

**BEFORE THE CANTERBURY REGIONAL COUNCIL**

**IN THE MATTER OF**

The Resource Management Act 1991

**AND**

**IN THE MATTER OF**

applications by **Williamson Holdings Ltd** filed as **CRC041788** and **CRC073115** for water permits to take and use surface water from the Ahuriri River for the spray irrigation of up to 1,100ha of pasture and for stock water and domestic purposes at WHL Killermont, Omārama

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

**PART B - SITE SPECIFIC DECISION**

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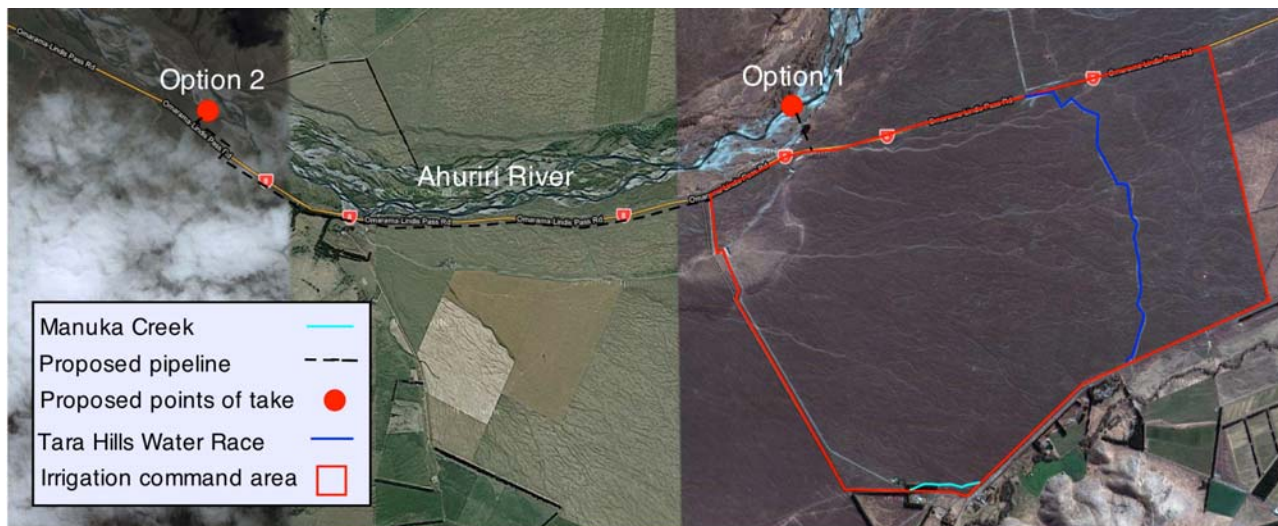
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## 1 INTRODUCTION

- 1.1 This is a decision on three applications by **Williamson Holdings Limited** (the applicant), formerly Southdown Holdings Limited. 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 has lodged a range of consents for two alternative proposals as an “either/or” situation. If all consents are granted, the applicant has advised that it will surrender the suite of consents it does not wish to exercise.
- 2.2 In essence, the applicant seeks two different means and locations of taking water from the Ahuriri River. However, the irrigation area for both options is the same. The key features of the two options are illustrated in Figure 1 and discussed further below.



*Figure 1. An aerial photo of the applicant's property showing point of take, location of the pump shed, proposed irrigation area, and proximity to the Ahuriri River. This figure is intended as a visual guide. The application and applicant's evidence was used to determine actual locations.*

- 2.3 There have been several changes to the proposal since the applications were first lodged. These are described below under the heading “modifications since notification”. The following descriptions are based on our understanding of the current options being promoted by the applicant and which form the basis of this decision.
- 2.4 The first proposal (**Option 1**) consists of water permit CRC041788 and associated works in the bed and banks of the Ahuriri River (CRC041787). This option involves abstracting the water via a gallery located in the bed of the Ahuriri River that is located adjacent to the proposed irrigation area (refer Figure 1). The water will be pumped directly from the river to the irrigation area.
- 2.5 The second proposal (**Option 2**) consists of water permit CRC073115 and associated works in the bed and banks of the Ahuriri River (CRC073113). This option involves abstracting the water via a gallery located in the bed of the Ahuriri River approximately 5 km upstream of the Option 1 point of take (see Figure 1). This water will then be conveyed via gravity to the irrigation area.
- 2.6 Both options involve taking water from the Ahuriri River at a maximum rate not exceeding 750 litres per second and a volume not exceeding 64,800 cubic metres per day and 6,600,000 cubic metres per year.
- 2.7 The applicant seeks to irrigate 1,100 hectares within a command area of 1,300 hectares. The approximate command irrigation area is shown in Figure 1 above. The water will be spray irrigated on the land using approximately 10 centre pivots.

- 2.8 The irrigated pasture will be used to support a dairy cow system. The applicant's proposal is to create three separate dairy units on the property, each with dairy cows and a wintering and milking shed for each – also referred to as a "cubicle". Full details of the proposed farm systems and effluent management system is included in our discussion of the applicant's evidence later in this decision.
- 2.9 In a response to a request for further information by the Council, the applicant advised they were seeking 67,375 cubic metres per year for stock water purposes [within the proposed allocation]. However, in the same correspondence the applicant noted its right to abstract stock water under Section 14(3)(b) of the RMA. We detail our approach to stockwater within Part A. We simply record here that the confusing circumstance we set out above was ultimately of no moment in our considerations in relation to this application.
- 2.10 The applicant is proposing for their water takes to be subject to a minimum flow in accordance with the Ahuriri Water Conservation Order (AWCO).

### **The applications**

- 2.11 The applications are for water permits to take and use surface water pursuant to section 14 of the Resource Management Act 1991 (the RMA). Consent is required under the Waitaki Catchment Water Allocation Regional Plan (WCWARP), as discussed below.
- 2.12 The applications (CRC04178 & CRC073115) were lodged with the Canterbury Regional Council (the Council) on 27 February 2004 and 23<sup>rd</sup> March 2007, respectively. The applications were publicly notified and there were a number of submissions that are referred to later in this decision. The applications are for a new activity and requested consent duration to April 2025.

### **Modifications after notification**

- 2.13 As noted above, the proposed activities are somewhat different to those originally applied for. The key change relates to the method of intake for both options.
- 2.14 As originally applied for, neither option included a gallery intake and proposed to take water from a structure in the bed of the river. Option 2 also included a diversion of water (as part of CRC073115) a discharge of water (CRC073114), and an associated erosion control and discharge structure (CRC073112).
- 2.15 On 13 August 2009, the applicant sought to withdraw Discharge Permit application CRC073114 and amend Water Permit application CRC073115 to remove the diversion aspect of the water permit (Option 2). This request was in response to the applicant wishing to amend their application to include a gallery intake for both of the Option 1 and 2 proposals.
- 2.16 However, on 20 August 2009 the applicant requested that the Council disregard their correspondence dated 13 August (advising of withdrawal of application). The applicant advised that this request to not withdraw Discharge Permit CRC073114 was due to it being unable to lodge a new application in time for the proposed works in the bed and banks of the Ahuriri River to install the proposed galleries.
- 2.17 As such, the applicant wished to keep both options as they were initially lodged as a fallback option. The applicant advised that in the near future they would seek a new application (or modify their existing consent applications) for a gallery intake.
- 2.18 Subsequent to the hearing, the Panel asked the Council if it had received any further amendments to the application or any withdrawals of the associated consents in regards to the use of the proposed galleries. The Council referred our query to the applicant who was of the opinion that the evidence presented at the hearing regarding the gallery intakes was an amendment to the applications. At the same time Council staff informed us that Land Use Consent CRC073112 had been withdrawn on the 21 October 2010. This land use consent related to the construction and maintenance of a discharge structure and erosion control measures associated with Option 2.
- 2.19 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.

- 2.20 After reviewing the information presented at the hearing by the applicant and taking into account the fact that the Consent Investigating Officers and other submitters have had the opportunity to respond to the amendment to use gallery intakes, we accept the proposed galleries as an amendment to the applications. Consequently, we have assessed the applications in the decision on the basis that the water will be taken via the proposed galleries and not as originally proposed.
- 2.21 Application CRC073115 (Option 2) originally proposed to continually divert 200 l/s of water, out of the main stem of the Ahuriri River to maintain an effective fish bypass. This water would then be discharged back into the Ahuriri River downstream. However, given the applicant chose to amend their application to use gallery intakes and our decision to accept these amendments, the 200 l/s diversion to operate the fish passage is no longer required. Consequently, the evidence relating to whether the additional 200 l/s diversion should be included in the application is no longer relevant and has not been discussed further in this decision.

### **Related consents and applications**

- 2.22 As mentioned above, there are land use consent applications for the gallery intakes associated with Option 1 (CRC041787) and Option 2 (CRC073113). We have issued separate decisions on these applications using the CRC application numbers described as a reference.
- 2.23 The application for a discharge permit associated with the earlier version of Option 2 also remains live and has not been withdrawn at the date of writing this decision. However, this application will not be required given that there is no discharge associated with the current proposals using the gallery intakes. For this reason and on the basis that the application will be withdrawn by the applicant, we consider that it is not necessary to make a decision on the discharge application.
- 2.24 In addition to the above, applications were submitted by the applicant that seek consent for the use of land for a stock holding pad, use of land to store animal effluent and the discharge of solid and liquid effluent onto the property subject to this irrigation proposal.
- 2.25 These applications were 'called-in' by the Minister for the Environment on 27 January 2010. Subsequent to this call-in the applicant withdrew these applications. We discuss the implications of the call-in and the applicant's subsequent withdrawal of the effluent applications in Part A of this decision.
- 2.26 Other applications lodged that relate to Killermont Station Farm were filed on in the name of Killermont Station Limited, namely:
- (a) Frosty Gully (CRC040180);
  - (b) Pebbly Block (CRC041331);
  - (c) Woolshed (CRC041777);
  - (d) Mānuka Creek (CRC041798).
- 2.27 Other decisions have issued for these described applications. In those decisions, as in this one, we have endeavoured to describe the application site by reference to a block name (such as Pebbly Block or, in this instance, WHL Block) and we have also utilised the CRC application numbers.

## **3 DESCRIPTION OF THE ENVIRONMENT**

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- 3.1 We set out following a summary of the description of the environment, which we have taken from the Consent Investigating Officer's Report (Report 35). The description also includes information from the applicant's application, and is intended to provide a brief overview of the environmental setting. Further description of the environment, including the relevant watercourses and current land use, is covered in the applicant's evidence reviewed subsequently.
- 3.2 The Ahuriri River rises in the Barrier Range and is primarily fed by snowmelt and rainfall runoff. Below the mountain catchment area it becomes braided as it passes through the flatter areas between Birdwood and Omārama and down to Lake Benmore.

- 3.3 The river is highly rated for its amenity values, in particular for trout fishing, picnicking, swimming, duck shooting, kayaking, canoeing and rafting. In addition to this a Black Fronted Tern Restoration Programme is situated on the Ahuriri River.
- 3.4 Both the Ahuriri River and Omārama Stream are described as Sites of Special Wildlife Importance, salmonid habitat, native bird habitat, and native vegetation habitat. Additionally there are two Department of Conservation archaeological sites (Moa- Hunter Camp and artefact findings) located adjacent to the area to be irrigated.

### **Irrigation Area**

- 3.5 The applicant describes the existing land use at the irrigation area as low intensity sheep and cattle farming. Land cover generally consists of unimproved species with a small amount of improved pasture.
- 3.6 The proposed irrigation area is located approximately 600 metres south of the Ahuriri River, and 400 metres north of Omārama Stream (see Figure 1). The irrigation command area we refer to subsequently as the WHL Block. We take that name from the description provided to us from the applicant. That name "WHL Block" was used by those providing evidence to us on this application.

### **Other Water Users**

- 3.7 Omārama Station holds resource consent CRC011354.1, to take and use water from the Ahuriri River at a location approximately 2.2 kilometres downstream of the proposed CRC041788 (Option 1) intake location.
- 3.8 Killermont Station Limited has applied to take and use water from the Ahuriri River at two locations. CRC041331 is approximately 2.2 kilometres downstream of Option 1 and CRC041777 is approximately 870 metres kilometres downstream of Option 2.
- 3.9 Using the Council's GIS database, the Consent Investigating Officer noted that there are other holders of water permits located further downstream in the Ahuriri River than those listed above.

### **Other River Users**

- 3.10 The Consent Investigating Officer noted that the New Zealand Transport Agency holds resource consent CRC001851 for bank protection works, approximately 1.5 kilometres downstream of the Option 2 proposal location. Killermont Station has applied for resource consents CRC041776 and CRC041777 to construct an intake structure and to take and use water approximately half a kilometre downstream of the Option 2 proposal. These applications are also before us for decision.

### **Site Visit**

- 3.11 We detailed our site visits in Part A and we do not repeat this information here. In addition to our helicopter flight, we visited the proposed WHL Killermont irrigation command area via Killermont Station and augered some soil profiles.

## **4 PLANNING INSTRUMENTS**

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

- 4.2 The provisions of these planning instruments critically inform our overall assessment of the applications under s104(1)(b) RMA, as discussed in Section 14 of this decision. In addition, the rules within the relevant planning instruments determine the status of the activities, as set out below.

#### **Status of the activity**

- 4.3 In our Part A decision we provide a detailed discussion of our approach to determining the status of activities. We now apply that approach to the current applications.
- 4.4 Application CRC041788 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 determining the status of this activity is the operative WCWARP. Application CRC073115 must also be assessed under the WCWARP as it was lodged at a time when the plan was already operative.
- 4.5 The following rules from the WCWARP are applicable to these applications:
- (a) Rule 2 clause (1) – The applicant proposes to comply with the minimum flows specified within the Ahuriri Water Conservation Order as specified in Row x of Table 3 of the WCWARP.
  - (b) Rule 6 – The taking of water is within the allocation limit of 275 million cubic metres for agricultural activities upstream of the Waitaki Dam (see Report 3 for annual allocation and priority tables) provided only one application is exercised. The applicant has advised that one of the applications will be withdrawn if both applications are granted.
  - (c) Rule 15 – classifying rule – discretionary activity.
- 4.6 In summary, both options are **discretionary activities** under Rule 15 of the WCWARP and resource consent is required in accordance with section 14 of the RMA.

## **5 PRELIMINARY MATTERS**

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### **Priority**

- 5.1 We discuss the issue of priority in our Part A decision and have applied that approach to these applications, including the priority order set out at Appendix B to our Part A decision.
- 5.2 The only other point of note is that the applicant has entered into an agreement that application CRC042561 by Haldon Station Limited would have higher priority than application CRC041788. This was confirmed by a letter dated 19 September 2008 to Professor Skelton. We have taken this into account, but note that it has had no material impact on our overall decision on these applications.

### **Ahuriri Water Conservation Order (AWCO)**

- 5.3 Given the location of this proposal, it is subject to the requirements of the AWCO, including ensuring that the minimum flow levels of the Ahuriri River are maintained. In accordance with section 217 RMA, we may not grant a consent that is inconsistent with the requirements of the AWCO.
- 5.4 All parties accepted the need to comply with the minimum flows in the AWCO. However, an issue of contention was the most appropriate way to ensure these flows are achieved, specifically whether the use of maximum allocation limits was appropriate for this purpose. We set out our findings on this issue in Part A and do not repeat that discussion here.

## **6 NOTIFICATION AND SUBMISSIONS**

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- 6.1 The applications were publicly notified at the same time on 4 August 2007 and 27 submissions in total were received, including:
- (a) 2 in support;
  - (b) 23 opposition; and

(c) 2 neither in support nor opposition.

6.2 Many of the received submissions are equivalent to submissions made in response to all applications notified on 4 August 2007. Table 2 is based on the relevant s42A reports and summarises those submissions that directly referenced the applications. In addition to those listed, there were other submitters that presented evidence at the hearing that was relevant to these applications. The relevant evidence from submitters is discussed in more detail later in this decision. Please note that all submissions hold equal importance, even if not specifically listed below.

**Table 1:** Submission made on Water Permit Application CRC041788 and CRC073115

Submitter	Reasons	Position
Dunstan Peaks Station	Water availability, priority, reliability of supply	Oppose
Tara Hills Station	Water availability, priority, reliability of supply	Oppose
Omārama Station Limited	Water availability, priority, reliability of supply	Oppose
Ōhau Snow Holdings	Priority over water resources	Oppose
Fish & Game NZ	That the Ahuriri Water Conservation Order minimum flows apply and that the following are addressed by way of conditions: metering, fish screens, duration, adverse effects on water quality and quantity and resulting effects on fish habitat/survival/spawning, timing of instream works, intensified land use and game bird impacts.	Oppose
Meridian Energy Ltd	Water quality, water metering and derogation	Oppose
Ōhau Company Trust	Enable other applicants equitable use of water resources	Oppose
Mr and Mrs Smithies	Alternative sources of power generation and sources of water for irrigation.	Oppose
Ms J Zusters, Ms J Kollmann, Ms R Williams and M A Rose	Adverse effects on the natural landscape values of the Mackenzie Basin and upper Waitaki catchment from infrastructure and water	Oppose
Transit NZ	Impact on Transit Infrastructure, particularly State Highway 8.	Oppose

6.3 Overall, the key issues of concern to the submitters were: ecosystems, water quality, allocations, minimum flows, natural character and landscape, efficiency and cultural values.

## 7 THE SECTION 42A REPORTS

7.1 A comprehensive officer report on the application and submissions was prepared by the Regional Council's Consents Investigating Officer (Susannah Vesey). The report was supported by specialist reports prepared by:

- (a) Claire Penman (Flow and level regimes);
- (b) Maria Bartlett (Annual allocations to activities);
- (c) Tom Heller (Hydrology and hydrogeology);
- (d) Dr Brent Clothier (Land management);
- (e) Carl Hanson (Groundwater quality);
- (f) Dr Adrian Meredith (Surface water quality);
- (g) Dr Marc Schallenberg (Lake water quality);
- (h) Dr Michael Freeman (Overview water quality and landscape effects);
- (i) Chris Glasson (Landscape effects - individual and cumulative) ;and



(j) Darren McNae (OVERSEER audit).

7.2 The report was pre-circulated in advance of the hearing. We have read and considered the content of all of the specialist reports. Points we thought of importance are briefly summarised below.

### **Other Water Users**

7.3 Ms Vesey noted that there is a number of existing water permits to divert, take, and use water from the Ahuriri River. She added that the applicant has proposed to manage this application on a minimum flow of 25 cubic metres second in accordance with the AWCO.

7.4 She noted that there are no existing users within this minimum flow/allocation 'band'. However, Killermont Station Limited has water permit applications CRC041777 and CRC041331 to take water from the Ahuriri River within this 'band' to be heard at this hearing. Ms Vesey noted that Killermont has higher priority to the water than the applicant and as such she considers Killermont Station Limited is a potentially adversely affected party.

7.5 Ms Vesey noted that the applicant advised that they are willing to enter into discussions with existing consent holders to come to a consensus on how to best manage access to water. We note that we have not been provided with any details of a consensus between these parties to date.

7.6 In her S42A report Ms Vesey suggested that given the proximity of Killermont Station's CRC041777 application to the (Option 2) proposal (approximately half a kilometre downstream), the applicant may wish to address the localised effects their proposal as a whole may have on Killermont.

