - iii. dissolved oxygen;
 - iv. conductivity;
 - v. turbidity;
 - vi. periphyton biomass as chlorophyll *a* per square metre (chl *a*); and
 - vii. *E. Coli*.
 - (c) This monitoring may be carried out on an individual basis, or may be prepared in collaboration with other consent holders, or on a collective basis by a suitable independent body appointed by all relevant consent holders in the sub catchment.
 - (d) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
 - (e) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring river water quality and periphyton biomass. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
 - (f) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person who demonstrates that they understand the appropriate methods to use for surface water quality sampling, including preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in

accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.

- (g) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ.
 - (h) The results of all sampling shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
54. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of the monitoring sites specified in Condition 55 over the period December to April is greater than 0.08 mg/L of DIN; or 0.005 mg/L DRP; or 50 mg chl *a*/ m² (early warning trigger) but does not exceed 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the early warning trigger.
55. The reports referred to in Condition 56 and 61 shall:
- (a) be prepared by an expert review panel consisting of two qualified and experienced independent scientists. One of the scientists shall be nominated by the Canterbury Regional Council, and the other shall be appointed by the consent holder; and
 - (b) include the experts' conclusion on whether the exceedance(s) were as a result of natural influences, one off events, or in whole or part by nutrient loss associated with the irrigation authorised by this consent; and
 - (c) include an assessment as to whether the exceedance measured by the monitoring is likely to continue; and
 - (d) be completed by 30 July following the sampling; and
 - (e) be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
56. If both the authors of the report prepared in accordance with Condition 57 conclude, after considering all the relevant available information (including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council) that either:
- (a) the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent; or
 - (b) that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the relevant monitoring site,
- then no further action needs to be undertaken by the consent holder.
57. If Condition 58 is not satisfied, then:
- (a) the NDA, as specified in Condition 33, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the total authorised irrigation area developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
58. In relation to the Remedial Action Plan referred to in Condition 59(b) and 63(b)(b):
- (a) It shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the early warning trigger is returned as soon

as practicable to and maintained below the average sample results of 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger) for the relevant monitoring site, over the period December to April.

- (b) It shall be prepared by a suitably qualified and experienced person using Overseer or an equivalent method to demonstrate that the actions to be undertaken will achieve the necessary nutrient reductions as soon as practicable.
 - (c) If the Remedial Action Plan is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment a common Remedial Action Plan shall be deemed to comply with this condition.
 - (d) Any actions required by the Remedial Action Plan shall be incorporated into the consent holder's FEMP. The amended FEMP shall be implemented as soon as physically possible.
 - (e) The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
59. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of monitoring sites specified in Condition 55 over the period December to April is greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the environmental standard trigger. This report shall satisfy the requirements specified in Condition 57.
60. If both the authors of the report prepared in accordance with Condition 61 conclude, after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, that the cause of the breach of the environmental standard trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent, then no further action needs to be undertaken by the consent holder.
61. If the report prepared in accordance with Condition 61 concludes that the environmental standard trigger has been exceeded because of farm land use practices, then:
- (a) the NDA, as specified in Condition 33, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedance) under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
62. If a required reduction in nutrient load is in effect under Condition 59(a) or 63(a) and monitoring for that period shows that the average sample results for any of the monitoring sites over the period December to April is:
- (a) greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then there shall be a further NDA reduction of 10% x IPF for the subsequent irrigation season.
 - (b) less than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), but greater than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) less than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then for the subsequent season no NDA reduction shall be required under this condition, and the full NDA for the property, as specified in Condition 33 shall be restored.

Lake water quality monitoring and response

63. The water quality of the Ahuriri Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:
- (a) Locations:
 - i. Ahuriri Arm, Map reference: NZMS 260 H39:8027-2667
 - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371
 - (b) Depths: depth integrated 0-10m, 25m, 50m
 - (c) Water quality variables:
 - i. total nitrogen;
 - ii. ammonia;
 - iii. nitrate;
 - iv. nitrite;
 - v. total Kjeldahl nitrogen;
 - vi. total phosphorus;
 - vii. dissolved reactive phosphorus;
 - viii. Secchi disc depth; and
 - ix. chlorophyll *a*.
 - (d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
 - i. $TLc = 2.22 + 2.54 \log(\text{chlorophyll } a)$
 - ii. $TLp = 0.218 + 2.92 \log(\text{total phosphorus})$
 - iii. $TLn = -3.61 + 3.01 \log(\text{total nitrogen})$
 - iv. $TLI = \Sigma (TLc + TLp + TLn)/3$
 - (e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
 - (f) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring lake water quality. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
 - (g) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person that demonstrates that they understand the appropriate methods to use for lake water quality sampling, including depth integrated sampling, and preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
 - (h) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ and shall be capable of analysing the variables listed in subparagraph c above with detection limits generally recognised by the scientific community as appropriate for oligotrophic lakes.