7.7 At the time of writing her S42A report Ms Vesey concluded that the effects on other water users remain uncertain.

### **Water Quality**

7.8 Ms Vesey noted that the applicant has been involved with the study by Mackenzie Water Research Ltd (MWRL) on cumulative effects within the Waitaki catchment. She noted that the time her S42A Report was written, no mitigation measures had been proposed and therefore (based on the comments on other Council Consent Investigating Officers) it was premature to make adequate conclusions about the potential adverse cumulative effects.

7.9 Given the above, and absence of proposed on-farm mitigation in relation to water quality, Ms Vesey did not consider potential adverse effects to be minor.

### **Landscape**

7.10 Ms Vesey noted that the applicant had proposed to engage a landscape architect to undertake a landscape and visual amenity assessment of the effects. However, this assessment had not been provided to the Council at the time Ms Vesey compiled her report.

7.11 Mr Glasson discussed the potential landscape effects of this proposal in his S42A Report. Due to the close proximity of the site to SH8 and the lack of information regarding continuous irrigation pattern, Mr Glasson concluded that the adverse effects would be significant. At the time of writing his S42A Report he noted that no mitigation measures had been proposed.

7.12 If suggested mitigation measures were undertaken, such as creating a buffer of approximately 300m from SH8 to the irrigated land, (he noted there is a natural river terrace at a higher level than the road which could form this irrigation boundary), a continuous irrigation pattern, the edges to conform to natural landform patterns and create a recessive form intake and water movement structures, then the effects would be of a moderate level according to Mr Glasson.

7.13 Given Mr Glasson's conclusions, and the absence of proposed mitigation measures, Ms Vesey considered potential adverse effects on landscape values may be more than minor.

### **Recreational and amenity**

7.14 Ms Vesey noted that the AWCO minimum flow has been proposed by the applicant, and she considered that in setting minimum flow levels in the WCWARP, protection of recreational and

amenity values on each water body would have been taken into account. Therefore, Ms Vesey concluded that the effects of the proposed water abstraction on people, communities and amenity values are likely to be minor and acceptable.

### **Ecosystems**

- 7.15 The applicant advised they would comply with the minimum flows set out in the AWCO. Ms Vesey agreed this mitigates effects in regards to ecosystem values in relation to the proposed take of 750 litres per second.
- 7.16 In addition to a minimum flow, suitable fish screening measures are also required to prevent fish from being pulled into the intake systems according to Ms Vesey. She added, despite formal requests for further information, at the time her report was prepared, no detailed designs of the intake had been provided to the Council.
- 7.17 There are a number of submissions in opposition to this proposal raising concerns about potential effects on ecosystems. Given this, and the absence of details about the fish exclusion methods, Ms Vesey was not able to determine the scale of potential effects on fisheries. She did note, however, that subject to suitable fish exclusion methods, the applicant may be able to mitigate potential adverse effects on ecosystems.

### **Efficient and reasonable use**

- 7.18 Ms Vesey agreed that proposed annual volume was within irrigation demand using methodologies described in Policy 16(c)(ii) WCWARP. She added that the Council's GIS database indicates approximately 150 ha of the area to be irrigated has a PAW of 45 millimetres and as such she recommended a standard condition to ensure efficient use of water and to ensure soils are not over-watered. Ms Vesey also agreed that the proposed stockwater volume is reasonable. However, she recommended that it is taken within total volume of 6,600,000 cubic metres per year.

### **Tangata whenua values**

- 7.19 At the time of writing her S42A report Ms Vesey noted that the applicant has not provided an assessment of potential adverse effects on tangata whenua values. Ms Vesey noted that this application is within the rohe of Moeraki Runanga and that Te Runanga o Ngāi Tahu has submitted in opposition on all applications which were notified in 2007. Given no assessment has been provided and submissions have been made regarding cultural values, at the time of writing her S42A report Ms Vesey could not determine the scale of effects of the proposed activity on cultural values until she had heard from submitters.

### **Positive Effects**

- 7.20 Ms Vesey noted that the use of water for irrigation may result in improved productivity of the land and positive economic benefits for the wider community.

### **Statutory Assessment**

- 7.21 We note that Ms Vesey's statutory assessment was written prior to her reading the applicant's or submitters' evidence.

### **National Water Conservation (Ahuriri River) Order 1990**

- 7.22 Ms Vesey stated the AWCO declares that the Ahuriri River and its tributaries include and provide for outstanding wildlife habitat, outstanding fisheries, and outstanding angling features. She added that the AWCO includes provisions to preserve and protect those characteristics and features.
- 7.23 Ms Vesey then applied the approach of considering the application against the maximum allocation limits interpreted from the AWCO (as discussed in our Part A decision). Ms Vesey noted that the existing allocation is considered to be 1.9784 cubic metres per second. There are two applications by Killermont Station (CRC041331 and CRC041777) to take a combined rate of 0.275 cubic metres per second with higher priority than these applications.
- 7.24 This means that the allocation made to those two applications identified above that have higher priority than CRC041788 and/or CRC073115 totals 2.2534 cubic metres per second. According to

Council staff interpretation, the AWCO allows for a maximum of three cubic metres per second to be abstracted from the main stem of the Ahuriri. Therefore, taking into current consents and applications with higher priority than this one, there is 0.7466 cubic metres per second of allocation available.

- 7.25 Applications CRC041788 and CRC073115 seek to take 750 litres per second from the Ahuriri River. This would result in the total allocation of three cubic metres per second being exceeded by about three litres per second. In Ms Vesey's opinion this would be acceptable as it is likely to be within the margins of error in calculating the total allocation.

#### WCWARP

- 7.26 When considering s104(1)(b), Ms Vesey reviewed the relevant provisions of the CRPS and WCWARP. She concluded the water permit application is not consistent with Objectives 1 and 5 due to outstanding issues relating to:
- (a) Effects on ecosystems;
  - (b) Potential effects on other users;
  - (c) The localised and cumulative impacts on surface water quality;
  - (d) The effects on landscape values within the Waitaki Basin; and
  - (e) The effects on cultural values in the area.
- 7.27 She added that she could not make a conclusion about whether the application is consistent with Objective 1 given the number of submissions to be heard and that in her view the proposal is inconsistent with Policy 13 due to likely effects on water quality.

#### **Recommendation**

- 7.28 Ms Vesey recommended that application CRC073115 be refused, and under s104B Ms Vesey could not recommend that consent application CRC041788 be granted.

### **8 THE APPLICANT'S CASE**

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- 8.1 Legal counsel for the applicant, Mr Christian Whata, presented opening submissions and called 11 witnesses as follows:
- (a) John McIndoe (Aqualinc Research Limited) – Proposed activity, efficient and reasonable use;
  - (b) Richard Peacocke (Williamson Holdings Limited) – owners submission;
  - (c) John Kyle (Mitchell Partnerships Limited) – Planning issues;
  - (d) Stephen Brown (Stephen Brown Environments) – Landscape;
  - (e) Dr John Bright (Aqualinc Research Limited) –Groundwater, node monitoring, cumulative effects;
  - (f) Robert Engelbrecht (Bob Engelbrecht Consultancy Limited) – Farm management;
  - (g) Buddy Mikaere (Buddy Mikaere and Associates) - Cultural;
  - (h) Dr Ruth Bartlett (Mitchell Partnerships Limited) – Terrestrial ecology;
  - (i) Dr Melissa Robson (Ryder Consulting Limited) – Farm Environmental Management Plan;
  - (j) David (Neal) Borrie (Aqualinc Research Limited) – Cubicle Barn – waste disposal; and
  - (k) Dr Gregory Ryder (Ryder Consulting Limited) – Aquatic ecosystems.

- 8.2 We note that the majority of the applicant's expert evidence was presented in conjunction with one or more of the following applicants: Five Rivers Limited, Killermont Station Limited and the applicant's proposed irrigation on the Killermont property. In this Decision, the evidence presented in The Applicant's Case and The Applicants Right of Reply only includes information relevant to this proposal.
- 8.3 It should also be noted that where the evidence has referred to multiple properties and other applications, which includes the applicant's, we have used that information in the context of applying to the applicant's property only.

#### **Opening legal submissions**

- 8.4 The applicant, together with Five Rivers Ltd, Williamson Holdings Ltd and Killermont Station Ltd, was represented by Mr Christian Whata of Russell McVeagh.
- 8.5 Mr Whata covered a number of issues generic to all the applicants he represented, including his clients' commitment to sustainable management, farming in the Mackenzie Basin and permitted activities, tangata whenua values, landscape, and cumulative effects. While we do not set out at length Mr Whata's submissions nevertheless we have considered them in detail. Points that we considered to be of assistance emerging from his submission are addressed in greater detail below.

#### **S42A Issues**

- 8.6 In Mr Whata's view, many of the concerns set out in the S42A (Consent Investigating Officer) Reports stem from a lack of information, a misunderstanding of the information provided or concerns relating to the Water Quality Study (WQS). Mr Whata outlined other witnesses' evidence that, in his opinion, addressed these issues.
- 8.7 Mr Whata noted that the applicant has modified its application in accordance with expert advice to minimise effects on the environment. On this basis, the applicant would prefer to employ gallery intakes. Mr Whata acknowledged that this departs from the notified application but as it is a mitigation proposal, he submitted that it remained within the jurisdiction of the original proposal as:
- (a) The effects are less (although he submits temporary construction effects may be slightly larger in scale for a short period);
  - (b) Persons that might be interested in this aspect are submitters and can address any environmental issues arising.
- 8.8 Mr Whata also addressed us in relation to the AWCO. We have discussed his submissions on this issue in our Part A decision and do not repeat this information here.

#### **Owner's submission (Mr Richard Peacocke)**

- 8.9 Mr Richard Peacocke (Director, Williamson Holdings Limited) told us that he is also a director of Mackenzie Irrigation Company (MIC), which negotiated an agreement with MEL that provided water for irrigation in the Mackenzie Basin.
- 8.10 Mr Peacocke's evidence was common to both this property and Glen Eyrie Downs. It was broad ranging brief covering the subject site and commenting on the benefits of irrigation. He also set out at length for us the future prospects for WHL if irrigation was not available.

#### **Planning Framework (Mr John Kyle)**

- 8.11 Mr John Kyle (Partner, Mitchell Partnerships Limited) was engaged by the applicant (and Five Rivers Ltd, Williamson Holdings Ltd and Killermont Station Ltd) to present evidence with respect to various planning documents (regional documents and RMA) as well as site specific evidence relating to overall mitigation and conditions.
- 8.12 Mr Kyle discussed the regional and district plans and their provisions for a "permitted baseline", relevant matters from the RMA (including Part II and Section 104 matters), the positive effects of the proposal, and the policies and objectives of the WCWARP and NRRP and how the applicant's activities sat with these policies and objectives.

- 8.13 In specific reference to this application, Mr Kyle noted that it is subject to the AWCO, which states that a minimum flows must be retained in the Ahuriri River in order to protect its fishery, wildlife and recreational values.
- 8.14 Mr Kyle referred to Mr McIndoe's evidence that outlines that modifications to application CRC073115 (Option 2) since lodgement, including the fact that the proposal - to divert water from the Ahuriri River through a standard revolving fish screen and discharge some of the water back to the river - is no longer required as a gallery option is now being considered.
- 8.15 Mr Kyle then noted that the evidence present by the various experts has highlighted that the effects on the Ahuriri River will be less than minor when using a gallery intake. He added that the use of a gallery intake could be included as a condition of consent.
- 8.16 Mr Kyle also presented supplementary evidence on 15 October 2009 covering the status of related applications and permits, including the Minister's call-in of effluent consents, and the applicants' subsequent withdrawal of those applications.

### **Proposed Activity (Ian McIndoe)**

- 8.17 Mr McIndoe opened his evidence by describing the two different proposals for the applicant's proposed take (Option 1 and 2). He noted that changes have been made to resource consent applications since they were notified on 4 August 2007. He summarised the changes as follows:
- (a) Amendment to the proposed consent duration of 35 years to an expiry of 2025, as per the MIC/MEL agreement.
  - (b) All flowing streams through the property were initially proposed to be fenced five metres from the bank. This is now proposed to change to between three to five metres depending on the type of waterway and the land gradient adjacent to the waterway.
- 8.18 Mr McIndoe then provided details on the proposed gallery intake; he included a schematic of the intake in his evidence. He added that the key feature of this design is that it is buried and natural river bed material remains over the gallery. Consequently, in his opinion, it becomes part of the natural landscape and will not affect the flood carrying capacity of the river in any way.
- 8.19 Mr McIndoe then stated that the gallery will be designed to comply with the NIWA best practice fish screening guidelines and to address a number of concerns, including the entrainment of fish. These features include:
- (a) Invisible to fish;
  - (b) Low approach velocity (0.005-0.1 m/s);
  - (c) Depth of about 2 m to the top of the collector pipe/screen; and Bed material will form the natural cover; and
  - (d) The rate of take will be reduced to 750 l/s.

### Water Take and Use

- 8.20 The proposal is to use ten centre-pivots, nine full circles, one half circle, with additional K-lines being used in gaps and corners. Pivots will not cross the main terrace south of SH8 or cross Mānuka Creek. On-farm pipelines will be PVC pipe or similar, buried with minimum 400 mm cover. Mr McIndoe added that power lines are required to supply electricity to pumps and irrigators and other infrastructure.
- 8.21 The irrigation system will be designed so that the pivots have the capacity to apply up to 5.9 mm/day over the 1,100 ha. Based on a return period of 2-5 days, the application depth will be between 12-29.5 mm.

### Impacts on waterways and mitigation

- 8.22 Mr McIndoe noted that a number of waterways located in the vicinity of the property may be potentially affected by irrigation run-off, including Tara Hills Water Race, Mānuka Creek, and Omārama Stream.

### *Tara Hills Water Race*

- 8.23 Mr McIndoe submitted that there will be no impact on the Tara Hills intake because of the distance between Tara Hills intake and the location of the applicant's proposed intakes. He acknowledged that because of pivots crossing over the race, water will be sprinkled at the crossing points. Because of that, no fertilisers will be added to the irrigation water. Furthermore, as the applicant's take is from the Ahuriri River and the Tara Hills race water is also from the Ahuriri River, there will not be any mixing of waters.
- 8.24 To mitigate any potential adverse effects of irrigating on the race, Mr McIndoe said the applicant is proposing to fence off the race approximately 3m from the bank to prevent stock access, and will establish riparian vegetation, where necessary, between the race and fence. The riparian vegetation will aid in reducing surface runoff and trap sediments.
- 8.25 To allow the irrigators to cross the water race, bridges and/or culverts will be installed under the wheel tracks of the two affected pivot irrigators. Mr McIndoe noted that the number and exact location of bridges will be determined at the time of pivot installation and will be constructed of either pre-cast concrete slabs or culvert pipe, and designed to avoid runoff. Furthermore, he added that measures will also be taken to ensure irrigation on land adjacent to the race does not result in surface runoff into the race.

### *Mānuka Creek*

- 8.26 Mr McIndoe noted that a 400 m section of Mānuka Creek crosses through the southwest corner of the property, at most 100m from property boundary. This section of Mānuka Creek is typically dry and only flows during significant flood events. Mr McIndoe said the applicant is proposing to fence off the section of Mānuka Creek that passes through the property 5m from the bank of the creek. Again, riparian vegetation will also be established alongside the creek, which will aid in reducing surface runoff, trapping sediments, and provide shade for the waterway.

### Stockwater and domestic water

- 8.27 Mr McIndoe told us that assuming a daily water use of 70L per cow, the volume required for stock equates to 269.5 m<sup>3</sup> per day and 67,375 m<sup>3</sup> per year (based on a herd size of 3,850 cows). Mr McIndoe noted that these are only indicative numbers and are subject to change depending on the numbers of stock and how they are managed. However, he stated that this stockwater will be taken from the total allocation proposed for the property (i.e. out of the 6,600,000 m<sup>3</sup>). The stockwater will be reticulated around the property using polyethylene pipelines and no discharge from the stock water distribution system will occur.
- 8.28 Where stockwater requirements exceed that stated above or water is not available because of Ahuriri River restrictions, Mr McIndoe noted that it will be taken under Section 14(3)(b) RMA. If the application for water for irrigation is granted, the applicant will also require water for domestic purposes. This will either be treated river water or groundwater obtained from a bore, and the quantity of water taken will comply with the allowance specified in the WCWARP for domestic use.

### Efficient and reasonable use

- 8.29 Mr McIndoe noted that the annual volume of water for irrigation that has been applied for under this consent is 6,600,000 m<sup>3</sup>/year, which is based on a Mackenzie Irrigation Company share allocation of 6,000 m<sup>3</sup>/ha/year. He added that irrigation demand modelling using IrriCalc (a crop-soil water balance model) had been undertaken for the applicant's property to determine whether the 6,000 m<sup>3</sup>/ha/year applied for is reasonable.
- 8.30 He told us that irrigation demand modelling had indicated that the seasonal irrigation requirement 80 percent of the time, assuming 80% application efficiency, ranges between 808 mm and 825 mm over the various soils. Consequently, an annual allocation of 8,917,535 m<sup>3</sup>/y for the 1,100 ha (or 810 mm/year, on average) is required to meet full irrigation demand every eight out of ten years according to Mr McIndoe. Furthermore, he added that this exceeds what has been allocated by the MIC shares and what has been applied for (6,600,000 m<sup>3</sup>/y), and shows that the proposed take will meet the reasonable use test.
- 8.31 The analysis indicates that the applicant may have insufficient water to fully meet demand more frequently than 20 % of the time. The applicant will therefore have to manage the proposed irrigation system to achieve an application efficiency greater than the 80 % that has been

modelled to ensure significant yield losses do not occur in extreme years. Mr McIndoe stated that soil moisture monitoring is proposed to be carried out to ensure over-watering does not occur and maximum possible water use efficiency is achieved.

- 8.32 From a productive perspective, Mr McIndoe noted that the allocation of 6,600,000 m<sup>3</sup>/y will be insufficient to keep up with peak crop water demand in dry seasons unless water is applied very efficiently. From an environmental perspective, he added that the potential for deep drainage to groundwater and for runoff onto adjoining land is of particular interest. Both these factors are site and system specific. An analysis of application efficiency and the potential for surface runoff into waterways has been carried out.
- 8.33 Although application efficiency had been assumed to be 80% as per Policy 16 of the WCWARP, centre-pivot application efficiency depends on several site specific factors such as pivot length, irrigation system capacity, sprinkler type, and depth of application according to Mr McIndoe.
- 8.34 The SPRINK irrigation efficiency model, which is a purpose-built model for assessing application efficiency, had been used to calculate average irrigation application efficiency under a range of conditions at the end of a 700 m pivot. Mr McIndoe noted that on average, 80% efficiency is achievable at the end of the pivot by applying small depths of water (17.7 mm) every three days. In drier than average years, application efficiency and gross irrigation depth applied will increase, because soil moisture deficits will be greater.
- 8.35 According to the data supplied in Mr McIndoe's evidence, applying smaller depths of water more frequently reduces the potential for irrigation redistribution over the irrigation season. Mr McIndoe added that the applicant will regularly check for ponding and will reduce return intervals and application depths if required.

#### **Landscape (Stephen Brown)**

- 8.36 Stephen Brown (Landscape Architect, Stephen Brown Environments Ltd) was engaged by the applicant (along with three other applicants subject to this consent process) to assess the landscape effects of their combined implementation.
- 8.37 Mr Brown stated that the rotary irrigators, in his opinion, would comprise the most visible structural components of the irrigation schemes proposed. The irrigators would also, in conjunction with fertiliser enhancement of the subject properties, result in the greatest direct change to the landscape of the southern Waitaki Basin by modification of the vegetation cover. Consequently, he added, although such modification may well be regarded as an effect in its own right, it is also a 'component' of change associated with the proposed irrigation system that would generate its own effects in relation to the wider Waitaki landscape.
- 8.38 Mr Brown then provided a description of the Basin. For the applicant's property he noted that the great bulk of the WHL Block that would be subject to irrigation comprises a sequence of extensive colluvial terraces that are almost entirely devoid of vegetation and features of any significance. However, he added that pines and other plants are more evident around the WHL Killermont farmhouse and yards, on the edge of the main river terrace at the point of transition into the Dunstan and Wether Ranges, as well as around Broken Hut Rd, west of the Tara Hills Research Station. Despite this, he added that impressions of the property are overwhelmingly dominated by its barren expanse of little used pasture gradually falling from the direction of Broken Hut Rd towards the Ahuriri River and SH8.
- 8.39 In Mr Brown's view, WHL Killermont is not an Outstanding Natural Landscape (ONL).

#### **Site Specific Landscape Effects**

- 8.40 Mr Brown explained that applicant's entire property, including the WHL Block, would be subject to a pivot and K-Line irrigation scheme spread across river terraces and gravel fans of the Omārama and Mānuka Streams near the confluence of the Ewe and Wether Ranges.
- 8.41 Accordingly, he added that the proposed irrigators and, in part, the cubicle barns would be spread across part of the Waitaki Basin that often has the appearance of being unremittingly flat, albeit with areas of terrace down cutting and a gradual rise from near the Ahuriri River and SH8 towards the mountains that arc north-eastwards from the Lindis Pass. Significantly, he added the terrain is much more variable near both the state highway and Ahuriri River, with a sequence of terrace edges and banks physically separating the great bulk of the WHL Block from both the river fairway and highway.

- 8.42 Travelling south from Omārama, he told us, one can see the main terrace on which the WHL Block sits becoming increasingly elevated, then a series of banks and natural mounds, visually segregating the future irrigation fields from the state highway.
- 8.43 The proposed pivot irrigation on the WHL Block, between SH8 and Broken Hut Rd, would lie within a reasonably open and, in part, quite visually exposed, part of the basin landscape according to Mr Brown. As a result, when travelling south, from Omārama, much more of the open plain occupied by the northern end of this Block would, in the future, be clearly modified by the introduction of pivot irrigators. On the other hand, they would come into view immediately after the adjoining farm (to the north), which already employs pivot irrigation, and the southern two-thirds of the WHL Block would be screened by an intervening terrace bank. That bank increases in scale towards, and across, the adjacent Killermont Station further south again. Although the very northern end of the property remains visible from SH8, in Mr Brown's view it is perceived as an arid, weed-infested, expanse of land with no distinguishing features or value in its own right.
- 8.44 Mr Brown was also of the view that while the applicant's property together with neighbouring properties closer to Omārama act as the foreground in views towards the mountain ranges beyond, a number of other factors also have to be taken into account, including:
- (a) Some 4.4kms out of the 5.1kms of combined highway frontage of the applicant's property offers significant to complete screening of the irrigation areas and systems because of intervening terrace 'edges' and embankments.
  - (b) A very large expanse of land beyond those edges is concentrated together visually, so that little of it is clearly legible. As a result, he added, the background ranges, foothills and even shelterbelts near Broken Hut Rd are frequently much more significant than the intervening land, which registers as little more than an intervening line or strip of undifferentiated 'pasture' (in reality, mostly coarse grasses and weeds).
- 8.45 According to Mr Brown's assessment, this suggests that up to three pivot irrigators at the northern end of the WHL Block may well be visible. Of these, only the northern-most one would be readily apparent, and even this irrigator would not break the skyline or be dominant in its own right. He added that its effects could be further minimised by ensuring that it is parked well away from the highway. As a result, even though the proposed structures would modify the local landscape's character to some extent, the more recessive location of the other six irrigators proposed, combined with the dynamic experience of seeing them in combination with other (existing) pivot irrigation systems when travelling along SH8, would limit such effects to an acceptable level.
- 8.46 Mr Brown acknowledged that the associated greening of pasture under the irrigators would be reasonably apparent near the 'top' of the WHL Block. This would almost certainly result in much clearer demarcation between the productive and more peripheral, non-productive, areas of land cover, together with greater domestication of the landscape as a whole. However, given that this division would mainly be apparent near areas of existing irrigation and would not in any way intrude into views of, or towards, the full sweep of ranges arrayed around the Omārama / Ahuriri catchment, it was his opinion that such effects would be incremental and would have a low impact overall even in conjunction with the pivot irrigators.
- 8.47 When looking across the property from the vicinity of Broken Hut Rd, Mr Brown noted that there are fewer intervening terraces or vegetation of any significance. However, he added, nor is there the same sense of proximity to, or interaction with, surrounding mountains above and beyond Killermont Station. The margins of the road corridor convey even more clearly the feeling of a working rural landscape, with the Tara Hills Research Facility and various other farm buildings and structures scattered among both open pasture and copses of trees.
- 8.48 Mr Brown accepted that the combination of pivot irrigators and areas of non-irrigated / irrigated pasture would be more apparent from this quarter. Despite this and bearing in mind the accepted and 'skeletal' nature of modern pivot irrigation systems, the entirely impoverished state of that subject land at present, and the general landscape having a sense of being even more productive than is obvious closer to SH8, he stated it seems likely that the applications would still have a quite limited impact on perception of the wider basin / ranges landscape.



## Cubicle Barns

- 8.49 In his evidence in respect of the cubicle barns Mr Brown (#8) recorded that although not part of the current applications, his evidence addresses the potential effects of cubicle barns, namely large concrete-floor sheds that are each capable of housing up to 650 cows at a time, and may well do so in the future in excess of six months of the year. He told us these structures are typically in the order of 30m wide, up to 7.5m high at their roof apex, and are either approximately 125m long without rotary milking plant attached or 155m long with rotary milking plant appended to the main shed. He provided us with depictions of the same in his Annexures 4a and 4b that he presented to us. He went on to tell us the cubicle barns would be paired and linked to slurry holding ponds, which would be located in close proximity to the cubicle barns.
- 8.50 As we understood it, he told us he included consideration and assessment of the cubicle barns so that we could have a full appreciation of the full proposal. Accordingly, we have taken them into account in our assessment in relation to our landscape considerations.
- 8.51 Mr Steven noted that the three 'pairs' of cubicle barns would be centrally located within the WHL Block part of Killermont Station and would be sited some 1.2kms or more from both SH8 and Broken Hut Rd. Mr Brown recommended that each cluster of barns be painted mid- to dark-grey using matt paint, with bunding and tussock planting on their outer periphery facing both roads. He noted that this should leave between approximately 1.0 and 5.0 m visible above the bunds and surrounding terrain.
- 8.52 With distances of 750m to 1.0km further separating the cubicle barn clusters from one another, Mr Steven was of the view that this would ensure a pattern of development that is reasonably consistent with the present, low density, distribution of farm buildings, sheds and houses within the wider rural landscape. Furthermore the roof profiles would be kept sufficiently low and remote, in relation to public vantage points, that they would have little real presence, despite their actual scale, and should in fact largely meld into the gently undulating contours of the wider terrace landscape.
- 8.53 While views from Broken Hut Rd across the subject property have a more elevated starting point and overlook much of the WHL Block, he considered that the barns would still sit low within the visible area of terracing, and their profiles would be partially broken up by the local terrain, bunding and even the pivot irrigators. In conclusion Mr Brown noted that his assessment is that the cubicle barns would have a low level of impact in relation to their wider landscape setting.

## **Farm Management (Robert Englebrecht)**

- 8.54 Robert Engelbrecht (Director, Robert Engelbrecht Consultancy Ltd) provided a brief overview of the applicant's proposed activity and outlined the information (including site visit) he has used to make his assessment. Mr Engelbrecht's evidence covered:
- (a) A description of the importance of farm management in New Zealand and the Upper Waitaki.
  - (b) A peer review of the FEMPs prepared by GHD and an assessment of the practicality and feasibility of the proposed farm management techniques outlined in the FEMPs.
  - (c) An assessment of the practicality of the auditing and monitoring proposed in the conditions/FEMP.
- 8.55 Mr Engelbrecht provided a description of the current land use on the property and the farming system proposed under the irrigation. Mr Engelbrecht noted that he has visited the property three times which included inspecting the soils and other physical features.
- 8.56 Mr Engelbrecht provided evidence on the importance of farming for New Zealand on global scale and local markets.
- 8.57 Mr Engelbrecht then provided general comments on the applicant's FEMP from a farm management point of view. For WHL Killermont, Mr Engelbrecht noted the main site specific environmental risks included soil risks (wind and water erosion and lack of ability of the soil to contain moisture), fertiliser use, compaction and trafficking of soil.

- 8.58 Mr Engelbrecht noted that the proposed dairy farm development for the applicant's property involves three similar sized units (average 366 hectares), carrying an average of 1,280 milking cows each.
- 8.59 Mr Engelbrecht noted that the return on the very substantial investment made in the cubicle barn dairy farms is very satisfactory (compared with other conventional farming systems), both on total farm capital, and on owners' equity in the businesses.
- 8.60 Mr Engelbrecht then outlined the mitigation, monitoring and auditing of the FEMP. and outlined the advantages of cubicle dairy farming in his opinion.

#### **Cubicle barns and effluent disposal (Neil Borrie)**

- 8.61 Mr David Neal Borrie presented evidence at the hearing on behalf of the applicant regarding the housing of cows and the effluent collection, storage and application to land system. We have carefully studied the proposed system and incorporated our understanding of it within our Section 104 evaluation.

#### **Groundwater environment and Nutrient Discharge Allowance – Dr John Bright**

- 8.62 Dr John Bright (Managing Director, Aqualinc Research Ltd) was engaged by the applicant (in conjunction with three other applicants subject to this consent process) to provide evidence on the following issues:
- (a) Development of Farm Environmental Management Plans (FEMPs - covered in the evidence of Dr Robson).
  - (b) Description of the potentially affected local groundwater environment.
  - (c) Identification of property-specific nutrient discharge allowances.
  - (d) Description of the on-farm nutrient leaching and groundwater quality monitoring proposed to ensure effects on groundwater are no more than minor.

#### Groundwater Environment

- 8.63 Dr Bright told us that the proposed irrigated area lies within the Ahuriri River sub-catchment and the Omārama Stream sub-catchment. He noted that a well is located approximately the middle of the proposed irrigated area and the water table there is 3 metres below ground level. He added that beneath the 600mm depth of topsoil and clay the stratigraphy has been described as greywacke gravels, becoming coarser with depth.
- 8.64 Dr Bright noted that concurrent measurements of Ahuriri River flow indicate that the river loses significant flow to groundwater between Clay Cliffs and SH8 Bridge in the order of 1.5 m<sup>3</sup>/sec based on an earlier study. He added that at the upper end of this losing reach the river is understood to be perched significantly above groundwater. In the vicinity of SH8 Bridge surface flow features indicated that groundwater begins to emerge at the surface, giving rise to a number of small streams.
- 8.65 Flow gauging data for Omārama Stream indicated that the stream gains flow over the reach from Swamp Outlet to Wardells Bridge. Dr Bright acknowledged that probable sources of flow include drainage from Tara Hills surface irrigation as well as from the highland areas. Dr Bright noted that modelled piezometric contours indicate that groundwater flow is in a north-easterly direction across Killermont from the Omārama Swamp.
- 8.66 A result of the above understanding Dr Bright noted that all water draining below the root zone on Killermont is expected to flow to regional groundwater in the Ahuriri River basin and to not contribute directly to Ahuriri River or to Omārama Stream flow locally. He added that the proposed development is therefore very unlikely to result in an increase in nutrient concentration of > 0.01 mg per litre of N or 0.001 mg per litre of P, from where Omārama Stream enters and exits the property.

#### Current groundwater quality

- 8.67 Drainage water from WHL Killermont is expected to contribute to nutrient concentrations that are proposed to be monitored at the following Node Points: Ahuriri groundwater, Ahuriri surface

water (both at the sub-catchment outlet in the vicinity of SH8 Bridge), and the Ahuriri Arm of Lake Benmore.

- 8.68 The nitrate-nitrogen concentration in groundwater in the Ahuriri River Basin is approximately 0.1 mg/litre, based on monitoring of well H39/0002 located close to Omārama, upstream from the Ahuriri River basin node point according to Dr Bright. Dr Bright added that this indicates that there is very little impact on groundwater quality from existing agricultural activity and there is available assimilative capacity with respect to the groundwater quality threshold.

#### Expected Nutrient Discharge from this property, and their expected effects

- 8.69 Dr Bright noted that irrigation of 1,100 hectares, applying up to 600 mm/year, is expected to generate 208 mm of drainage per annum on average, based on modelled drainage under irrigated agriculture. The mass of nitrate-nitrogen estimated by OVERSEER to be leached from the farm on an average annual basis is 17,857 kg.
- 8.70 Assuming that all of the nitrate-nitrogen that is leached from the farm comes from the irrigated area only, which is a conservative assumption, Dr Bright noted that the average annual nitrate-nitrogen concentration in the drainage water would be approximately 7.7 mg/litre. He noted that this is significantly less than the 11.3 mg/litre nitrate-nitrogen drinking water limit, meaning that shallow bores could be used as a source of potable water.
- 8.71 Dr Bright noted that the quantity of nitrogen leached is substantially below the specific nutrient discharge allowance for WHL Killermont, and within this farm's proposed nutrient discharge allowance for phosphorus. As a consequence, Dr Bright did not expect more than minor adverse effects on downstream receiving waters.

#### Monitoring

- 8.72 In conjunction with the OVERSEER® modeling Dr Bright recommended that sets of three drainage lysimeters be installed on the first blocks to be developed for irrigation, and be operated continuously for the duration of the consents. He added that the sets of lysimeters should be strategically located on the applicant's property in an area that has a plant available water capacity of 65mm. According to Dr Bright the proposed sites (in conjunction with Killermont's and Southdown's proposed sites) will provide leaching measurements across a range of soils and climate settings.
- 8.73 Early installation of these lysimeters provides opportunity to measure actual nutrient losses under the first developed areas and to use this data to fine tune OVERSEER®. According to Dr Bright, the lysimeters should be installed prior to the commencement of irrigation so that leaching can be monitored for the whole of the first year of irrigation system operation.
- 8.74 Dr Bright referred us to the lysimeters installed on the Lincoln University Dairy Farm. He noted that the 60 lysimeters built and installed to this design have been operating successfully for several years. Dr Bright provided recommendations on how the monitoring should take place and that the total annual measured nitrogen leached should be compared with the OVERSEER® estimates of the average annual nitrogen leached. If the actual nitrogen leached is greater than the farms NDA then the Dr Bright recommended that:
- (a) A new NDA is calculated by multiplying the current NDA by the ratio of the OVERSEER® estimated nitrogen leached to the actual nitrogen leached.
  - (b) The farm management is then revised so that it results in an OVERSEER® estimate of nitrogen leached that is less than the new NDA.

#### **Aquatic and avian ecology (Dr Gregory Ryder)**

- 8.75 Dr Gregory Ryder (Director, Ryder Consulting Limited) was engaged by the applicant (and two other applicant's for their respective properties) to describe the existing aquatic and avifaunal ecological values associated with both the proposed take and use of water, the ecological effects associated with the irrigation developments and the recommended mitigation options to address these effects.
- 8.76 Dr Ryder told us that he undertook biological surveys of the property area, focusing on the streams in the area, with additional areas also surveyed to assess bird habitat values. He acknowledged that other information on water quality, fish distribution and avifauna had been

obtained from a variety of sources and he used this information to aid him in his assessment of potential effects.

### Water Quality

- 8.77 Dr Ryder noted that recent water quality studies by GHD have found nutrient concentrations in the Ahuriri River to be low. He added that historic sampling, undertaken in 1990 –1991 also found low (and in the case of phosphorus declining) nutrient concentrations, indicating that there has been little change in both natural and agricultural or anthropogenic sources of nutrients in the catchment. Dr Ryder acknowledged that it appears that this river may be in a 'natural state' with respect to nutrients. However, he added that he is unsure how relevant this situation is given the widespread cover of *Didymosphenia geminata* (Didymo) in sections of the river. He added that didymo is capable of growing to high biomass levels in low nutrient waters.

### Aquatic Ecology

#### *Didymo*

- 8.78 Dr Ryder stated that the invasive algae didymo was first identified in the upper Ahuriri River in 2007. A survey in 2009 found a dense cover of the invasive algae on the river margins in the upper river. However, he noted that the algae does not appear to have spread to the lower river. He added that didymo is also present in Omārama Stream.

#### *Macroinvertebrates*

- 8.79 Macroinvertebrate communities in the Ahuriri River are dominated by high quality Deleatidium mayflies according to Dr Ryder. He added that taxonomic diversity is high, with an average of fourteen different macroinvertebrate taxa per sample. Dr Ryder noted, based on the work of Dr Coffey, that community health index scores decreased down the catchment, with scores upstream of Killermont and at the SH83 Bridge indicative of good biotic health, while at the site downstream of the SH83 Bridge scores indicated poor biotic health.
- 8.80 The Council also monitors macroinvertebrate communities regularly in the Ahuriri River at the SH83 Bridge. Dr Ryder acknowledged that he is yet to view this data, but he understood that monitoring by the Council has found the macroinvertebrate community to be diverse and indicative of excellent biotic health, including a high proportion of pollution sensitive taxa. Dr Ryder noted that Dr Goldsmith has more recent macroinvertebrate data for the Ahuriri River and the Mānuka Creek which she presented in relation to the Killermont Station applications.

#### *Fish*

- 8.81 Dr Ryder noted that the New Zealand Freshwater Fish Database has recorded three freshwater fish species as being present in the Ahuriri River in the general vicinity of the proposed irrigation take. Only one species is native; upland bully, with two introduced species; brown and rainbow trout and that none of these fish are rare or uncommon. Dr Ryder acknowledged that the Ahuriri River is known to support a highly valued sports fishery with good populations of both brown and rainbow trout.
- 8.82 Dr Ryder added that other species recorded in the Ahuriri River, away from the proposed irrigation take, are alpine galaxias, bignose galaxias, lowland longjaw galaxias, Canterbury galaxias and common bully. Surveys in Mānuka Creek, by DOC (2004) found that the creek supports brown trout. Dr Ryder noted that a recent survey by Dr Goldsmith confirmed that brown trout are the only fish species found in this creek.

### Avifauna ecology

- 8.83 Thirty four different bird species have been identified in the Killermont Station area and surrounds. Fifteen species are introduced, with thirteen native and six endemic species. Dr Ryder noted that species of interest include the black fronted tern and grey duck, which are listed by DoC as 'Nationally Endangered' and the falcon, which is listed as 'Nationally Vulnerable', although he added that these species are unlikely to be present on land proposed for irrigation. Most of the bird species are found predominantly in wetland or farmland habitat, with the exception of bellbird, falcon, grey warbler, fantail and silvereye that prefer native bush.
- 8.84 Dr Ryder acknowledged that previous surveys of the wider Ahuriri River area found that it provides important feeding, roosting and breeding habitat for many key bird species, including

black stilt, black fronted tern, wrybill, banded dotterel, black-billed gull, marsh crake, Australasian bittern, Australasian shoveler and New Zealand scaup.