- (i) The results of all sampling including the calculated average summer TLI, shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
64. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then:
- (a) the NDA, as specified in Condition 33, 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. 342 irrigated hectares divided by the total farm area of 7,017 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.
65. If a reduction in nutrient loading is required under Condition 66(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the monitoring site over the period December to April:
- (a) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (b) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 33 shall be restored.
66. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 33, 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. 342 irrigated hectares divided by the total farm area of 7,017 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.
67. If a reduction in nutrient loading is required under Condition 68(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April:
- (a) continues to be greater than 3.0 then there shall be a further NDA reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season.
 - (b) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 33 shall be restored.
68. The nutrient load reductions and investigation referred to in Conditions 66 to 69 inclusive shall not be required if a two person expert scientist panel (with one expert nominated by the Canterbury Regional Council) both conclude after considering all the relevant available information (including catchment resource consent compliance, FEMP compliance monitoring

pertaining to this consent and audit reports made available by the Canterbury Regional Council) that the cause of the breach of the early warning trigger or environmental standard (as applicable) was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.

Review of conditions

69. The Canterbury Regional Council may, once per year, on any of the last five working days of March or July serve notice of its intention to review the conditions of this resource consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the resource consent and which it is appropriate to deal with at a later stage, including (but not limited to):

- (a) any cumulative adverse effect on a waterway arising from abstractions
- (b) amending the flow in Omārama Stream at which abstraction is required to be reduced or discontinued.

Lapse

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

Advice notes:

- *In relation to the lake monitoring required under Condition 65, it is anticipated that all consent holders subject to this condition would coordinate and cooperate together to ensure that the lake water quality monitoring is undertaken and the costs of that monitoring is shared between those consent holders. The Canterbury Regional Council may provide resources to facilitate that coordination and recover the costs of that facilitation from the relevant resource consent holders as a cost of supervising and administering the resource consents. Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders and may be the subject of enforcement proceedings.*
- *If any additional land use consents are required to carry out the proposed activity, those consents must be obtained before giving effect to this consent.*

Diversion and take of water

1. Water shall be diverted, taken and used for spray irrigation from Omārama Stream between map references NZMS 260 H40:6163-1866 and NZMS 260 H40: 6139-1922 at a rate not exceeding 125 litres per second and with a volume not exceeding 10,800 cubic metres per day.
2. The total volume of water taken, shall not exceed 1,089,000 cubic metres between 1 July and the following 30th June.
3. The taking of this water shall only occur once border dyke and irrigation at Twin Burn and Dunstan Peaks under consents CRC011361A, B and C is converted to spray irrigation
4. Water shall only be temporarily diverted within the bed of Omārama Stream as follows:
 - (a) diversion shall only be for the purpose of installation and maintenance of a submerged gallery intake or concrete weir structure, in accordance with consent CRC011363;
 - (b) diversion shall only be over a length of the bed of less than 50 metres, located in accordance with Condition 1; and
 - (c) diversion shall not impede fish passage or cause the stranding of fish in pools or channels.
 - (d) For the period of diversion, all water diverted shall remain within the bed.
 - (e) When diversion ceases, water shall be returned to its original course.

Use of water

5. Water taken shall be used for the border dyke irrigation of 15 hectares and once converted to spray irrigation, for 24 hectares of crops and pasture, within the area of land marked as "Clifton Downs Irrigation Area" on the attached **Plan CRC011361** that forms part of this consent.
6. The combined irrigation area under consents CRC011361A, B, C & D shall not exceed 342 hectares at any one time.
7. For the exercise of all spray irrigation systems, there shall be a minimum 5 metre setback, where there is no irrigation, from any permanently flowing waterways within all of the irrigation areas marked on **Plan CRC011361**.
8. The consent holder shall take all practicable steps to:
 - (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
 - (b) Avoid leakage from pipes and structures; and
 - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
9. For so long as any water races remain, the consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.