- 8.85 In terms of conservation value, the Ahuriri River represents a highly important habitat for rare and uncommon bird species, and activities associated with it warrant close attention according to Dr Ryder. However, he concluded that the proposed irrigation land on Killermont Station offers very little in terms of habitat for these species.

#### Rabbits

- 8.86 As rabbits prefer dry habitats, irrigation can act as a deterrent and reduce local abundance according to Dr Ryder. However, he added that a decrease in rabbit abundance can potentially lead to predatory mammalian (cats, ferrets and stoats), preying on birds instead.

#### Recommended Mitigation

##### *Water Take*

- 8.87 Dr Ryder noted that the irrigation intake design, consisting of an infiltration gallery buried beneath the bed of the Ahuriri River, has been described in the evidence of Mr McIndoe. In his opinion, this design should be effective at safely screening a wide range of fish sizes, including adult and juvenile salmonids. Consequently, he expected effects on river fisheries to be less than minor.

##### *Irrigation system*

- 8.88 Dr Ryder noted that there are no main waterways within the proposed irrigation area. He added that Mānuka Creek crosses towards the southwest corner of the property, but irrigation will not pass over the creek. The Tara Hills water race runs through the proposed irrigation area and will be crossed by centre pivot irrigators. In Dr Ryder's opinion the race has an intermittent flow and therefore has only minor value for macroinvertebrate and fish communities.
- 8.89 It will be necessary for bridges to be installed for centre pivot irrigators to cross the Tara Hills water race and water from the irrigator will be sprayed directly into the stream at the crossing point. However this will not affect water quality as the sprayed water (from Ahuriri River) will not contain fertilizer or effluent. Spray from the irrigator may actually be favourable for plant growth within the riparian margin.

##### *Irrigation application*

- 8.90 Dr Ryder noted the required reduction in nutrient inputs as set by the GHD study to achieve no more than a 25% increase of calculated periphyton biomass above existing conditions. He noted that in the applicant's situation, where both the lake and the sub-catchment river require mitigation, the GHD study recommends that the higher figure should be adopted. Nutrient losses from Killermont Station therefore should be reduced by 10.7kg N/ha and 1.1kg P/ha. Dr Ryder noted that these reductions have been addressed by way of farm management plans as described in the evidence of Dr Robson.

##### *Effects on Avifaunal Ecology*

- 8.91 Dr Ryder noted that the potential effects and recommendations relating to Canada geese are the same for the Glen Eyrie Downs proposal. There is no other sensitive bird habitat immediately adjacent to the proposed irrigation area and consequently Dr Ryder does not consider any other mitigation for birds is necessary.

##### *Water quality*

- 8.92 The GHD farm environmental risk assessment for Killermont identified potential risks of runoff from grazed areas reaching watercourses, stock access to watercourses and the grazing of stock over winter according to Dr Ryder. He added that due to the absence of connectivity and location of waterways on the station relative to the irrigation area, the only potential pathway for nutrients to enter watercourses on the Killermont property is through windblown soils and direct deposition from stock or effluent irrigation, or possibly runoff from the one centre pivot irrigator that crosses the Tara Hills water race.

- 8.93 Dr Ryder noted that nutrient thresholds have been developed for the farm to ensure that inputs of nitrogen and phosphorus to waterways does not result in potentially significant adverse effects to local streams and receiving lakes. He further noted that nutrient management and mitigation approaches have been developed to achieve these thresholds and include the approaches (i.e., stock housing in cubicles, fertiliser management, separation and storage of water and effluent, effluent application away from waterways and the use of centre pivots), as well as a proposed fenced and planted riparian margins of 3m for the Tara Hills race and 5m for Mānuka Creek. Furthermore he added that irrigation and the subsequent establishment of full ground cover will reduce the potential for soil erosion and therefore the potential for nutrients to enter watercourses through windblown soils.

#### *Riparian management*

- 8.94 Dr Ryder recommended a 5m riparian set back for Mānuka Creek and a 3m riparian set back for the Tara Hills water race should be adopted. In total, he added, this equates to approximately 3.5 km of riparian protection (Mānuka Creek 0.9km, Tara Hills Race 2.5km).

#### **Terrestrial Ecology (Dr Ruth Bartlett)**

- 8.95 Dr Ruth Bartlett (Botanist, Mitchell Partnerships) provided a description of the applicant's property and proposed irrigation. Her evidence included a description of the proposed intake structures, irrigation systems and the proposed farming systems (cubicle dairying). Only evidence relevant to this take and use consent is described here

#### Description of Vegetation

- 8.96 Dr Bartlett noted that the area that is proposed for irrigation is a vast flat plain with a sparse vegetation cover almost entirely composed of hawkweed, sheep's sorrel and scattered exotic grasses. She added that Fescue tussock is very occasionally present, along with briar rose. Wilding pines are establishing near the western property boundary, she told us, with a large pine shelterbelt providing a seed source.
- 8.97 Mānuka Creek crosses the south western corner of the property over a short distance and appears to have been channelized in this area according to Dr Bartlett. The vegetation along the margins is almost entirely composed of exotic grasses with briar rose and occasional pine seedlings present.

#### Potential Effects

- 8.98 Dr Bartlett concluded that irrigation on this flat land would have a positive effect by creating a vegetative cover preventing further soil loss.

#### Consideration of Submissions

- 8.99 Dr Bartlett then provided a response to the submissions received regarding terrestrial ecology. She noted that these submissions were concerned with the protection of habitat from ecological damage, protection against soil erosion and protection of indigenous biodiversity.
- 8.100 She added that these submissions need to be considered in the light of the severe modification that these habitats have already been subjected to since human arrival. The sites have already been substantially altered and native species richness, diversity and distribution across the irrigation sites is very limited in her opinion.
- 8.101 Generally the indigenous species are limited to riparian areas and the few limited areas that have not been previously cultivated. She told us that the cessation of grazing and burning is unlikely to restore native species because of the widespread presence of weeds such as hawkweed and wilding pines, which respond very quickly when grazing animals are removed and will out-compete native species.
- 8.102 On soil erosion she noted that an increase in vegetative ground cover is expected to result from the proposed irrigation and this will reduce soil erosion across the properties concerned.

#### **Cultural (Buddy Mikaere)**

- 8.103 Buddy Mikaere (Principal, Buddy Mikaere and Associates) appeared on behalf the applicant (and two other applicants represented by Mr Whata). He stated that the objective of his evidence was

to show how the cultural issues raised in submissions by Te Runanga O Ngāi Tahu (TRONT) and the Ngāi Tahu Mamoe Fisher People Incorporated opposing the applications for irrigation in the Mackenzie Basin, have been addressed.

- 8.104 Mr Mikaere has considered all the applications and his assessment is that provided the suggested mitigation proposals are put in place by way of appropriate consent conditions and incorporated into the respective FEMPs then the overall impact on cultural values of the proposed irrigation and associated infrastructure will be less than minor.
- 8.105 Sections 6(e), 7(a) and 8 of Part 2 of the RMA are normally regarded as the 'cultural' sections according to Mr Mikaere. In his view the applicant is in compliance with these sections of the RMA. Mr Mikaere then provided details on how he believed these applications are compliant with these sections. Mr Mikaere then outlined the relevant 'cultural' policies and objectives from the WCWARP and in summary noted the applicants proposed activities are consistent with these policies and objectives.
- 8.106 While we have considered Mr Mikaere's evidence in full, it is discussed further in that section of our Part A decision dealing with tangata whenua values.

#### **Farm Environmental Management Plan (FEMP) – Dr Melissa Robson**

- 8.107 Dr Melissa Robson (Environmental Scientist, Ryder Consulting Limited) presented evidence on the applicant's FEMP. Dr Robson's evidence on the purpose and development of the FEMP was covered in Part A of the decision and will not be repeated here. Only evidence specific to the applicant's property and proposed irrigation is considered in this section. Similarly a description of the receiving environment, waterbodies within the applicant's property and predicted groundwater flow has been covered in other experts' evidence.

#### Receiving Environments

- 8.108 Dr Robson noted that for this farm, the Ahuriri Arm mitigation requirements are the most stringent. These mitigation requirements set WHL Killermont's nutrient discharge allowance at 35,262 kg N per annum and 551 kg P per annum. She added that a reallocation of 1,500 kg of N has been made from SHL to the remainder of Killermont Station which reduces SHL's NDA to 33,762 kg N. In Dr Robson's view there is no environmental impact of this reallocation.
- 8.109 On a per hectare basis over the entire farm, this gives an N loss of approximately 16 kg/ha and a P loss of approximately 0.4 kg/ha. Dr Robson noted that these losses are considerably less than the range quoted for typical dairy farms in New Zealand of 30-50 kg N/ha and 3-5 kg P/ha.
- 8.110 At a highly developed setting, Dr Robson acknowledged that the modelled N losses increased to 21,496 kg N. She added because this is still within the WQS threshold, no further mitigation will be required when soils have become highly developed.

#### Modelling limitations

- 8.111 Dr Robson noted that the OVERSEER model in its current format is not able to model a complete cut and carry system and in the applicant's case a more restrictive system is proposed than that which can be modelled. She added that the implications of this are that the nutrient losses modelled in OVERSEER are likely to be an overestimate and therefore even more buffer below the threshold is maintained. However, despite this likely overestimate, this level of mitigation should be maintained unless new modelling and or measurements show otherwise.

#### Amendment to the FEMP

- 8.112 On the 9 March 2010 the applicant provided an amendment to their FEMP. This amendment introduced three new proposed farming systems in addition to that already proposed (dairy cubicles). The new systems, as explained by Dr Robson, included:
- (a) An irrigated cut and carry system with a small area (105 ha) of arable cropping grown during pasture renewal. Stock would be housed off site and do not graze on the station except for a light spring grazing of triticale during pasture renewal. Pasture will be cut, conserved and exported to a dairy herd (off farm) throughout the year.
  - (b) An irrigated sheep and beef finishing enterprise (500 ha) with an area of cut and carry (495 ha) and a small area of arable cropping undertaken during pasture renewal.

- (c) A mixed enterprise farm with a dairy herd (400 ha) a sheep and beef finishing enterprise (250 ha) and an area of cut and carry for the production of supplements (345 ha) and a small arable rotation for the pasture renewal phase.

8.113 According to the table supplied in Dr Robson's evidence, all the new proposed systems met the WQS-nominated NDA for the applicant's property.

#### Response to S92 request

8.114 In her additional evidence dated 9 March 2010 Dr Robson also provided a synopsis of the further information requested by the Council under Section 92 of the RMA. This response was in regard to effluent management, which while strictly relating to the 'called-in' effluent consents, is also relevant to our understanding and decision on the total nutrient load leaving the property as a result of exercising this take and use consent.

8.115 One of the main issues vexing the Council experts assessing this application in combination with the other dairy applications (Five Rivers Ltd, SHL Glen Eyrie) was the apparent difference in N loading in effluent. Dr Robson explained that the effluent N concentration used is calculated internally within OVERSEER and is a function of variables such as the number of stock, the housing, whether solids are separated, and the type and quantity of supplements, all of which were farmer-supplied.

8.116 Dr Robson also clarified that any N reductions achieved by riparian buffer strips/wetlands were not included within assessments of whether individual properties would meet their thresholds, and that in fact no mitigation measures that could not be modelled within OVERSEER were included within such assessments.

8.117 Dr Robson stated that the applicant proposed to apply effluent to 1,049 -1100 ha of WHL Killermont, which is 89%-93% of the applicant's property.

8.118 In response to a question on how the applicants proposed to ensure that effluent cannot be irrigated into, or immediately adjacent to streams Dr Robson replied that solenoid valves were originally proposed, however this has now been changed so that none of the centre-pivot irrigators used to irrigate effluent will cross streams. Liquid effluent will be applied by tanker in those paddocks that have streams running through the pivot circles. And a 20 m layback will be observed for effluent spreading from all watercourses.

## **9 SUBMITTERS**

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9.1 We note that most of the submissions against the granting of large-scale dairy applications (of which this proposal is one) were aired as generic opposition to the cumulative water quality effects of granting. Some of the issues raised by these submissions have been addressed in Part A and will not be repeated here. However we consider all the Part A evidence along with the specific submissions to this application in our consideration of the issues.

### **Groundwater and water quality (Peter Callander)**

9.2 Mr Callander (appearing for Meridian) presented three briefs of evidence at the hearing, a general brief, a brief on cumulative water quality effects and one on individual applications. The following information has been compiled from his 'individual applications' brief of evidence. In this evidence Mr Callander provided comment on Dr Bright's evidence on the applicant's property in addition to three other applicants represented by Mr Whata.

9.3 Mr Callander noted the groundwater sub-catchments which for the applicant's property is the Ahuriri and Omārama. Mr Callander stated that the partitioning of soil drainage water and groundwater flow into each of the groundwater sub-catchments has been determined by observations of surface flow patterns and from the groundwater flow model that was developed as part of the MWRL groundwater assessment.

9.4 Mr Callander's evidence related to:

- (a) Uncertainty in groundwater partitioning between sub-catchments,
- (b) The monitoring nodes applicable to each property
- (c) Lack of information about phosphorus migration



- (d) The applicability of the suggested lysimeter monitoring
  - (e) A lack of critique on Dr Bright's part with respect to the WQS groundwater modelling
  - (f) Lack of detail on how individual NDAs were arrived at,
  - (g) Doubts about the efficacy of the denitrifying process for removing nitrate-N from leachate as submitted by MWRL
  - (h) A lack of reliable field data from which to validate MWRL modelling
- 9.5 Mr Callander considered that Dr Bright's evidence presents a generalised description of a possible migration of nutrients that has been provided to Dr Bright by GHD. In Mr Callander's view however, Dr Bright did not appear to have critically reviewed that information and not described the uncertainties associated with it. Mr Callander provided a description of the uncertainties, which in his view lessen the confidence we should place on their assessment. This summary of uncertainties has been noted.
- 9.6 Mr Callander acknowledged that these uncertainties are largely due to a lack of reliable field data rather than any basic errors in the assessments. However, due to that lack of data he added that it would be appropriate to present either a conservative analysis (which is not the current MWRL approach) or a sensitivity analysis to consider a range of possible nutrient generation and migration scenarios that could arise within the constraints of the information available.
- 9.7 Based on the information he had available to him Mr Callander could not conclude that the proposal will not ultimately contribute to an increase in nutrient load to the Ahuriri Arm of Lake Benmore.

#### **Aquatic Ecology (Fish and Game)**

- 9.8 Central South Island Fish and Game presented three briefs relating to fisheries values that were specific to this application: Mr Mark Webb, Mr Frank Scarf, and Ms Devon Christensen. We discuss relevant aspects of these briefs below.
- 9.9 Mr Webb noted that apart from the lower reaches which are now beneath Lake Benmore, the Ahuriri River is the last relatively unmodified river fishery of significance in the upper Waitaki Catchment. He told us that on average twenty-two anglers fished the river every day of the season equating to about 4,000 angler-days for the season. Mr Webb then provided a breakdown of the sections of the river used by anglers.
- 9.10 Mr Scarf described the WCO for the Ahuriri catchment. He outlined the flow restriction imposed by the WCO in which he agreed with Ms Penman's analysis on the current allocated abstraction and that available for future abstraction.
- 9.11 Mr Scarf discussed the proposed take from these applications and the other two takes from the Ahuriri proposed by Killermont Station Limited. In Mr Scarf's view either all three applications should be reduced to conform with the limits set out in the AWCO, or alternatively one or more of the applications will need to be declined on the grounds that to grant the consent(s) would breach the provisions of the AWCO.

#### **Landscape and Terrestrial Ecology**

##### Ms Lucas – Landscape architect

- 9.12 Ms Di Lucas (representing Mackenzie Guardians) noted that nine centre pivot irrigators were proposed with the development up to the road boundary on a currently large and undeveloped area, as well as other facilities including three large cow barns.
- 9.13 Ms Lucas stated that she was not convinced that the buffering proposed by Mr Glasson would adequately mitigate landscape effects. She added that the viewing experience is more than that indicated by the simulation. In her opinion, the proposed buffer would be perceived as merely an undeveloped roadside strip. The landscape [as a whole] would have reduced integrity in her view, and she recommended that a more holistic approach be taken.

## Ms Stevens – Landscape architect

- 9.14 Ms Anne Stevens (representing Mackenzie Guardians) discussed the applicant's proposed irrigation area in conjunction with Killermont Station Limited's proposed irrigation areas. She noted that all the subject consent sites fall within the area recognised as outstanding natural landscape at a regional level but (currently) fall outside the ONL at a district level. Ms Stevens noted that she had previously undertaken assessments on the Killermont pastoral lease land (which includes the applicant's property) in 2001/12 as part of the Tenure Review process.
- 9.15 Ms Steven then provided a description of the setting for the applicant's property. She noted that Mr Brown describes the area incorrectly as being a 'colluvial terrace' and being devoid of any features of significance. In her opinion it appears he is totally unaware of the geopreservation site affecting both the homestead block and the central block. She explained that the boomerang shaped hump in the middle of the area is a reverse fault feature called The Knot. She added that it was formed around 20,000 years ago and includes a unique 90 degree bend. It is rated as a Site of International Significance and is monitored for fault movement, as it is part of the active Ostler Fault.
- 9.16 Ms Stevens agreed with descriptions provided by Mr Brown, in that the surfaces appear as an arid or barren weed-infested expanse of little used pasture. Furthermore she agreed largely that there is little of interest on the plains themselves, apart from the Knot.
- 9.17 The botanical assessment for Tenure Review also dismissed the plains completely as not being of any significance according to Ms Steven. However she added it must be borne in mind that the survey was done over a very short time frame, possibly at the wrong time of year for some species, and was not comprehensive and therefore cannot be regarded as conclusive.
- 9.18 Ms Steven agreed that the area appears species-poor compared to other outwash plains she has visited. Nevertheless, many native species on these surfaces are spread widely and are diminutive and may include spring annuals. These may be difficult to detect, as Dr Walker explained. She argued that given a respite from grazing including rabbits, high-stress tolerant native species could slowly return, as seed sources remain in the area and the re-establishment of native species in the Tekapo Scientific Reserve demonstrates. It is not certain therefore that there is no flora or potential flora of any significance. Therefore in Ms Stevens view, it cannot be said for certain that there are no "*natural science*" values worthy of consideration, either now or in the future under alternative management.
- 9.19 Naturalness/natural character is moderate to high in her view in the context of the Basin. However, she added that the level of degradation and lack of indigenous cover has reduced naturalness. Ms Steven acknowledged that there is a high degree of agreement in her analysis of the perceptual qualities with Mr Brown and Mr Glasson's analysis.
- 9.20 Ms Steven pointed out that three submitters to the tenure review also requested that a visual corridor of open natural landscape be provided along the highway, to a suggested distance of at least 600m. She noted that whilst the Crown (through LINZ) did accept these values, none of the requested amendments were made. The Crown decided 'the district planning process was the most appropriate tool for addressing ongoing landscape and development issues within this area' and that 'a covenant over this area was not necessary whilst there are other mechanisms to achieve this protection (such as the Resource Management Act).'
- 9.21 In Ms Steven's opinion it was not credible to say that the Tenure Review process has taken care of all the important natural values. She added that it is now up to this process to decide how these values can be protected.
- 9.22 Ms Steven told us that the Waitaki District Council engaged landscape architect Graham Densem in 2004 to carry out a district-wide landscape assessment to identify outstanding landscape to assist in Plan Change 2. Mr Densem identified all of the application area as outstanding landscape at a district level. Ms Steven went into detail on how he described the landscape. Ms Steven noted that Mr Denise's assessment is complementary to hers, Mr Brown's and Mr Glasson's assessments.
- 9.23 Ms Steven noted that in the Proposed Plan Change 2 process and subsequent to consultation and review, the outstanding status of the landscape of the Killermont flats was lifted. She acknowledged that it has now reverted to the Rural Scenic Zoning, which is more restricted than the Rural General Zone.

- 9.24 Ms Steven noted that the applicant's proposed irrigation area is a 'much larger development' covering almost the entire block of land bounded by Short Cut Road, SH8, the northern boundary and Broken Hut Road. She added that the only part that is excluded is the small section of lower river terrace in the southwest corner adjacent to SH8.
- 9.25 She noted that the way the irrigators are laid out, the irrigator booms would be perpendicular or angled in relation to SH8. She added that no centre pivots would be parked up alongside the fence. However the half circle pivot on top of the Knot would end up parked parallel to the highway more or less along the top of the scarp which in her view would make it prominent.
- 9.26 Ms Steven agreed with Mr Glasson that the visibility of irrigated development hard up against SH8 for a distance of almost 4km would be an adverse effect because of the marked reduction in naturalness so close to the highway. She agreed it would be desirable to have a continuity of natural landscape across the highway and as far south as the natural rise in the land, beyond which it is less easy to see the ground surface. She recommended that a 250-300m setback to the irrigators as well as their angled or perpendicular orientation to the road, which would render them much less intrusive.
- 9.27 She noted that Mr Brown finds the development acceptable because it is an incremental addition to irrigated development that has already occurred in the adjacent land. Ms Stevens did not support this. Rather, in her opinion, there are adverse cumulative effects.
- 9.28 With respect to Broken Hut Road, Ms Steven accepted that it has more of a working farm character with developed land along a good part of it. However there are views to the Clay Cliffs from this road, which is likely to support more visitor and tourist traffic given the securing of two public access routes over the properties at the end of the road. A setback of at least 200m would, in her view, reduce the dominance of the irrigated development and avoid interference with views of the wider landscape.
- 9.29 Mr Brown assessed the three cow barn clusters as having low visual impact. For two of them Ms Stevens would agree, given their location in the middle of the proposed development and wide spacing. However the third cluster at the western end would result in significant adverse effect according to Ms Steven. She added that it is directly adjacent to Short Cut Road and would be very intrusive and would block views of the Knot and would interfere with the integrity of the landform as a natural feature. She recommended this building cluster be shifted to an alternative site well away from the Knot and any public road.
- 9.30 According to Ms Stevens, there appears to have been little, if any, assessment of effects on terrestrial ecology for these applications and consequently there is a risk of further loss of large areas of a rare and threatened dryland ecosystem. Ms Steven recommended a dryland specialist ecologist undertake a comprehensive survey at the right times of year for these potential effects to be assessed properly. Furthermore, as these ecosystems and species are very poorly protected nationally, the alternative of conservation-oriented land management and recovery of indigenous biodiversity should be considered.

#### Dr Walker - Ecologist

- 9.31 Dr Susan Walker (representing Mackenzie Guardians) noted that the applicant's proposed irrigation area overlapped significant inherent values identified in the Tenure Review. She rated it in the 'high' category in terms of potential effects on terrestrial biodiversity.
- 9.32 We note that Dr Walker gave comprehensive evidence on the cumulative effects of irrigation on vegetation in the Mackenzie Basin. This evidence is discussed in Part A. Her evidence was Basin-wide and she concluded that more in-depth investigation was required. Also, she included as Attachment 15 of her evidence her views in relation to a number of particular sites. Those views have been taken into account while considering the terrestrial biodiversity issue that this application gives rise to.

#### **Cultural**

- 9.33 While Ngāi Tahu did not make a specific submission in relation to SHL Killermont, they did submit in opposition to all applications at this hearing. They later qualified that opposition (in a memorandum in relation to Simons Hill/Simons Pass stations) saying they remained formally opposed to all dairying applications.

- 9.34 We discuss Ngāi Tahu evidence in relation to all applications in Part A. Points made in those submissions of relevance to WHL Killermont are captured in our consideration of the issues.

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

- 9.35 Gregory Stuart (Farm Manager, Tara Hills Station Limited) provided evidence in support of his company's submission. Mr Stuart noted that Tara Hills Station is situated approximately 5km south of Omārama on Broken Hut Road and Killermont Station [area subject to this application] is just across Broken Hut Rd to the West.
- 9.36 Mr Stuart acknowledged that at the time of lodging the submission it was on the grounds of downstream effects mainly Tara Hills irrigation intake and the water race across Killermont flat. The submission also raised concerns that the applicant would be in the same band for the low flow trigger (15 cubic metres/second). Now since the 12 October 2009 Mr Stuart stated that the farming activity to be carried out has changed to 3 highly intensive dairy farms, on highly marginal land with any amount of water.
- 9.37 Mr Stuart noted that Tara Hills and Omārama Station was one of the last grants before the proposed Project Aqua. According to him since 2003 he has been responsible for putting in place all consent requirements for full compliance (e.g. flow monitoring, Fish pass etc).
- 9.38 Mr Stuart detailed the occasions when Tara Hills has been put on water take restrictions due to low flows in the Ahuriri River and Omārama stream. In his view the reliability of water supply from these water bodies during the irrigation season is not there.
- 9.39 According to Mr Stuart Mr McIndoe's response to our question "what effects on downstream users would Williamson Holding water take have" was incorrect. Mr Stuart noted that Mr McIndoe had replied "nil, as Tara Hills & Omārama Station are band 1". He explained that Omārama Station consent is in band 1 with [take restriction] triggered at 12 cubic metres and 10 cubic metres dependent on the time of the year and Tara Hills Station consent is in band 2 at a trigger of 15 cubic metres all year round. In Mr Stuart's view, the Tara Hills Station take would be in the same band as the applicant (if granted).
- 9.40 Mr Stuart submitted that Tara Hills Station would like to see any new consents granted being subject to a low flow trigger higher than 15 cubic metres.
- 9.41 We note that the applicant's proposed take would fall outside of the allocation band that Tara Hills and Omārama Stations are subject to as the proposed take, if granted, would be subject to a minimum flow of 25 cubic metres as per the AWCO requirements. Our discussion regarding the effects of this take on other water users is provided later.
- 9.42 Mr Stuart noted that the opening legal submission by Mr Whata had stated that Tara Hills water race does not flow continuously and because of this, has only minor aquatic values. Mr Stuart pointed out that this is not correct as the water race flows continuously with 50 l/s for stock water. Furthermore he added that because the Tara Hills fish screen is situated beside the Omārama stream, fish have access to the water race between the Ahuriri and the outlet into the Omārama stream.

#### Land Use

- 9.43 In Mr Stuart's opinion this land is marginal for any sort of dairy farming, with long hot summers even with irrigation, the growth is away lower than down land farms. Furthermore in his opinion the very cold winters of -15deg and sometimes only getting to -2deg in the afternoons would cause large scale problems with frozen water, burst pipes, frozen effluent. Mr Stuart also noted potential animal welfare issues with, cows in sheds in summer months with temperatures getting over +35deg and -15deg winter months.
- 9.44 Mr Stuart pointed out that in Mr Brown's evidence on 15th October 2009 showed an effluent pond and barn and milking shed right next to the Tara Hills water race. In Mr Stuart's opinion this could cause a hazard through leakage or accidental overflow. He added that soil and sub soil damage [from contaminant leaching] could take months or years to detect and with the general direction of the drainage it would drain into the Omārama Stream.
- 9.45 Mr Stuart then raised issues with the storage of effluent and the potential odorous emission on Tara hills homestead. These effects, he told us, would be exacerbated by the south-west and

warm summer weather. He noted that the north-west wind would blow right across the 5 houses with tenants in as well as Berwen Station and Twin Peaks Station's homesteads.

- 9.46 Mr Stuart concluded by stating that he had no objection in principle to this water consent being granted, but that the volume and proposed farming activity were inappropriate. He added that it is very marginal land even with water the amount fertiliser needed to grow feed for 3,800 cows will be huge and the effects may or not show up for years. In his opinion the Omārama stream and Tara Hills wells will be the first indicator of effects followed by Omārama Station, then downstream to the lower Ahuriri River and finally Lake Benmore.
- 9.47 Mr Stuart also presented a report prepared by Dr Peter Espie of AgScience Ltd regarding the effects of aluminium Levels in the soils of the Omārama Basin Outwash. The report concluded that the high levels of surface and subsoil exchangeable aluminium on Omārama/Ahuriri basin soils would adversely affect growth of pasture species and significantly reduce their effectiveness in nutrient uptake. Dr Espies' report concluded that high exchangeable aluminium in the soils would increase the risk of nutrient leaching from applied dairy effluent into ground water. Effective amelioration would require substantial time to take effect.

#### Submissions from other water users

- 9.48 Omarara Station Limited and Dunstan Peaks Station provided a submission in opposition to the applications. These submissions were identical to Tara Hills Station submission and raised concerns with the applicant's proposed take affecting their existing takes by reducing the flow at the minimum flow site. They requested that if the applicant's consents are granted then conditions are put in place to protect existing downstream users. Neither Omarara Station limited nor Dunstan Peaks Station provided evidence at the hearing.
- 9.49 Ōhau Company Trust Limited (OCTL), who also have water permit applications before the Panel, provided a submission in opposition to the application. Their submission stated that the amount of water being sought will exceed the volume of water available in this water body and limit the availability for other users.
- 9.50 OCTL requested that the Panel specify a schedule in the consent that will enable other applicants' equitable use of the water resources and reassess minimum flow limits to accommodate schedule use of water.

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

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- 10.1 Ms Vesey noted that the most significant change proposed by the applicant to this proposal was that they were now seeking to use gallery intakes to mitigate effects on fisheries. She further added that Mr Whata advised it is the applicant's preference to use gallery intakes. Ms Vesey agreed with Mr Whata's submission and provided a number of reasons to allow the application to be changed to intake galleries.
- 10.2 Ms Vesey noted that Dr Ryder had based his assessment of effects on a gallery intake but that he had not provided any discussion in regards to potential effects on ecosystems from the original intake structures, diversion nor discharge channels.
- 10.3 Additionally Ms Vesey pointed out that Mr Kyle's condition sets are based on a gallery intake (although she notes that he still includes the diversion of 950 litres per second). Ms Vesey noted that Mr Kyle's draft conditions are worded the same for applications CRC041787, CRC073112 and CRC073113 in that they all refer to excavation of a depth of three meters which she noted is consistent with a gallery intake and no longer has reference stop banks.
- 10.4 Ms Vesey noted that Dr Meredith has reviewed the evidence presented by the applicant and considered that subject to appropriate fish screening guidelines and conditions, the proposed gallery intakes offer more suitable mitigation than the originally proposed intakes and fish screening methods.

### **Comments on outstanding matters**

#### Ecosystems

- 10.5 Dr Meredith did not consider adequate details have been provided about the intake galleries to ensure effects on fisheries will be mitigated according to Ms Vesey. She acknowledged that the applicant has proposed to bury the gallery approximately two metres below the river, however

Ms Vesey recommended that information on the depths and size of gravel overlying the gallery is required to ensure fish are not sucked into the intake. In spite of this she considered that an appropriate condition may be worded to ensure effects on ecosystems are mitigated. Should a suitable condition be included, she would no longer consider this to be an outstanding matter.

#### Allocation and other users

- 10.6 Given the proposed use of gallery intakes, Ms Vesey noted that the additional 200 l/s originally sought to operate the fish screen was no longer required. As such, Ms Vesey considered that either of the two proposals (Option 1 or Option 2) now fit within the available allocation for the Ahuriri River.

#### Stock and domestic water

- 10.7 The applicant is seeking to include the use of water for stock and domestic supply under these applications. Ms Vesey noted that Mr Kyle has proposed conditions specifying the rates and volumes at which water may be taken for stock water. She further noted that he has subtracted the stock water volume from the irrigation volume to ensure no more water than was originally sought will be taken.
- 10.8 She added that Mr Kyle has not however specified domestic use as a condition of consent. Mr McIndoe advised that during times the Ahuriri River is on restriction, the applicant will take under s14(3)(b) of the RMA. Ms Vesey referred us to Policy 24 of the WCWARP which allows water to be taken for essential stock and domestic needs. She recommended condition (6) in her original report for these water permits be retained that will allow the applicant to take water for stock and domestic needs when the Ahuriri River is on restriction.
- 10.9 Given the discussion from Mr McIndoe about the potential for drilling a bore to seek a source of domestic water, Ms Vesey suggested that domestic use could be removed from the consent application.
- 10.10 Mr McIndoe advised that water will also be taken under s14(3)(b) RMA when they need more water than is authorised under these water permits. Ms Vesey noted that it is the Council's position that where stock water is authorised under a resource consent the consent holder should not also be taking under s14(3)(b).

#### Water quality

- 10.11 The FEMP provided by the applicant has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report). For these applications those technical experts consider that there is a high level of uncertainty about potential adverse effects and given the scale of the development and potential consequence of those effects, suggest that the applications should not be granted. Mr Kyle proposed a number of conditions addressing water quality on a local and cumulative scale and Ms Vesey referred us to Dr Freeman's addendum report for comment on these.

#### Landscape

- 10.12 Mr Glasson acknowledged that while mitigation was proposed in relation to landform (i.e. no irrigation between SH8 and upper terrace), in his opinion a significant buffer is still required between SH8 and the irrigation scheme which he noted was originally intended and agreed with Mr Brown. He added that the planting of trees is not seen as a suitable mitigation measure. He also noted that the location of large cow sheds is seen as having a very high impact on the landscape character and quality of this site. Mr Glasson concluded by stating that his original mitigation measures should be retained.

#### Cultural

- 10.13 Ms Vesey acknowledged that Mr Mikaere provided comment in relation to this application; however she did not wish to provide further comment on potential effects on Tangata Whenua values until she had heard the submission from Ngāi Tahu.

#### Summary

- 10.14 Ms Vesey concluded by noting that Mr Whata has not addressed the following effects on the applications. She added that if the Panel agreed with her recommendation and accept the

proposed change to allow for gallery intakes, the following factors need to be considered by both the applicant and the Panel:

- (a) Application CRC073115 should be amended to seek only to take up to 750 litres per second the diversion of an additional 200 litres per second to operate the fish bypass is no longer required.
- (b) Application CRC073114 to discharge water at a rate of 950 litres per second into the Ahuriri River is no longer required as there will be no diversion race from which a discharge could occur.
- (c) Applications CRC073113 and CRC041787 may be amended to relate to the construction of the intake gallery.
- (d) Application CRC073112 for works related to the construction and maintenance of the discharge structure is also no longer required.

10.15 Given the above, should the Panel decide to grant either Option 1 or Option 2, subject to gallery intakes, Ms Vesey noted that she would expect the applicant would be issued with only two consents making the proposal much simpler to understand for the applicant and Enforcement Officers alike. She explained one consent for the taking and use of water and the second for the construction and maintenance of an intake gallery.

#### Recommendation

10.16 In her Addendum Ms Vesey stated that subject to the amendment of a gallery intake (and hence removal of diversion of an additional 200 l/s), her recommendation for CRC073115 is the same as for CRC041788, which is that the application cannot be granted due to outstanding potential adverse effects.

10.17 The reasons for her stance are (in order of importance):

- (a) There remains outstanding concern that the proposal will have adverse effects on water quality in the Waitaki catchment.
- (b) There remains outstanding concern that the application may result in adverse effects on landscape values.

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

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### **Closing legal submission (Christian Whata)**

- 11.1 Mr Whata provided the closing legal submission on behalf of the applicant and three other applicants subject to this consent process. In his overview he stated that the final officer recommendations have lost sight of the big picture, and more particularly a realistic appraisal of the adverse and positive effects of the proposed farming systems.
- 11.2 He addressed us on the existing and future environment reminding us that the applicant's site was not a pristine natural environment and reflects the reality of a dryland farming tough environment. He discussed with us outstanding issues, including water quality issues, cultural issues, and landscape issues, which we discuss in more detail below.
- 11.3 He also discussed effluent management issues and the Ahuriri Water Conservation Order. He addressed us in detail in respect of adaptive management, including lock-step, staging, and ratcheting, which we discuss in greater detail later within this Decision.

#### Landscape

- 11.4 On the issue of landscape, Mr Whata noted the recommendations the applicant has accepted including:
  - (a) Restoration of land around and above the Ahuriri River intake and pumping structures, including the river margins
  - (b) Use of underwater galleries at the Ahuriri River intake.

- (c) Location of a 2m bund along the northern and western faces of those cubicle barns on WHL Killermont exposed to SH8.
  - (d) Planting of tussock along those same bunds.
  - (e) Planting of hedgerow-type "amenity planting" along the crest of the northern-most bund.
- 11.5 In response to Mr Glasson's specific recommendations for WHL Killermont regarding a buffer for SH8, Mr Whata noted that the applicant has accepted the recent advice of Mr Brown to re-locate two irrigators on the north-most part of WHL Block to the point where they merge with the array of shelterbelts and vegetation close to Broken Hut Rd. In response to any further mitigation, Mr Whata noted that Mr Brown is of the view that the subject site is entirely impoverished and that Mr Glasson has greatly over-stated its appeal.
- 11.6 In regards to Mr Glasson's comments that "*The location of cow sheds is seen as having a very high impact on the landscape character and quality of the site*", Mr Whata referred us to Mr Brown's right of reply.

#### **Proposed Activity (Ian McIndoe)**

- 11.7 Mr McIndoe's right of reply evidence responds to evidence given by S42A report Officers and submitters.

#### Ahuriri WCO

- 11.8 Mr McIndoe provided further comment on the relevance of the AWCO, much of which is discussed in our Part A decision. Some comments that are specific to this application are summarised below.
- 11.9 Mr McIndoe then reiterated the views of Mr Scarf and Mr Webb (Fish and Game). He agreed that the total amount of water allocated for existing and proposed consents is approximately 3.2 m<sup>3</sup>/s, if the diversions are included. He added however in his opinion because the AWCO requires specific flows to be maintained relative to South Diadem flows, the fact that the total exceeds 3.0 m<sup>3</sup>/s does not violate the AWCO provided the minimum flows are maintained.
- 11.10 Mr McIndoe added that because the applicant's 0.2 m<sup>3</sup>/s diversion is the first on the river and will not cause the minimum flow to be violated because the water is returned to the river within a short distance of the divert point and well before any other takes occur.

#### Lock-step approach for groundwater monitoring

- 11.11 Mr McIndoe noted that Dr Bright's evidence in reply (for MWRL) described the proposed lock-step approach for the groundwater sub-catchments in the upper Waitaki Basin. He added that this evidence was largely generic and described the approach in more detail using SHL Glen Eyrie as an example. We have studied Mr McIndoe's evidence on this matter and refer to it again in our Section 104 evaluation.