Conversion

10. The consent holder shall within a period of 5 years from the commencement date of this consent, convert to spray irrigation the existing systems at Twin Burn and Dunstan Peaks and advise the Canterbury Regional Council as to the staging of any conversion.

11. The spray system at Clifton Downs cannot be completed prior to the conversion to spray irrigation at Dunstan Peaks and Twin Burn
12. Any rights to continue border dyke or other non-spray method of irrigation shall cease 5 years from the date of this consent.
13. The consent holder shall advise the Canterbury Regional Council of the completion of the conversion prior to the commencement and use of the new completed spray system.
14. The consent holder shall provide to the Canterbury Regional Council annually upon request:
 - (a) An update on the conversion programme set out in these conditions;
 - (b) An irrigation design plan of the areas to be converted under this consent within the next 12 months; and
 - (c) Verification of the post conversion irrigation areas for the previous 12 month period.

Minimum flow

15. Subject to Condition 16:

- (a) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream, as estimated by the Canterbury Regional Council, at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	500
Tara Hills Recorder	NZMS 260 H39:624-260	250

- (b) for the period 1 May to 31 October the taking of water for irrigation purposes in terms of this consent shall cease whenever the flow in the Omārama Stream as estimated by the Canterbury Regional Council at either of the following sites is at or below the following flows.

Site	Map Reference	Flow (Litres per second)
Omārama Station Bridge	NZMS 260 H39:678-306	1200
Tara Hills Recorder	NZMS 260 H39:624-260	750

- (c) for the period 1 November to 30 April the taking of water for irrigation purposes in terms of this consent shall be reduced to half the maximum rate noted in condition (1) above, whenever the flow in the Omārama Stream at the Omārama Station Bridge recorder site (at or about map reference NZMS 260 H39:678-306), as estimated by the Canterbury Regional Council, is at or below 800 litres per second.

16. Whenever the Canterbury Regional Council, in consultation with the Water Users Group representing all water users who are subject to this condition, has determined upon a water sharing regime which restricts abstraction from the Omārama Stream in accordance with the minimum flow of 500 litres per second at the Omārama Station Bridge recorder site, then the taking of water in accordance with that determination shall be deemed to be a compliance with Condition 15.

Water metering

17. The consent holder shall, upon conversion of an existing intake proposed to be utilised for the spray irrigation system and for new intakes, install:

- (a) water meters that have an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a locations that will ensure the total take of water from Omārama Stream is measured; and
 - (b) a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.
18. If the water meter specified in Condition 17(a) is not an electromagnetic or ultrasonic meter, the consent holder shall, prior to the first exercise of this consent install or make available an easily accessible straight pipe(s) at a location where the total water take is passing through, with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system, to allow the Canterbury Regional Council to conduct independent measurements.
19. The measuring and recording device(s) specified in Condition 17 shall:
- (a) 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);
 - (b) 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;
 - (c) unless certified by a suitably qualified person that telemetry is not feasible, 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.
 - (d) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions;
 - (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.
20. No data in the recording device(s) shall be deliberately changed or deleted.
21. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 17 are at all times fully functional and meet the accuracy standard stated in that condition.
22. Within one month of the installation of the measuring or recording device(s) specified in Condition 17 (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 these conditions.
23. 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 these conditions; and

- (b) the tamper-proof electronic recording device is operating as specified in these conditions.