#### **Landscape (Stephen Brown)**

- 11.12 Mr Brown's right of reply responded to the matters raised in the supplementary report of Mr Glasson. The first part of Mr Brown's evidence responded to the general status of Mr Glasson's comments and have been incorporated into the discussion on landscapes in Part A of this decision. The second part of Mr Brown's evidence focuses on the concerns and recommendations raised by Mr Glasson in relation to the individual properties including the applicant's property.
- 11.13 Mr Brown acknowledged that Mr Glasson reiterated in his Section 42 Report the need for a buffer between SH8 and the proposed irrigation fields in the order of 300m, that planting is not a 'suitable mitigation measure' and the proposed cubicle barns would again have a very high impact on the landscape character and quality of this site.
- 11.14 In Mr Brown's view, Mr Glasson's assessment fails to recognise the depauperate state of the site at present: its present land cover is largely dominated by hieraceum and other weeds, with rabbits precluding the likelihood of any more 'natural' regrowth of tussock or pastoral grasses at present. He added that whether viewed from SH8 or Broken Hut Rd, the subject site is entirely impoverished, and its unremittingly flat terrain east of the Ahuriri River terraces adds little to its intrinsic character or value. In his opinion Mr Glasson has greatly over-stated its appeal.



- 11.15 On the other hand, Mr Brown acknowledged that the subject land does afford the 'base plate' to views of the much more characterful and important Ewe, Wether and Dunstan Ranges to the east. However, it is only when travelling past the north-most quarter of the site that motorists would see the proposed irrigation and sheds against that mountain backdrop which is close to where an existing farm already operates pivot irrigation, without any set-back.
- 11.16 Despite this Mr Brown recognised that two of the proposed irrigators would be viewed at closer range and would be more prominent in such views. He added that this could be addressed by pulling both irrigators back 100m or so from the road boundary, to the point where they merge with the array of shelterbelts and vegetation close to Broken Hut Rd.
- 11.17 With only the outer rotation areas reaching close to both the highway and Broken Hut Rd, and the potential for even low level planting, in which he provided examples, to break up the profile of most of the irrigators, without screening the mountains in the background, in Mr Brown's opinion a buffer strip of less than 10m could be just as effective as the proposed 300m.
- 11.18 Furthermore, he added that the viewing distance of 1.2 km to the nearest cubicle barn, combined with the flat viewing perspective from surrounding roads, and the potential to use bunding with low level revegetation across those bunds for mitigation, would help to appreciably reduce their presence – to the point where they merge with the combination of pine woodlot, shelterbelts and farm buildings that already exist near Broken Hut Rd.
- 11.19 In Mr Brown's opinion, such measures would be entirely compatible with the working nature of the farmland at present. Perhaps just as important, the combination of irrigated pasture and revegetated margins is preferable to allowing the WHL Block to physically deteriorate further.
- 11.20 Mr Brown concluded by noting that the important point to emerge from his analysis is that the applicant's property is not in a natural state at present, nor is it the actual focus for views from either SH8 or Broken Hut Rd. He added however that this is how Mr Glasson appears to be treating it, as a landscape feature in its own right.

#### **Cultural (Buddy Mikaere)**

- 11.21 Mr Mikaere responded to matters raised in the evidence of David Higgins, Di Robertson, Paul Horgan and Mandy Waka Home on behalf of Te Runanga O Ngāi Tahu. In that response he set out at length a further review of the consultation process undertaken with Ngai Tahu. He was clear in his view a longer consultation would not have assisted in terms of identification of application specific issues, but may have been helpful in the formulation of appropriate mitigation, remedial and avoidance strategies. He was of the view that any issues around consultation had been remedied largely because of the content and nature of the FEMPs.
- 11.22 It is noted that Mr Mikaere had acknowledged that the health and water quality of the Ahuriri Arm had been raised as a specific issues in the CIA and by Ngāi Tahu in their submission. We return to this issue later.

#### **Aquatic Ecosystems**

- 11.23 In his right of reply Dr Ryder responded to several issues raised in the amended Section 42A reports and by a number of submitters, including MEL, DoC and Fish & Game.
- 11.24 Regarding the proposed gallery intakes, Dr Ryder agreed with this approach. He added that conditions on performance criteria for fish exclusion at gallery- type intakes already exists on some consents in Canterbury and he sees no reason why they cannot be developed for this application.
- 11.25 Dr Ryder then outlined some of the monitoring proposed by the MWRL and the individuals farms. The approach adopted by these individual farms, and indeed MWRL, in relation to protecting the environment, is reliant on establishing a monitoring programme according to Dr Ryder. He noted that this program firstly establishes existing environmental conditions, secondly determines acceptable levels of environmental change, and thirdly tracks or monitors indicators through time and across the Basin to provide an information feedback loop to the consent holder and the regulatory authority.
- 11.26 Dr Ryder added that the lock-step adaptive management approach put forward by the applicants requires the consent holder to establish a sub-catchment monitoring plan that includes, among other matters, surface water nutrient and periphyton biomass monitoring at relevant node points.

He added that pre-irrigation monitoring is intended to establish existing maximum annual periphyton biomass. He noted that the development of a baseline dataset for periphyton had already commenced through the monitoring of Dr Coffey and more recently Ludgate and Ryder (2010) which targeted the node sites throughout the MacKenzie Basin over the 2009/2010 summer.

- 11.27 He told us that data generated from pre-irrigation monitoring is to be compared against post-irrigation monitoring data to assess, for example, whether the 25% increase threshold for peak periphyton biomass is being met. In Dr Ryder's view, this is a pragmatic and ecologically suitable approach to protecting key ecological values for streams and rivers of the MacKenzie Basin.
- 11.28 The FEMP also required surface water quality monitoring for individual farms, according to Dr Ryder. Other proposed farm monitoring conditions relating to fencing of watercourses and monitoring of aquatic biota (fish, macroinvertebrates, macrophytes and periphyton), birds and mammalian predators are sound and in Dr Ryder's view will provide farmers, stakeholders and the regulatory authorities with robust information on the environmental effects of irrigation.
- 11.29 In conclusion Dr Ryder stated that having viewed further information produced since the commencement of the hearing, he has no reason to change his ecological assessments and conclusions relating to this farm as originally set out in his evidence in chief.

#### **Terrestrial Ecosystems (Dr Ruth Bartlett)**

- 11.30 In her right of reply evidence Dr Bartlett discussed matters raised in the evidence of Mr Mark Webb on behalf of Fish and Game, Ms Sue Maturin and Ms Anna Cameron on behalf of the Royal Forest and Bird Protection Society and Dr Susan Walker on behalf of Mackenzie Guardians. Dr Bartlett also responded to comments and recommendations from the relevant Section 42A Reports.

#### Mr Webb (Fish and Game)

- 11.31 Mr Webb had expressed concern that changing land use (irrigation) in the Upper Waitaki Basin will see continuation and probably accelerated growth in Canada geese (*Branta Canadensis*) numbers and a widening of their distribution. Mr Webb considered that the result of this increase will be more Fish and Game control programmes being required at further cost to their members.
- 11.32 Dr Bartlett explained the habitat of Canadian Geese and reasons for their potential increase in numbers and how they are controlled. She added that Canada geese compete with livestock for feed and foul pastures with their droppings. Although farmers increase habitat for Canada geese they are, in Dr Bartlett's opinion, also adversely economically affected by them and cannot control them as of right outside the defined season. Dr Bartlett noted that if Canada geese become an economic pest for the farmers concerned then she would expect them to be carrying out their own control during the permitted season.
- 11.33 Dr Bartlett agreed with Mr Webb's recommendation that to avoid adverse effects from runoff and nutrient leaching to streams and wetlands in or near the irrigated land, irrigation should not be permitted where the natural form of the land in the irrigated area collects and channels drainage as surface flow beyond the irrigated area.

#### Ms Maturin, Ms Cameron and Dr Walker

- 11.34 Dr Bartlett's general reply to the evidence presented by Ms Maturin, Ms Cameron and Dr Walker. We noted the following specific points.
- 11.35 Following the presentation of her evidence in chief, Dr Bartlett undertook additional surveys and collected further information about the land use practices and cultivation activities on the applicant's property. Dr Bartlett then categorised the current land use into four categories being: 'natural', 'oversown', 'direct drilled' and 'fully cultivated' of which a description is provided in her evidence. Dr Bartlett overlaid these four classifications onto topographical maps and added the proposed irrigation layout to show the existing land use on the areas that would be subject to irrigation. From this information Dr Bartlett made the following observations:
- (a) The area that is proposed for irrigation on WHL Killermont is managed as a modified 'natural' pasture and has a sparse vegetation cover. She noted that the majority of this vegetation comprises hawkweed, sheep's sorrel and scattered exotic grasses, mainly sweet vernal and browntop, with occasional cocksfoot and sweet briar. On the terrace at

the north-western corner of the property there is a more complete pasture cover dominated by exotic species and this would also be irrigated. Across the outwash plain tufts of the native hard tussock occur, mostly in long shallow wind-hollowed depressions on the surface of the plain. These were most common in the north western part of the property.

- (b) Other species found on the property included occasional tufts of native grasses such as the tiny *Poa maniatoto*, *Rytidosperma pumilum*, *Agropyron scaber* and *Poa colensoi*. The scabweeds *Raoulia australis* and *R subsericea*, the mat-forming *Muelhlenbeckia axillaris* and the native broom *Carmichaelia australis* were occasionally present, the latter grazed to within centimetres of the surface.
- (c) Much of the ground is devoid of vegetation. Soil loss can be expected to be ongoing in this poorly vegetated environment and it is unlikely that there will be any improvement in the currently poor vegetation cover without active management. The very small proportion of indigenous vegetation present is likely to be lost if the area is brought under irrigation, but under the present management regime the indigenous vegetation cover is unlikely to improve and will continue to diminish if irrigation does not occur. The vegetation present cannot be said to form a 'natural system' in its current state.

### **FEMP (Dr Melissa Robson)**

11.36 Dr Robson's right of reply provided comments on the Council's Consent Investigating Officer's Reports including (relevant to this application) Mr McNae, Ms Vesey and Dr Freeman, the evidence of Ngāi Tahu expert Mr Paul Horgan, the evidence of Waitaki First expert Dr Brookes and the evidence of Fish and Game expert Ms Christensen. Only those matters deemed relevant to the applicant's proposed activities have been included below.

### **Mr Darren McNae**

- 11.37 Dr Robson addressed Mr McNae's concerns with respect to the applicant's OVERSEER modelling regarding the very low clover content. She noted that Mr McNae had acknowledged the applicant's reply to this concern and she agreed that the clover levels must be verified as a part of the OVERSEER audit.
- 11.38 Dr Robson also acknowledged that Mr McNae had raised issues with the effluent solids being removed from the system. She added that the removal of solids from the farm had been assumed in the modelling to ensure compliance with the NDA. Dr Robson noted that in Mr McNae addendum evidence he accepts this explanation, however he added that a concern remains as to the final destination of this organic nitrogen.
- 11.39 Dr Robson submitted that the fate of the removed nitrogen is beyond the remit of Mr McNae which was to focus on the reasonable use of inputs to the OVERSEER model. However, as the issue may be of interest to us, Dr Robson provided further details on the fate of the removed solids.
- 11.40 If the exported solids are used on another farm that is a part of these consent applications, regardless of where, Dr Robson explained that the import would be recorded in their nutrient budget and its compliance assessed. Alternatively, if the exported solids were used on a farm that was not a part of these hearings, as long as the inorganic fertiliser applications were scaled back to account for the nutrient applied with the solids, there should be no net change in losses according to Dr Robson.
- 11.41 Specific to this application Dr Robson acknowledged that Mr McNae had raised concerns as to whether or not the 12.8 t/ha DM production is sustainable. Dr Robson by pointed out that Dr Snow's evidence in chief, defends the annual pasture production figures used in the WQS which were higher than those presented for WHL Killermont.
- 11.42 Dr Robson acknowledged that research published by Greenwood (1982) summarising research at neighbouring Tara Hills Research Station reported a range of irrigated dry matter (DM) production of 4.5- 11.9 t/ha. However, Dr Robson noted that these irrigation trials were conducted under border dyke irrigation systems with a range of return periods.
- 11.43 Although the irrigation would have increased the water holding capacity on these shallow soils, the soil's store of plant available water would soon be exhausted and the plants would spend time

under moisture stress between irrigations. This results in decreased growth rates compared to the more frequent irrigation supplied by centre pivots.

- 11.44 Modelled pasture growth rates (using EcoMod) under different irrigation return periods to represent irrigation types and soil PAW found that an average of 15 t DM/ha was modelled on the light soils such as those found on WHL Killermont Station.
- 11.45 In his addendum evidence Mr McNae accepted Dr Snow's evidence for the purpose of the OVERSEER® audit which Dr Robson noted is the extent of his remit.

#### Response to Mr Paul Horgan (Ngai Tahu)

- 11.46 Dr Robson noted that Mr Horgan had quoted from the Cultural Impact Assessment that "Ngai Tahu ... is concerned at the possible conversion to dairy. Almost without exception, the conversion over recent years of dry land farms to dairying has brought with it a host of adverse environmental effects and has resulted in the significant degradation of our rivers, lakes, streams and wetlands."
- 11.47 Dr Robson added that in recognition of the potential deleterious impacts of some dairying systems, significant mitigation measures had been imposed to the dairy farming systems, including extended housing. Dr Robson stated that that while Mr Horgan is making well-versed criticism of conventional dairying, he did not seem to have considered that the applicant is proposing extensive and expensive mitigation measures. She added that these measures aim to prevent or minimise the types of damage that have come to be associated with dairy farming, in terms of degraded waterways, degraded stream banks, effluent pollution, soil compaction and erosion with associated phosphorus loss, and winter losses of nitrate associated with urine patches.

#### Response to Ms Devon Christensen (Fish & Game)

- 11.48 Dr Robson noted that Ms Christensen expressed doubt as to whether the housing of stock and reduction of nitrogen fertiliser offered a sufficient suite of mitigation tools. According to Dr Robson the removal of stock and the reduction of nitrogen fertiliser are the two most effective mitigation measures for reducing nitrogen loss for a pastoral system.
- 11.49 Ms Christensen suggested that because changes can be made to the FEMPs, nothing in the FEMP ties the farmer into a serious commitment. Ms Christensen has misunderstood the nature of the changes permissible in the FEMPs according to Dr Robson. She added that it is essential that the FEMPs may be able to be updated and farm systems change as site specific risks arise or become obsolete. She added however to suggest that this flexibility means that they do not bind the farmer to a commitment, is incorrect.
- 11.50 Dr Robson added that the FEMPs, through their mitigation measures, monitoring and auditing plans that include triggers, contingency plans if triggers are exceeded and actions in case of non compliance with audit measures, are not 'take it or leave it' recommendations, but form an auditable part of the resource consent that is tailored to the specific farm and farming system.
- 11.51 Again Dr Robson noted that Ms Christensen suggested that some wording in the FEMPs does not show a commitment to addressing risks by the use of the word 'should' and that it should be replaced with the word 'shall'. Ms Robson stated that these FEMPs and FERAs are not written as a series of resource consent conditions. They are aimed for use on farm by farmers.

#### Permitted baseline

- 11.52 Dr Robson was asked to produce estimations of permitted baseline loads. The inputs to these calculations came from the farmer indicating what their best dryland option (or no more irrigation option) would be in terms of stock, fodder crops, grain crops etc. These areas were then multiplied by attributed losses. The losses used were derived from the AgResearch OVERSEER® modelling of Ōhau Downs current farm system. Dr Robson pointed out that these calculations are crude and intended for broad brush comparisons only.
- 11.53 Mr Whata presented these comparisons in his closing legal submissions. We note that for WHL Killermont, the modelled WQS losses are ~6.5 x permitted baseline for nitrogen and 4 x permitted baseline for phosphorus.

## Needs plus buffer approach

11.54 Dr Robson used WHL Killermont as an example of how the needs plus buffer approach would work in practice (refer her Appendix A). We have studied Dr Robson's explanation, which is pivotal to the lock-step adaptive management proposed by the applicant and refer to it again in our Section 104 evaluation.

## Conclusion

11.55 Dr Robson concluded that "*I believed that these FEMPs go much further than a step in the right direction...(that) they outstrip what has yet been seen in New Zealand in terms of combating both diffuse and point source pollution from farms.*" None of the evidence on the updated reportage had caused Dr Robson to deviate from her viewpoint. She added that the consent conditions presented by Mr Kyle that tie these FEMPs in allowing them to be enforced are a key step to their success.

## **Planning (John Kyle)**

11.56 Mr Kyle provided a set of proposed consent conditions for the applicant's consent. He also included a flow chart that explained how the approach to conditions in terms of response to the proposed OVERSEER modelling and water quality monitoring would be achieved.

## **12 STATUTORY CONTEXT**

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12.1 As already noted, the proposed activity is a **discretionary** activity under Rule 15 of the WCWARP. The relevant statutory context for a discretionary activity is set out in detail in our Part A decision. In accordance with those requirements, we have structured this evaluation section of our report as follows:

- (a) Evaluation of effects
- (b) Evaluation of relevant planning instruments
- (c) Evaluation of other relevant s104 matters
- (d) Part 2 RMA
- (e) Overall evaluation

## **13 EVALUATION OF EFFECTS**

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13.1 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) Visual amenity and Landscape
- (b) Other users (minimum flows)
- (c) Terrestrial Ecology
- (d) Water Quality and aquatic ecology
- (e) Cultural
- (f) Positive effects

### **Visual amenity and landscape**

13.2 In our Part A decision we summarised the evidence of a number of landscape experts who expressed differing views the effects that irrigation would have on visual effects. We reached some general conclusions on the issue and set out our general approach for assessing landscape effects for individual proposals. We now move on to apply this assessment approach to the current proposal.

### Existing landscape

- 13.3 The site is located within Unit 6 – Omārama as per Mr Glasson’s evidence. This Landscape Unit is at the southern end of the Upper Waitaki catchment. It is a landscape of an outwash plain and terraces resulting from the action of the Ahuriri River. The surface is flat to undulating.
- 13.4 The landscape is defined on both sides of the Ahuriri River. It is valley-like with high hills on each side and an enclosure at the southern end by the Lindis Pass. The northern end closest to Omārama is much more open. Irrigation is already present in this landscape unit on flat pastures.
- 13.5 Killermont Station is located on both sides of State Highway 8 with the Pebbly Block located to the north immediately adjacent to the Ahuriri River. The WHL Block is bounded to the north by State Highway 8 and to the south by Broken Hut Road. There is an access road that joins Broken Hut Road to State Highway 8. On either side of that access road new pivot irrigation is proposed. Moving to the west, the plain begins to rise and there are additional irrigation proposals in that area of Killermont Station as well.
- 13.6 Mr Glasson did note that already in the landscape there are modifications, which include shelter belts, wilding pines, water races, roads, fences, farm buildings, irrigated pasture, plus the settlement of Omārama. He noted that Omārama is the base from which various recreational pursuits and tourist pursuits, such as camping, fishing, hunting, gliding, and site-seeing take place.
- 13.7 Mr Glasson tells us it is a landscape with a legible expression of land forms with a strong horizontal emphasis, an absence of trees, a high naturalness with a dominating tussock and grassland character. Although we do observe (from our site visits) the grassland quality was certainly not good. It is a consistent landscape, unified in form, colour and texture. According to Mr Glasson the landscape holds a low absorption capacity for change.
- 13.8 Mr Glasson emphasised it was the two opposite mountain ranges on each side of the valley coupled with the valley floor and open flat landscape surface that gave this particular landscape unit what he called a special quality. He told us this openness allows unimpeded views, especially to the clay cliffs on the northern side of the plain, and long distance views following State Highway 8.

### Effects on landscape

- 13.9 It was generally agreed between the different experts that granting consent to the proposal would bring about the following changes to the landscape;
- (a) Visibility of irrigation infrastructure, in particular nine pivot irrigators;
  - (b) Presence of three cubicle barns on the site; and
  - (c) Change to vegetative cover over the 1,100ha site, otherwise described as the “greening” of the landscape.
- 13.10 We move on to assess the significance of these changes, taking into account the evidence received from the various experts.

### Significance of effects

- 13.11 A useful reference point when considering the significance of the change is how the landscape is treated in the relevant district plan. In this case, the Waitaki District Plan did previously recognise the site as an ONL but now, through proposed Plan Change 2, the ONL status has been lifted and replaced with Rural Scenic zoning. This indicates to us that the District Council considered the property as a whole not worthy of ONL status, though there may be some aspects of it deserving that status.
- 13.12 The Waitaki District Plan provides that the Rural Scenic zone has a particular visual amenity that is associated with the dominance of open-space vistas and land forms, lack of intense subdivision and land use, and the overall absence of buildings and structures. However farming and irrigation are permitted activities in this zone.

- 13.13 We do note that the site is surrounded by an outstanding natural landscape, being the adjacent hill areas to the south and the Ahuriri area to the north. There is also a QEII covenant area in close proximity to the subject site.
- 13.14 Also of interest is Policy 16.3 of the Waitaki District Plan, which seeks to protect site-specific and outstanding geological or geomorphological features that are of scientific importance. This is of potential relevance to the feature known as "the Knot", as discussed by Ms Stevens. Although the Knot is not specifically identified in the District Plan, we are of the view that the proposal could compromise the geopreservation values of the Knot and consider that some protective separation would be appropriate. The Knot does provide an unusual landscape feature that contrasts with the featureless landscape described by Mr Brown.
- 13.15 In respect of the general visibility of the site, Mr Glasson told us (and we agree) the landscape and the WHL Block is very visible from State Highway 8 as it bisects this unit. We agree that there is a significant amount of traffic, including tourists. Thus, we think this is a landscape unit that is sensitive to change. As acknowledged by Mr Brown and argued by Ms Steven (for Mackenzie Guardians) the viewing from this ~1 km of road frontage does encompass the Dunstan and Wether ranges, and also the Knot.
- 13.16 All experts agreed that some form of mitigation was required. However there was a difference of opinion as to the extent of mitigation that was necessary. In general, Mr Glasson and Mr Stevens supported more extensive mitigation measures than Mr Brown, including larger setbacks.
- 13.17 Accepting Mr Glasson's view that the landscape does have a high degree of landscape value, which is sensitive to change and therefore at risk of degrading visual amenity and natural qualities, we consider that the mitigation measures he proposes are more appropriate than those proposed by Mr Brown. In summary, the key mitigation measures proposed by Mr Glasson were
- (a) A buffer back from State Highway 8 of approximately 300m or so;
  - (b) A buffer from Broken Hut Road of approximately 100m; and
  - (c) A buffer from Short Cut Road of approximately 100m.
- 13.18 Another issue where the experts took different positions was the mitigation for the cubicle barns. On this issue, we note that there is some uncertainty as to whether the barns remain part of the proposal given the changes that have since occurred, including the ministerial call in of the effluent discharge applications. However in the event that the cubicles remain, we support the use of bunding and vegetative screening as proposed by Mr Brown.
- 13.19 Overall, we come to the conclusion that in relation to the WHL Block that without the mitigation measures proposed by Mr Glasson, particularly alongside State Highway 8, we could not support the grant of consent. We conclude that a significant buffer zone is required between the irrigated land by State Highway 8. This should consist of retaining the land form and cover and allowing for tussock grassland and shrubland to regenerate. The edge of the irrigated area should therefore relate to the land form better. In other words, irrigation activity should occur on the terrace that Mr Glasson refers to. This would mean that there would be a buffer back from State Highway 8 of approximately 300m or so.
- 13.20 In respect of buffering from Broken Hut Road, we acknowledge the points made by Ms Stevens for Mackenzie Guardians. However, we do form the view that the landscape along Broken Hut Road has much more of a working environment element. We therefore agree with Mr Glasson's view that there should be buffering setbacks, but only of 100m from Broken Hut Road and 100m from Short Cut Road. We do not consider that Ms Steven's recommendation for a buffer along the walking route that transects the site (which route provides access to the Wether Range) had merit.
- 13.21 If these mitigation measures are included, we consider that the proposal could proceed without compromising the landscape values. However this conclusion must be considered in combination with our findings on other issues, particularly water quality, to inform our overall decision as to whether consent should be granted.
- 13.22 In reaching this conclusion, we have taken into account the potential cumulative effects of the proposal. However our conclusion remains unchanged irrespective of whether we are considering the WHL block in isolation or in combination with other existing and future developments. For this

reason and given our overall findings on these applications we have not provided a detailed discussion on cumulative landscape effects in this decision.

- 13.23 For the sake of certainty we record that even if the cubicles no longer form part of the proposal we consider that the buffer measures are still required, as they provide mitigation from the balance of the irrigation infrastructure along with providing mitigation to the greening effect.

#### **Other users (minimum flows and the AWCO)**

- 13.24 Whether or not the applicant's proposed take from the Ahuriri River met the minimum flow provisions of the AWCO was a key point of contention. On this point we refer to our discussion in Part A, where we concluded that setting a limit on total abstraction is the most pragmatic way of achieving the desired minimum flows.
- 13.25 During the hearing the applicant advised that it preferred to install a gallery intake rather than using a rotary fish screen. We agreed with their departure from the application as notified because it would result in better environmental outcomes, no one was disadvantaged by the departure, and it would remove the need for the additional 200 l/s diversion needed for operation of the fish screen and its subsequent discharge back into the river. Hence the arguments presented by Mr Webb (Fish & Game) with respect to wildlife management are no longer relevant. In addition subtracting the 200 l/s off the total take allows ensures that the application fits within the total abstractable water as presented by Ms Vesey. We therefore conclude that the applicants proposed takes (either Option 1 or 2) are within the AWCO allocation limits.
- 13.26 Although consent for the applicant's take (either 1a or 2a) could be granted without breaching the AWCO minimum flows when gorge flows exceed 25 m<sup>3</sup>/s we note that all the water remaining in that flow band will be exhausted. That is, there will be no possibility of granting consents for other applicants unless existing consent holders surrender their rights or there is a voluntary reduction in the amount of water taken by all applicants. Submissions from Tara Hills, Omārama, Dunstan Peaks Stations requested that if consents were granted then conditions be put in place to protect downstream users and Ōhau Company Trust Ltd were concerned that the volume of water sought will limit the availability to other users and requested a schedule in the consent to allow other applicants' equitable use of the water resource. We agree and are of the view that while it would be unfair to allocate all remaining water in the flow band to one applicant, it would also be unfair to require this applicant to take a lesser amount when their take meets reasonableness and efficiency criteria. We have, however, considered the sustainability of the water resource when arriving at our decision.

#### **Terrestrial ecology**

- 13.27 Ms Stevens argued that the applicant had not presented sufficient evidence on terrestrial vegetation and that there was a risk that rare species would be destroyed by irrigation. Further, she stated, many of species likely to be present of these flats were diminutive, and difficult to find. She argued that the seed banks of these species remained in the soil and if grazing pressure was removed (including rabbits) then we could see a regeneration of native species. We also note the evidence of Dr Walker in terms of the need for more in-depth investigation on this subject site.
- 13.28 We agree with Ms Stevens and Dr Walker that the applicant's original description of terrestrial vegetation and assessment of likely effects was inadequate. However subsequent vegetation surveys undertaken by Dr Bartlett and reported in her right of reply have effectively provided this information and confirmed that the property is largely devoid of significant vegetation. Whilst we appreciate that Dr Bartlett's transects are at best 'a sample' of the vegetation within the command area, we are of the view that chances of the proposal affecting rare or endangered species, not widely found elsewhere in the Mackenzie Basin, are low. We are also mindful that dryland farming is a permitted activity and that removal of grazing (including rabbits) is a very unlikely scenario. Consequently we are of the view that any remaining native terrestrial vegetation on the property is unlikely to be sustainable, even in the absence of irrigation.

#### **Water Quality and Aquatic Ecology**

- 13.29 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 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 applicants proposed threshold of 1 mg/L NO<sub>3</sub>-nitrogen; and
  - (c) Periphyton growths and other ecological effects in Omārama Stream and the Ahuriri River.
- 13.30 The applicant has proposed significant 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.
- 13.31 A starting point for the consideration of effects on points (a)-(c) above is the FEMP. Evidence on the FEMP was given by Dr Robson, but for consistency with other decisions we have independently audited the FEMP. Key points arising from our audit and additional to Dr Robson's evidence are summarised below.
- 13.32 Mackenzie soil series dominate the site. They are predominantly shallow and stony and excessively to somewhat excessively well drained, and are characterized by sandy loam to very stony loamy sand top soils and B horizons over very stony sand C horizons below 30 cm.
- 13.33 The FEMP presented the results of soil profiling along a 100 m transect on the site. It confirmed the soils were very shallow with a median depth to C horizon of ~20 cm. As noted in Part A there are good reasons to expect that OVERSEER will underestimate nutrient load from shallow soils, which is why Dr Snow (on behalf of MWRL) recommended that the highly developed setting (which ignores nitrogen immobilisation) be used as a pragmatic conservative measure. There is insufficient information in the FEMP to gauge whether significant areas of the site do not have shallow soils, but with no evidence to the contrary we assume that the transect is representative and therefore conclude that the highly developed setting would provide a more conservative basis for estimating nitrogen losses. We acknowledge that there is a divergence of opinion (see Part A) on the scientific basis for using the highly developed setting.
- 13.34 For the applicant, the WQS identified the Ahuriri Arm of Lake Benmore as requiring the most stringent mitigation requirements. These mitigation requirements cap WHL Killermont's nutrient discharges at 34,716g N per annum and 459 kg P per annum (based on 1,100 ha of irrigation). The 5 farm systems modelled were all within this MWRL-defined cap, even using the highly developed setting. We note that the calculated nutrient exports are approximately 20,000 kg N for all systems except for cut and carry, which has predicted nitrogen export ~9000 kg per year less than the other systems (no significant change in phosphorus export).
- 13.35 The cubicle barns and effluent management options are factored into OVERSEER. We accept the evidence of Dr Robson for MWRL and Dr Ryan for Meridian (see Part A) that the housing of cows over winter the farms should result in a significantly reduced leaching load compared to a typical New Zealand dairy farm system and that nitrogen loads of the order of 16 –21 kg N/ha/y are achievable. We note that the OVERSEER modelling (highly developed) is at the lower end of this range.
- 13.36 None of the other mitigation measures proposed in the FEMP are likely to result in significant nutrient reductions above that predicted in OVERSEER and/or could be expected using good agricultural practice.
- 13.37 Therefore the critical issues are:
- (a) Is the predicted nutrient load from the five farming systems realistic?
  - (b) What effect will the predicted nutrient load (alone and in combination with other applications we grant) have on the surface waters listed in the PNRRP and NRRP making reasonable assumptions about flow paths?
  - (c) Can the effects be avoided, remedied or mitigated?

#### Predicted load realistic

- 13.38 The inputs to OVERSEER were audited by Mr McNae who reported a number of issues with the inputs, viz, very low clover content of pasture, high reliance of cubicle barns and feed pads to

meet NDA (dairy option) and use of only the developed setting. Dr Robson partially addressed these issues in her right of reply agreeing that the clover content would need to be part of the annual OVERSEER audit. We note the latest revision of the FEMP did include the highly developed option but that in comparison to other properties appeared to make a relatively small difference to predicted nitrogen losses.

- 13.39 Overall, we are of the view that the OVERSEER modelling may have underestimated nitrogen losses, in particular, from this site. This is because of the extremely shallow soils, their stony nature and high drainage rates, and uncertainty about their extent. We also note the caution of nutrient uptake by pasture given by Mr McNae. The appendix on the effects of high exchangeable Aluminium authored by Dr Espie and tabled by Mr Gregory Stuart (Farm Manager, Tara Hills) give additional reason for being cautious about the extent of nutrient uptake by pasture. All farm systems with the exception of cut and carry predict very similar nutrient losses, which is understandable in terms of the applicants wish to maximise return on investment within the environmental parameters they perceive to be working within. However the stochastic nature of the modelling, together with the lack of error and/or sensitivity analysis of particular parameters do not give us confidence in the accuracy of the predictions. We note that OVERSEER has not been validated in the Mackenzie Basin and also that OVERSEER is not currently configured to simulate a solely cut and operation.

#### Effects on waterbodies

##### *Ahuriri Arm of Lake Benmore*

- 13.40 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 any other applications we grant.
- 13.41 In Dr Freeman's addendum (on behalf of the Regional Council) he gave a useful summary of estimated total property nitrogen loads to the Ahuriri Arm associated with irrigation development proposals, together with their priority as determined by Professor Skelton on the basis of the date the application was deemed to be notifiable. From Dr Freemans (Table 5) figures (based on modelling using the developed setting only) we calculate that a fully developed WHL Killermont would contribute ~20% of the new additional nitrogen load to the Ahuriri Arm (except for the cut and carry option would contribute ~10%). Using the highly developed setting would elevate this to 23%. This is, in our view very significant, and it is highly likely that additional nitrogen loads of this order (even without loads from other consents we may grant) would result in the Ahuriri Arm becoming mesotrophic.

##### *Groundwater*

- 13.42 We agree with Dr Bright that effects on groundwater in this case are manifest by interaction with surface waters and that groundwater is largely a matter for policy considerations. This notwithstanding, we note that Dr Bright predicted that drainage from the root zone could reach 7.7 mg/L NO<sub>3</sub>-N. The final concentration in groundwater will depend upon dilution from upland sources and there has been no evidence presented that allow us to estimate this dilution.
- 13.43 We also note that Dr Bright considered that groundwater beneath the irrigation command area would drain to regional Ahuriri groundwater and enter the Ahuriri River well downstream of WHL Killermont. We discuss this in relation to water quality and periphyton growths in the next section.

##### *Periphyton growths in Omārama Stream and Ahuriri River*

- 13.44 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).

- 13.45 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.
- 13.46 There are two important elements that will determine whether the MfE guidelines are likely to be breached:
- (a) The flow path of drainage water/groundwater with respect the river, and,
  - (b) The amount of dilution as the drainage water mixes with the river, particularly under summer low-flow conditions.
- 13.47 Superimposed on both of these elements is the groundwater travel time, however for our purposes, which only affects the timing of any effect, rather than the effect itself.
- 13.48 As noted above, Dr Bright told us the Ahuriri River was perched in the vicinity of Killermont and that all drainage water is expected to flow to regional groundwater in the Ahuriri River basin and to not contribute directly to Ahuriri River or to Omārama Stream flow locally. He told us that groundwater started to emerge in the vicinity of SH8 Bridge. We accept that WHL Killermont-sourced drainage water is unlikely to affect the Omārama Stream but note that there is not a strong evidentiary base for it not entering the Ahuriri River closer to Clay Cliffs. The satellite photo (Figure 1) for example appears to show clear hydraulic linkages to the river from the northern part of the irrigation area at least.
- 13.49 Regardless of where it enters the Ahuriri, we assume that it will enter the river well before the delta and that a considerable length of river may be potentially affected.
- 13.50 Using the applicants OVERSEER modelling predictions and assuming (i) a uniform mass flow into the river, and (ii) a low flow in the river of 10 m<sup>3</sup>/s (flow at which most severe restrictions imposed by AWCO) then the resulting elevation in nutrient concentration would be sufficient to support growths of benthic algae sufficient to exceed the aesthetics/aquatic biodiversity guideline (oligotrophic-mesotrophic) albeit with lengthy accrual times (>1 month between flood flows). Considering that WHL Killermont comprises only ~20% of the proposed new nitrogen load to the river, there is reason to be cautious.
- 13.51 We conclude that while leachate from WHL Killermont alone is unlikely to cause nuisance periphyton growths in the Ahuriri River, it may well do so in combination with other consent applications before this committee should they be granted.

#### Avoided, remedied or mitigated

- 13.52 We acknowledge the efforts the applicant has proposed to mitigate the effects of their activities. We agree that the cubicle barns (dairy option) are an effective measure to reduce nutrient export from WHL Killermont. However, we are still not convinced that even these significant mitigation measures will be sufficient to avoid adverse environmental effects to high quality waterways as outlined above. Our view is that mitigations proposed by the applicant for the other farm systems nominated will not result in a significant reduction in nutrient lost from the property beyond what could be expected from good agricultural practice (assumed by OVERSEER).
- 13.53 The applicant has proposed a lock-step approach as a measure to ensure that any remaining 'unknowns' are addressed before their activities are fully developed. This is an advancement of the applicant's thinking on adaptive management about which we gave our views in Part A.
- 13.54 The lock-step approach in essence, includes the design and implementation of a pre-irrigation monitoring programme. Simply put, if the baseline assumptions are not confirmed through this monitoring, then irrigation cannot commence.
- 13.55 While attractive at first blush it raised for us the question: Why should consent be granted in the circumstance where what we considered to be fundamental pre-consent research was either not completed or not completed adequately?
- 13.56 Our concern with this approach is that while we see the sense in the circumstances of this case of pre-irrigation monitoring, we note that, firstly, it is more than pre-irrigation monitoring; indeed, it is the design and implementation of a pre-irrigation monitoring programme.

- 13.57 Next, if we are to grant consent on this basis, then our view of the evidence produced there is a very real risk the applicant group would not be able to proceed beyond the pre-irrigation monitoring programme. Rather than grant a consent that could not be given effect to and which might create difficulties for both the applicant group and the consent authority, we considered it more appropriate that we recognise, through declining consent, that the applicant bears the primary responsibility of coming to a hearing with adequate information.
- 13.58 In addition, to the lock-step approach, the applicants have (in Mr Whata's closing arguments) proposed staging (capping nutrient discharge at 80% of the provisional NDA in the first full five years of irrigation) and ratcheting (a mechanism that provides for reducing nutrient discharge in the event that the monitoring reveals that loadings are approaching 90% of the Ahuriri TLI threshold).
- 13.59 The difficulty we have with both of these suggestions is that we are of the view that the Ahuriri Arm is already close to the oligotrophic-mesotrophic boundary and even 80% of the proposed NDA would be sufficient to effect that change in state. Similarly, after 5 years of nutrient discharge (excluding allowances for travel time) we would be reasonably certain that the Ahuriri Arm would have crossed the mesotrophic boundary. In would in our view, be irresponsible to grant a consent on the basis that once the Ahuriri Arm reached that undesirable state, the applicants would then have to ratchet back their nutrient discharge.
- 13.60 In summary we are of the view that that the lock-step approach should not be a substitute for a robust AEE and/or supporting evidence in which the state of the existing environment is adequately described and reasonable efforts are made to address reasonably foreseeable environmental effects. As discussed in Part A we are of the view that the MWRL WQS falls short of the standard expected for a proposal (the total consents for irrigation before us) of this magnitude.