Fish Screen

24. If a submerged gallery intake is used to abstract water under this consent, the following conditions shall apply:
- (a) The consent holder shall ensure that water is abstracted using a gallery intake and shall be designed to prevent native and exotic fish species from entering the system.
 - (b) The fish screen shall be designed by a person with experience in freshwater ecology and fish screening techniques, and constructed in a manner that ensures the principals of the NIWA fish screening guidelines (Fish Screening: Good Practice Guidelines for Canterbury, NIWA Client Report 2007-092, October 2007, or other revision of these guidelines. (Copy available on www.ecan.govt.nz)) are achieved.
 - (c) No water may be taken in terms of this permit until, upon completion of the intake structure a report is provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager. The report shall be prepared by the consent holder for certification and shall demonstrate compliance with the following:
 - i. Design plan for the gallery specifying gallery dimensions;
 - ii. Detail of depths and sizes of layers of gravel over the gallery;
 - iii. Photographic evidence of key stages of construction of the gallery, including demonstrating compliance with gravel specifications in sub clause (c)(ii) above; and
 - iv. Any ongoing maintenance required by the manufacturer is carried out in accordance with their specifications.
 - (d) The intake structure shall be maintained in good working order. Records shall be kept of all inspections and maintenance. And those records shall be provided to the Canterbury Regional Council upon request.
25. If the intake structure used to abstract water under this consent is not a submerged gallery intake, the following conditions shall apply:
- (a) The consent holder shall, within a period of 5 years from the commencement date of this consent and on conversion to spray irrigation (whichever occurs earlier) install a fish screen with a maximum mesh width and height size of 3 millimetres or slot width and height of 2 millimetres across the intake to ensure that fish and fish fry are prevented from passing through the intake screen.
 - (b) The fish screen shall be positioned to ensure that there is unimpeded fish passage to and from the waterway and to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the screen face.
 - (c) The fish screen shall be designed and installed to ensure that:
 - i. the majority of the screen surface is oriented parallel to the direction of water flow; and
 - ii. where practicable, the screen is positioned in the water column a minimum of 300 millimetres above the bed of the waterway and a minimum of one screen radius from the surface of the water; and
 - iii. 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
 - iv. the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.

- (d) The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 24 to 26 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.
- (e) 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 24 to 26 inclusive of this consent.
- (f) The fish screen shall be maintained in good working order. Records shall be kept of all inspections and maintenance, and those records shall be provided to Environment Canterbury upon request.

Nutrient Loading

- 26. For the purposes of interpretation of the conditions of this consent the DPL Properties (which includes Twin Burn Station, Dunstan Peaks Station and Clifton Downs) shall be defined as the areas shown on Maps A-D in Section 2 of the Farm Environmental Management Plan attached to these conditions and marked **CRC011361-A**.
- 27. The consent holder shall prepare once per year:
 - (a) an Overseer[®] nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
 - (b) a report of the annual farm nutrient loading for the DPL Properties using the model Overseer[®] (AgResearch model version number 5.4.3 or later).
- 28. When undertaking the modelling outlined in Condition 30, 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 30 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
- 30. Following conversion the consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs)) as estimated in accordance with Condition 30 from the DPL Properties does not exceed 20,964 kg of Nitrogen and 675 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 earlier of the first full year (1 July to 30 June) following completion of the irrigation conversion or five years 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 Farm Environmental Management Plan (FEMP) for the DPL Properties in particular, the mitigation measures and monitoring set out in section 5 of the FEMP, a copy of which is attached to these conditions and marked **CRC011361-A** and forms part of these conditions.
- 34. Subject to Condition 36, the consent holder shall implement, and update annually the FEMP for the DPL Properties. 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 DPL Properties 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 35 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 DPL Properties 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 7,017 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 33. 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 33. 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 31st May and 1st 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:
 - (a) use direct drilling as the principal method for establishing pastures; and
 - (b) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

Irrigation Infrastructure

49. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:
 - (a) designed and certified by a suitably qualified independent expert holding a National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request; and
 - (b) tested within 12 months of the first installation of the new irrigation infrastructure and afterwards every five years in accordance with the 'Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007' (code of practice) by a suitably qualified independent expert.
50. Within two months of the testing referred to in Condition 52(b) the expert shall prepare a report outlining their findings and shall identify any changes needed to comply with the code of practice. Any such changes shall be implemented within five years from the date of the report. A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.
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:
 - (a) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
 - (b) This report shall be obtained within three months of the first exercise of the consent.
 - (c) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
 - (d) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

River water quality monitoring and response

52. The water quality of Omārama Stream shall be monitored within six months of the first exercise of this consent as follows:
- (a) The location for monitoring of Omārama Stream shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
 - i. Map reference: NZMS 260 H40: 614-161 immediately upstream of all irrigation takes on Omārama Stream.
 - ii. Map reference: NZMS 260 H40 614-193 and H39: 606-246 downstream of the discharge.
 - (b) Water quality variables monitored shall include:
 - i. dissolved inorganic nitrogen (DIN);
 - ii. dissolved reactive phosphorus (DRP);
 - iii. dissolved oxygen;
 - iv. conductivity;
 - v. turbidity;
 - vi. periphyton biomass as chlorophyll *a* per square metre (chl *a*); and
 - vii. *E. Coli*.
 - (c) This monitoring may be carried out on an individual basis, or may be prepared in collaboration with other consent holders, or on a collective basis by a suitable independent body appointed by all relevant consent holders in the sub catchment.
 - (d) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
 - (e) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring river water quality and periphyton biomass. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
 - (f) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person who demonstrates that they understand the appropriate methods to use for surface water quality sampling, including preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
 - (g) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ.
 - (h) The results of all sampling shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
53. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of the monitoring sites specified in Condition 55 over the period December to April is greater than 0.08 mg/L of DIN; or 0.005 mg/L DRP; or 50 mg chl *a*/ m² (early warning trigger) but does not exceed 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m²

(environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the early warning trigger.

54. The reports referred to in Condition 56 and 61 shall:

- (a) be prepared by an expert review panel consisting of two qualified and experienced independent scientists. One of the scientists shall be nominated by the Canterbury Regional Council, and the other shall be appointed by the consent holder; and
- (b) include the experts' conclusion on whether the exceedance(s) were as a result of natural influences, one off events, or in whole or part by nutrient loss associated with the irrigation authorised by this consent; and
- (c) include an assessment as to whether the exceedance measured by the monitoring is likely to continue; and
- (d) be completed by 30 July following the sampling; and
- (e) be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.

55. If both the authors of the report prepared in accordance with Condition 57 conclude, after considering all the relevant available information (including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council) that either:

- (a) the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent; or
- (b) that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the relevant monitoring site,

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

56. If Condition 58 is not satisfied, then:

- (a) the NDA, as specified in Condition 33, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the total authorised irrigation area developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
- (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.

57. In relation to the Remedial Action Plan referred to in Condition 59(b) and 63(b)(b):

- (a) It shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the early warning trigger is returned as soon as practicable to and maintained below the average sample results of 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl a/ m² (early warning trigger) for the relevant monitoring site, over the period December to April.
- (b) It shall be prepared by a suitably qualified and experienced person using Overseer or an equivalent method to demonstrate that the actions to be undertaken will achieve the necessary nutrient reductions as soon as practicable.
- (c) If the Remedial Action Plan is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment a common Remedial Action Plan shall be deemed to comply with this condition.
- (d) Any actions required by the Remedial Action Plan shall be incorporated into the consent holder's FEMP. The amended FEMP shall be implemented as soon as physically possible.

- (e) The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
58. If the monitoring undertaken in accordance with Condition 55 shows that the average sample result for any of monitoring sites specified in Condition 55 over the period December to April is greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the environmental standard trigger. This report shall satisfy the requirements specified in Condition 57.
59. If both the authors of the report prepared in accordance with Condition 61 conclude, after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, that the cause of the breach of the environmental standard trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent, then no further action needs to be undertaken by the consent holder.
60. If the report prepared in accordance with Condition 61 concludes that the environmental standard trigger has been exceeded because of farm land use practices, then:
- (a) the NDA, as specified in Condition 33, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedance) under this resource consent divided by the total farm area (i.e. 342 irrigated hectares divided by the total farm area of 7,017 hectares); and
 - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 60.
61. If a required reduction in nutrient load is in effect under Condition 59(a) or 63(a) and monitoring for that period shows that the average sample results for any of the monitoring sites over the period December to April is:
- (a) greater than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), then there shall be a further NDA reduction of 10% x IPF for the subsequent irrigation season.
 - (b) less than 0.18 mg/L of DIN; or 0.007 mg/L DRP; or 90 mg chl *a*/ m² (environmental standard trigger), but greater than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) less than 0.08 mg/L of DIN; or 0.005 mg/L of DRP; or 50 mg chl *a*/ m² (early warning trigger), then for the subsequent season no NDA reduction shall be required under this condition, and the full NDA for the property, as specified in Condition 33 shall be restored.