## Cultural

- 13.61 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. Mr Horgan summarized Ngāi Tahu's position as being:

*"The Ngāi Tahu experience with large scale land use intensification has, almost without exception, been negative. From our perspective, there is an unequivocal link between irrigation related activities and waterway degradation, and in turn, further loss of access to mahinga kai resources. In this context, it is our view that these consents should only be granted if you are satisfied that there is a high level of certainty that the package of mitigation measures proposed by the applicants (in particular the Farm Environmental Management Plans) will ensure that sustainable water quality outcomes are achieved. In the absence of such certainty, then we submit that you must adopt a precautionary approach and decline the consents."*

- 13.62 While we acknowledge that the mitigation measures proposed by the applicant go further than many other large scale dairy conversions that have gone before it, we do not have the high degree of certainty Ngāi Tahu are seeking, that sustainable water quality outcomes will be achieved.
- 13.63 In addition all the drainage from WHL Killermont will drain to the Ahuriri River which enters Lake Benmore via the Ahuriri delta. The Ahuriri delta is of particular cultural significance to Ngāi Tahu as a source of mahinga kai and is a focus of their restoration efforts (see Part A).

## Positive Effects

- 13.64 The granting and exercising of these consents will have positive economic effects, both for the applicant, the district, and indeed the country. There will also, in our view be significant positive benefits in terms of reducing or halting wind-borne soil erosion over a large tract of land and providing a means of controlling invasive species such as wilding pines and hieracium. The fencing off of streams and water races will also have positive effects with respect to improving aquatic habitat within the applicant's property.

## Permitted baseline

- 13.65 In accordance with s104(2), we have the discretion to disregard an adverse effect on the environment where the relevant plan permits an activity with that effect. The issue of the permitted baseline was raised on several occasions by the applicant in relation to the effects of permitted activities (including minor water takes and dryland farming) on landscape and nutrient loads.
- 13.66 Mr Whata's closing legal submission presented an Appendix showing the modelled nitrogen and phosphorus losses arising from dryland farming, which is a permitted activity. For WHL Killermont nutrient losses were modelled on a stocking rate of 0.2 stock units/ha (sheep) and it was noted that because of the poor soils on the property, without irrigation, this was the maximum production considered feasible. The total nitrogen losses predicted as permitted baseline were 2.5 kg N/ha/y compared with 15.6 kg N/ha/y predicted (WQS) after irrigation (developed setting). The equivalent losses for phosphorus were 0.1 kg P /ha/y (permitted baseline) versus 0.4 kg P /ha/y (after irrigation). In her evidence Dr Robson noted that the losses under a permitted baseline were only approximate. Nevertheless in this case the nutrient losses after irrigation are between 4x and 6 x those of the permitted activity. For nitrogen we are of the view that the margin may be even greater for reasons we have outlined earlier in this decision.

## Key conclusions on effects

- 13.67 In relation to the actual and potential effects of the proposal, our key conclusions are as follows.
- 13.68 The single biggest effect in our view would be for the nutrient draining from the irrigation area to contribute significantly to increasing the trophic state of the Ahuriri arm of Lake Benmore with the likely result in a change from its current oligotrophic state to a mesotrophic state.
- 13.69 We are also of the view that nutrient draining from the irrigation area could, in combination with other applicants at this hearing, cause periphyton in the Ahuriri River to breach MfE guidelines for aquatic biodiversity and recreation under summer low flow conditions.
- 13.70 Our view is that the lock-step approach proposed by the applicant is not appropriate to manage the potential changes in trophic state of these significant and valued water bodies because of the likely long travel times before any effect is manifest.
- 13.71 The applicant has proposed significant and substantial nutrient mitigation measures; particularly cubicle barns. However, in spite of these measures we do not have, we think, an appropriate level of certainty that sustainable water quality outcomes will be achieved.
- 13.72 The granting of these consents would result in significant economic benefits as well as positive environmental effects in terms of reducing/halting wind-borne soil erosion, and controlling invasive species over a large tract of land.
- 13.73 The existing terrestrial vegetation on WHL Killermont is of low ecological value. Irrigation will irreversibly eliminate any residual native vegetation, but there is no evidence of rare or endangered species present that could cause us to decline the consent on those ground, or invoke conditions to protect such species. Overall our view is that effects of terrestrial vegetation will be minor.
- 13.74 The applicant's requested change to gallery intake structure have circumvented the need for an additional 200 l/s take for maintenance of fish screens. This has had the effect of ensuring the requested take will not breach the minimum flow requirements of the AWCO. However, we are concerned that the requested take will utilise all the remaining water available for use within the flow band (except under flood flows) and this could be unfair on future applicants. Similarly, we recognise that the applicants requested take meets reasonable and efficient use criteria and there is no good reason to curtail their take on those grounds.
- 13.75 The effects both locally and at a cumulative level on landscape and amenity we think will be acceptable provided that the mitigation measures proposed by Mr Glasson are fully implemented.

## 14 EVALUATION OF RELEVANT PLANNING INSTRUMENTS

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- 14.1 Under s 104(1)(b) of the Act, we are required to have regard to the relevant provisions of a range of different planning instruments. Our Part A decision provides a broad assessment of those planning instruments and sets out the approach we have applied to identification and

consideration of the relevant provisions. The following part of our decision should be read in combination with that Part A discussion.

- 14.2 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.
- 14.3 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, which are water quality, tangata whenua values and landscape.

#### **Water quality**

- 14.4 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.
- 14.5 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 and lakes and Objective 1(d) seeks to safeguard the integrity, form, functioning and resilience of the braided river system.
- 14.6 We have determined that granting the consents was likely to result in the Ahuriri Arm of Lake Benmore becoming mesotrophic in summer from its current oligotrophic state. Deterioration from oligotrophic to mesotrophic is a significant step along the continuum to eutrophy. Whilst not so important in terms of significance to life-supporting capacity, mesotrophic lakes are nevertheless increasingly at risk from toxic algal blooms, whereas under oligotrophic conditions such risk is negligible. We have also determined that drainage from the irrigation area was likely to result in maximum annual periphyton biomass exceeding MfE guidelines with respect to aquatic biodiversity and recreation during low flow summer conditions. Allowing these outcomes to occur is in our mind contrary to Objectives 1(b) and 1(d).
- 14.7 Objective 1(c) requires us to manage waterbodies in a way that maintains natural landscape and amenity characteristics and qualities that people appreciate and enjoy. Given our finding in terms of the likely results in the Ahuriri Arm of Lake Benmore becoming more mesotrophic in summer from its current oligotrophic state and our finding in terms of maximum annual periphyton biomass exceeding MfE guidelines during low-flow summer conditions, then in our view granting consent would not be consistent with Objective 1(c).
- 14.8 We note that Objectives 2, 3, 4 and 5 'in the round' deal with and provide for the allocation of water. However, the critical qualification is that water can be allocated provided that to do so it is consistent with Objective 1. Given the findings we have made about Objective 1, we must conclude that allocating water in terms of the balance objectives would not be consistent with the overall scheme of the WCWARP. We have reached 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.
- 14.9 The Ahuriri River is highly rated for its amenity values, in particular for trout fishing, picnicking, swimming, duck shooting, kayaking, canoeing and rafting. In addition to this, a black-fronted tern restoration program is situated on the Ahuriri River. Taking into account these matters, we do not see how the granting of consent given the water quality outcomes that we are concerned about, that we would be enabling present and future generations to access the water resource to gain cultural, social, recreational, economic and other benefits.
- 14.10 Policy 1 of the WCWARP requires us to take a whole of catchment approach and requires us to recognise the importance of the connectedness between all parts of the catchment from mountains to the sea. In this particular proposal, given the findings we have made in relation to water quality and the connectedness between all parts of the catchment, we have a very real concern that grant of consent could lead to environmental outcomes that would have significant adverse impacts on the water quality of the entire catchment. We conclude then that grant of consent would not be consistent with Policy 1.
- 14.11 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 in the PNRRP not being achieved. As explained in our Part A decision, we have considered the objectives of the PNRRP and the now operative NRRP in relation to the current proposal.

- 14.12 Under the PNRRP, the Omārama Stream and Ahuriri River were classified (WQL1) as 'Natural' under which the water quality and substrate had to be maintained in that state (i.e. No change). Under the operative NRRP the classification changes to high country alpine, which has the same requirement (no change). We are of the view that granting these consents could result in a deterioration in the quality of the Ahuriri River; specifically the breaching of periphyton guidelines under summer low flow conditions; particularly in conjunction with other applications in this catchment.
- 14.13 The Ahuriri Arm of Lake Benmore is classified as an Artificial Lake under Table WQL6 of the NRRP, which has as an outcome the TLI shall not be greater than 3 (i.e. oligotrophic-mesotrophic boundary). As discussed in Part A and earlier within this Decision, we are of the view that granting these consents would result in a deterioration of lake water quality and cause that outcome to be breached. Therefore on both criteria (maximum TLI and intent of the water quality outcomes) Objective WQL1.2(2) of the NRRP would not be achieved.
- 14.14 For non-point source discharges to groundwater, Objective WQL2 of the PNRRP distinguishes between groundwater that is "*unaffected or largely unaffected by human activities*" [as reported in 2004]. While there is extremely limited groundwater quality data in the Upper Waitaki there appears to be general agreement that nitrate nitrogen concentrations are generally low (<1 mg/l) and the WQS (#3.85d Part A) proposed a threshold of 1 mg/L NO<sub>3</sub>-nitrogen for those catchments that sit below the threshold.. Because of the importance of groundwater as a determinant of surface water quality, our view is that the 1 mg/L NO<sub>3</sub>-Nitrogen threshold is appropriate. We note the NRRP Objective WQL2.1(3) states that "Where groundwater enters a river or lake, the concentration of any contaminant in the groundwater shall not result in the surface water quality being reduced below the relevant provisions of Objective WQL1, or the standards set by a water conservation order." We note that Dr Bright states the maximum NO<sub>3</sub>-Nitrogen concentration in drainage water will be 7.7 mg/L, but that there is insufficient data from which to predict maximum concentrations in groundwater and consequently whether the surface water threshold in WQL2.1(3) could be breached.
- 14.15 Overall then, having regard to the scheme of the WCWARP and the NRRP we reach a conclusion that granting consent in this case would not be consistent with the key objectives and policies of those plans.

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

- 14.16 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 specifies minimum flows and levels for water bodies and allocation limits for specific activities. In relation to these applications, the applicant proposes to comply with flow and level regimes in the WCWARP, which should ensure that the proposal is consistent with Policies 3 and 4.

#### **Efficient use of water**

- 14.17 Objective (4) of the WCWARP seeks to promote "*the achievement of a high level of technical efficiency in the use of allocated water*". The technical efficiency of the application is consistent with the provisions of the WCWARP. Application by spray within the constraints of an annual volume will require a high degree of efficiency to ensure that crops and pasture are not stressed in extreme conditions and water is not wasted.
- 14.18 Policies 15 – 20 deal with efficient and effective use of water and are applicable to this application. The Policies provide for an efficient use of water so that net benefits are derived from its use and are maximised and waste minimised. We are satisfied that the rates and annual volumes sought by the applicant reflect an efficient and effective use of water and that the reasonable use test can be met. Overall, we consider that the proposed irrigation will comply with the reasonable use and efficiency provisions of the WCWARP.

#### **Tangata Whenua**

- 14.19 Objective 1(a) of the WCWARP relates to the integrity of mauri and is closely linked to Objective 1(b). If we are not satisfied that the health of a particular water body is being safeguarded then the mauri is not being safeguarded either. As noted above, we do not have confidence that even with the mitigation measures proposed by the applicant, sustainable water quality outcomes will be achieved. It therefore follows that granting the consents may not maintain the integrity of the mauri and also, will not meet the spiritual and cultural needs of the tangata whenua

- 14.20 Objective WQN1 from Chapter 5 of the NRRP seeks to enable present and future generations to access the regions surface water and groundwater resources to gain cultural, social, recreational, economic and other benefits, while (c) safeguarding their value for providing mahinga kai for Ngāi Tahu and (d) protecting wāhi tapu and other wāhi taonga of value to Ngāi Tahu. This objective aligns with one of the principal aspirations expressed by Ngāi Tahu during the hearing of enhancing mahinga kai resources and supporting ecosystems. The potential for an increase in algal blooms at important mahinga kai gathering sites such as the Ahuriri Delta would be a serious consequence for Ngāi Tahu. This application is one of a number that will result in nutrient losses that travel to the Ahuriri Arm, and our finding that there is likely to be a deterioration in trophic status from oligotrophic and mesotrophic should these applications be granted causes this application to be inconsistent with the objective.
- 14.21 Objective WTL1(d) from Chapter 7 of the NRRP seeks to achieve no overall reduction in the contribution wetlands to the relationship of Ngāi Tahu and their culture and traditions with their ancestral lands, water, mahinga kai sites, wāhi tapu and wāhi taonga. The traditional relationship that Ngāi Tahu are seeking to restore through restoration of mahinga kai and kaitiakitanga practices relate principally to the Ahuriri Delta, and the wetlands in the Lower Ahuriri. Given the uncertainty over the water quality issues related to this and the other applications in the Ahuriri catchment we find that the proposal would be inconsistent with the objective.

### **Landscape values**

- 14.22 We discuss 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.
- 14.23 In considering these provisions, we are informed by the provisions of the Waitaki District Plan, which identifies the applicant's property as being outside the area classified as an Outstanding Natural Landscape. Given this circumstance, a more permissible or relaxed approach to landscape issues (such as they are in the context of this application) is, we think, available to us.
- 14.24 For the reasons already advanced, we think that with appropriate mitigation measures the landscape effects of this proposal are capable of being addressed by conditions and could achieve consistency with the relevant objectives and policies. However, given the finding we make on water quality which ultimately determines the outcome for these applications, we do not think it is necessary for us to advance this matter further.

### **Key conclusions on planning instruments**

- 14.25 For all of the above reasons, we consider that granting the consent would be contrary to the objectives and policies of the WCWARP (incorporating the PNRRP) and the NRRP relating to water quality. As consequence of this is that the proposal would also be contrary to the objectives and policies relating to tangata whenua values. In terms of landscape issues, if the mitigation measures recommended by Mr Glasson were included then we think that a grant of consent would be consistent with both the Operative and Proposed CRPS.

## **15 EVALAUTION OF OTHER RELEVANT S104 MATTERS**

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- 15.1 Under s104(6) RMA we may decline application for resource consent on the grounds that it has inadequate information to determine the application. However before doing so, we must have regard to whether any request made of the applicant for further information or reports resulted in further information or any report being available.
- 15.2 Any effects on receiving waters (creeks, rivers, lakes) will be manifest by the ingress of groundwater to the receiving water in question. In our view, the applicant has not provided sufficient information to understand the likely fate of nutrients leached from the irrigation command area to receiving waters. The evidence on this matter is rudimentary, based on few field measurements, and gives little geographic certainty as to where in the Ahuriri River system drainage waters will emerge. Having a reasonable understanding of recharge areas, together with approximate travel time is important in order to gauge the impacts of the activity on Ahuriri system and over what length.



- 15.3 We note the applicant proposes to address these uncertainties through their lock-step approach: where the information is gathered, audited, and conclusions made and agreed prior to exercising the consent. However we have rejected this approach for the reasons set out in Section 13.

## **16 PART 2 RMA**

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

### **Section 6 – Matters of National Importance**

- 16.2 Section 6 identifies matters of national importance that we must “recognise and provide for” when making our decision, including preserving the natural character of lakes and rivers (s6(a)), protecting outstanding natural features and landscapes (s6(b)) and the relationship of Maori with the environment (s6(e)).
- 16.3 In relation to s6(a), we consider that the natural character of Lake Benmore may be compromised if we grant this consent. While it is unlikely that a shift from oligotrophic to mesotrophic conditions will be readily seen by the public as a deterioration in natural character, for those knowledgeable about lake quality and fisheries it will be perceived that way because it will place Lake Benmore firmly on the continuum of increasing trophic waterbodies that are very difficult to reverse. We are also cognisant that Lake Benmore is not a natural waterbody, but is nevertheless nationally significant because of its importance for power generation and supporting the best lake fishery in the South Island.
- 16.4 In addition, the traditional and cultural significance of the Ahuriri Delta to Ngāi Tahu and, in particular, their efforts to promote restoration of mahinga kai in that area, leads us to conclude that granting these consents would not recognise and provide for provide for section 6(e).
- 16.5 For the above reasons, we consider that granting consent to the proposal would not recognise and provide for sections 6(a) and 6(e), as we are required to do under the RMA.

### **Section 7 – Other Matters**

- 16.6 Section 7 lists other matters that we shall “have particular regard to”. We make the following findings in relation to each of those matters as they are relevant to the application, referring to the sub paragraph numbers of s7:
- (a) The principle of Kaitiakitanga has been observed to the extent that the applicant has endeavoured to consult with and understand the tangata whenua (Ngāi Tahu) values that might be subjected to impacts from the proposed WHL Killermont irrigation development. The applicant has gone on to develop a Farm Environmental Management Plan and a nutrient mitigation process that they consider will address the kaitiaki interests of Ngāi Tahu. We note however that Ngāi Tahu remain concerned at the end of the hearing, as we were, with the scale and consequently the potential cumulative impacts the proposed development might have on downstream waterways and mahinga kai values.
  - (aa) The ethic of stewardship has been followed with respect to land management of the applicant’s property. The applicant has submitted that an irrigated farm system is the only way to arrest the very considerable problem of wind-borne soil erosion and control invasive species such as wilding pine and hieracium. We agree with that assessment. On the other hand, however, we have determined the loss of nutrients offsite is likely to cause adverse effects on waterways, even with the significant mitigation measures proposed, which is not consistent with stewardship. This is brought about because of the position of the applicant’s property in the landscape, relative to waterbodies valued by the community.
  - (b) The applicant has demonstrated their proposal constitutes an efficient use of water.
  - (c) We think the effects on recreation and amenity values, particularly those arising from water quality outcomes from a grant of this proposal, will be significant.
  - (d) The intrinsic value of terrestrial ecosystems will be affected with existing vegetation replaced by pasture. However the existing value of terrestrial ecosystems within the irrigation command area is low and there is little prospect of its restoration under existing

permitted land use. Stream ecosystems within the property boundary will be enhanced through fencing and planting of some riparian vegetation. However this may be offset by deterioration of creeks and river downstream should relatively nutrient-enriched groundwater intersect them, and the trophic state of the Ahuriri Arm of Lake Benmore will deteriorate.

- (e) The overall quality of the environment downstream of the applicant's property will in our view be degraded, and although the degree of that degradation cannot be predicted with confidence, there are significant consequences should the Ahuriri Arm become mesotrophic.
- (f) The Ahuriri Arm valued highly by Ngāi Tahu, fishermen, tourists, and the local population. The WCWARP and NRRP recognise the finite nature of water resources in the Mackenzie Basin and seek to ensure that they are maintained or enhanced and certainly not degraded.
- (h) Fish & Game have not raised any issues with respect to trout in salmon in water bodies downstream of the applicant's property. However, should nuisance growths occur then trout and salmon habitat will be compromised to some extent.

16.7 Having particular regard to the above matters in the context of section 7, we conclude that the grant of consent could not be supported.

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

16.8 Section 8 of the RMA has had a cascading influence on the development of regional and district plans in so far as they affect the Upper Waitaki through the integration of Ngāi Tahu values into the respective objectives and policies. The applicants were part of the initiative (through MWRL) to develop a