Lake water quality monitoring and response

62. The water quality of the Ahuriri Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:
- (a) Locations:
 - i. Ahuriri Arm, Map reference: NZMS 260 H39:8027-2667
 - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371
 - (b) Depths: depth integrated 0-10m, 25m, 50m
 - (c) Water quality variables:
 - i. total nitrogen;
 - ii. ammonia;

- iii. nitrate;
 - iv. nitrite;
 - v. total Kjeldahl nitrogen;
 - vi. total phosphorus;
 - vii. dissolved reactive phosphorus;
 - viii. Secchi disc depth; and
 - ix. chlorophyll *a*.
- (d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
- i. $TLc = 2.22 + 2.54 \log(\text{chlorophyll } a)$
 - ii. $TLp = 0.218 + 2.92 \log(\text{total phosphorus})$
 - iii. $TLn = -3.61 + 3.01 \log(\text{total nitrogen})$
 - iv. $TLI = \Sigma (TLc + TLp + TLn)/3$
- (e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (f) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring lake water quality. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.
- (g) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person that demonstrates that they understand the appropriate methods to use for lake water quality sampling, including depth integrated sampling, and preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.
- (h) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ and shall be capable of analysing the variables listed in subparagraph c above with detection limits generally recognised by the scientific community as appropriate for oligotrophic lakes.
- (i) The results of all sampling including the calculated average summer TLI, shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.
63. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then:
- (a) the NDA, as specified in Condition 33, 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. 342 irrigated hectares divided by the total farm area of 7,017 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.

64. If a reduction in nutrient loading is required under Condition 66(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the monitoring site over the period December to April:
- (a) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (b) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 33 shall be restored.
65. If the monitoring undertaken in accordance with Condition 65 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 33, 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. 342 irrigated hectares divided by the total farm area of 7,017 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.
66. If a reduction in nutrient loading is required under Condition 68(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for either the Ahuriri Arm monitoring site or the Lower Benmore monitoring site over the period December to April:
- (a) continues to be greater than 3.0 then there shall be a further NDA reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season.
 - (b) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 33 shall be restored.
67. The nutrient load reductions and investigation referred to in Conditions 66 to 69 inclusive shall not be required if a two person expert scientist panel (with one expert nominated by the Canterbury Regional Council) both conclude after considering all the relevant available information (including catchment resource consent compliance, FEMP compliance monitoring pertaining to this consent and audit reports made available by the Canterbury Regional Council) that the cause of the breach of the early warning trigger or environmental standard (as applicable) was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.

Review of conditions

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

Lapse

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

Advice notes:

- *In relation to the lake monitoring required under Condition 65, it is anticipated that all consent holders subject to this condition would coordinate and cooperate together to ensure that the lake water quality monitoring is undertaken and the costs of that monitoring is shared between those consent holders. The Canterbury Regional Council may provide resources to facilitate that coordination and recover the costs of that facilitation from the relevant resource consent holders as a cost of supervising and administering the resource consents. Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders and may be the subject of enforcement proceedings.*
- *If any additional land use consents are required to carry out the proposed activity, those consents must be obtained before giving effect to this consent.*

Diversion of water

1. Water shall be diverted for augmentation purposes, into an irrigation augmentation race from Middle Gully at or about map reference NZMS 260 H40: 6133-1920 and/or from Omārama Stream between approximate map references NZMS 260 H40:6163-1866 and H40: 6139-1922 at a combined rate not exceeding 150 litres per second and with a volume not exceeding 12,960 cubic metres per day.

Metering

2. Prior to commencing the diversion of water from Omārama Stream described in Condition 1, the consent holder shall install:
 - (a) a water level measuring device in a location that will enable the determination of the continuous rate of flow and volume of water being diverted into the augmentation race to within an accuracy of ten percent; and
 - (b) a tamper-proof electronic recording device such as a data logger(s) that shall time stamp a pulse from the flow meter at least once every 15 minutes.
3. The measuring device shall, as far as is practicable, be installed at a site likely to retain a stable relationship between flow and water level. The measuring device shall be installed in accordance with the manufacturer's instructions.
4. All data from the recording device and the corresponding relationship between the water level and flow, shall be provided to the Canterbury Regional Council annually in the month of June, and shall be accessible and available for downloading at all times by the Canterbury Regional Council.
5. The measuring and recording device(s) specified in Condition 2 shall:
 - (a) 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);
 - (b) 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;
 - (c) unless certified by a suitably qualified person that telemetry is not feasible, 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.
 - (d) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions;
 - (a) be maintained throughout the duration of the consent in accordance with the manufacturer's instructions; and
 - (b) be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.
6. No data in the recording device(s) shall be deliberately changed or deleted.
7. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 2 are at all times fully functional and meet the accuracy standard stated in that condition.

8. Within one month of the installation of the measuring or recording device(s) specified in Conditions 2 (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 these conditions.
9. 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 these conditions; and
 - (b) the tamper-proof electronic recording device is operating as specified in these conditions

Administrative conditions

10. The Canterbury Regional Council may, once per year, on any of the last 5 working days of March or July serve notice of its intention to review the conditions of this resource consent for the purposes of dealing with any adverse effect on the environment, which may arise from the exercise of the resource consent and which it is appropriate to deal with at a later stage.
11. The lapsing date for the purposes of section 125 shall be 5 years from the commencement of this consent.

Omārama Stream Discharge

1. Water shall only be discharged to Omārama Stream:
 - (a) at or about map reference NZMS 260 H40: 6165-1852, at a rate not exceeding 170 litres per second; and
 - (b) at or about map reference NZMS 260 H40: 6170-1810, at a rate not exceeding 350 litres per second.
2. The discharge specified in Condition 1 shall cease on conversion of the Twinburn Station Irrigation Area to spray under consent CRC011361A, or five years from the commencement of this consent, whichever occurs first.

Middle Gully Discharge

3. Water shall only be discharged to Middle Gully between approximate map reference NZMS 260 H40: 6122-1864 and H40: 6127-1881 at a rate not exceeding 290 litres per second.
4. The discharge specified in Condition 3 shall cease on conversion of the Dunstan Peaks (Middle Gully) Irrigation Area to spray under consent CRC011361B, or five years from the commencement of this consent, whichever occurs first.

Twaddles Creek Discharge

5. Water shall only be discharged to Twaddles Creek at or about map reference NZMS 260 H40:6073-2010 at a rate not exceeding 250 litres per second.
6. On conversion of the Dunstan Peaks (Twaddles Creek) Irrigation Area to spray under consent CRC011361C or at five years from the commencement of this consent, whichever occurs first, the discharge specified at Condition 5 shall reduce to a rate not exceeding 150 litres per second and shall only be the discharge water from the augmentation race authorised under resource consent CRC011361E.

Operation and Maintenance

7. All practicable measures shall be undertaken to avoid erosion of the bed or banks of the Omārama Stream, Middle Gully and Twaddles Creek occurring as a result of the discharge.
8. In the event of any erosion occurring to the bed or banks of the Omārama Stream, Middle Gully or Twaddles Creek as a result of the discharge, the consent holder shall be responsible for rectifying the situation as soon as practicable.
9. The discharge, after reasonable mixing, shall not cause a change in the colour or a reduction of the clarity of the receiving water body.

Administrative Conditions

10. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.
11. The lapsing date for the purposes of section 125 shall be 5 years from the commencement of consent.

Scope

1. The works shall be limited to the disturbance of the bed and banks of the Little Omārama Stream, Omārama Stream, Twaddles Creek and Middle Gully for the purpose of the placement, extension, removal or demolition associated with maintenance of intake structures and diversion channels for the diversion and abstraction of water under consent CRC011361 A - E and CRC011362.
2. The works for the new gallery or concrete weir structure located in Omārama Stream shall be limited to:
 - (a) Installation, maintenance or replacement of the intake structure within the bed, including excavation of gravel and sediments;
 - (b) Maintenance necessary to maintain adequate flow of water into the intake.

Intake Locations

3. The works carried out in accordance with Condition 1 and 2 in relation to intake structures shall be located at:
 - (a) Little Omārama Stream, at or about map reference(s) NZMS 260 H40:6346-1667;
 - (b) Omārama Stream, at or about map reference(s) NZMS 260 H40:6141-1588;
 - (c) Omārama Stream, at or about map reference(s) NZMS 260 H40:6136-1752 and between NZMS 260 H40:6163-1866 and H40: 6139-1922;
 - (d) Middle Gully, at or about map reference(s) NZMS 260 H40: 6133-1920;
 - (e) Twaddle Creek, at or about map reference(s) NZMS 260 H40:6029-1981.

Discharge Locations

4. The works carried out in accordance with Condition 1 in association with the discharge of water shall be located at:
 - (a) Twaddle Creek, at or about map reference(s) NZMS 260 H40:6073-2010;
 - (b) Omārama Stream; NZMS 260 H40: 6165-1852 and NZMS 260 H40: 6170-1810; and
 - (c) Middle Gully between approximate map reference NZMS 260 H40: 6122-1864 and H40: 6127-1881.

Limits of Works

5. Works to maintain intakes shall not exceed one day and replacement or establishment of a new intake shall not exceed two days.
6. Depth of excavation for gallery intakes will be up to 3 metres below bed level, with gallery intakes installed at a depth of at least 1 metre below bed level.
7. The extent of the earthworks at each site shall be limited to 50 metres upstream and downstream of the intake structure.
8. Excavation or the operation of vehicles/and or machinery shall not occur within 100 metres of birds which are nesting or rearing their young in the bed of the river. For the purposes of this condition, birds are defined as those bird species listed in **Schedule A**.

9. Any gravel, sand and other natural material excavated as part of the works authorised by this consent during the disturbance of the bed of Little Omārama Stream, Omārama Stream, Middle Gully and Twaddles Creek, must be deposited on, or near to, the excavation site, and shall be reshaped and formed to a state consistent with the surrounding natural riverbed.

Erosion Protection

10. Erosion and sediment control measures shall be constructed and maintained in accordance with the Environment Canterbury Erosion and Sediment Control Guidelines, and any amendments to that document.
11. Erosion controls shall be installed on all earthworks to prevent sediment from flowing into any surface water body.
12. Works shall not be undertaken in a manner likely to cause erosion of, or instability to, the banks or bed of the Little Omārama Stream, Omārama Stream, Twaddle Creek or Middle Gully; or reduce the flood-carrying capacity of these waterways.

Prior to Construction

13. The Canterbury Regional Council Compliance Monitoring Officer shall be notified at least 48 hours prior to the commencement of work.
14. Prior to commencing excavation, a copy of this resource consent shall be given to all persons undertaking activities authorised by this consent.

During Construction

15. The consent holder shall adopt the best practicable options to:
 - (a) Minimise soil disturbance and prevent soil erosion;
 - (b) Prevent sediment from flowing into any surface water; and
 - (c) Avoid placing cut or cleared vegetation, debris, or excavated material in a position such that it may enter surface water.
16. To prevent the spread of Didymo or any other aquatic pest, the consent holder shall ensure that activities authorised by this consent are undertaken in accordance with Biosecurity New Zealand's hygiene procedures.

Note: You can access the most current version of these procedures from the Biosecurity New Zealand website <http://www.biosecurity.govt.nz> or Environment Canterbury Customer Services.
17. All practicable measures shall be undertaken to minimise vehicles and machinery entering the Little Omārama Stream, Omārama Stream Twaddle Creek or Middle Gully.
 - (a) All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery.
 - (b) There shall be no storage of fuel or refuelling of vehicles and machinery within 20 metres of the bed of a river.
 - (c) Fuel shall be stored securely or removed from site overnight.
18. Machinery shall be free of plants and plant seeds prior to use in the riverbed
19. All practicable measures shall be undertaken to minimise adverse effects on property, amenity values, wildlife, vegetation, and ecological values.
20. The works shall not prevent the passage of fish, or cause the stranding of fish in pools or channels.

Accidental Discovery Protocol

21. In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall immediately:
- (a) Advise the Canterbury Regional Council of the disturbance;
 - (b) Advise the Upoko Runanga of Moeraki, or their representative, and the New Zealand Historic Places Trust, of the disturbance; and
 - (c) Cease earthmoving operations in the affected area until an area has been marked off around the site, and Kaumatua and archaeologists have given approval for the earthmoving to recommence. Note: This condition is in addition to any agreements that are in place between the consent holder and the Upoko Runanga (Cultural Site Accidental Discovery Protocol) or the New Zealand Historic Places Trust

Upon Completion

22. On completion of works, the area shall be restored to its original condition as far as practicable.
23. All spoil and other waste material from the works shall be removed from site on completion of works.

Administrative Conditions

24. The Canterbury Regional Council may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.
25. The lapsing date for the purposes of section 125 shall be 5 years from the commencement of consent.

Schedule A

South Island Pied Oystercatcher

Black Stilt

Pied Stilt

Wrybill

Banded Dotterel

Black-fronted Dotterel

Spur-winged Plover

Paradise Shelduck

Grey Duck

NZ Shoveler

Grey Teal

NZ Scaup

Black-billed Gull

Red-billed Gull

Caspian Tern

White-fronted Tern

Black-fronted Tern

White-winged Black Tern

Australasian Bittern

Marsh Crake

Spotless Crake

Cormorant/shag colonies

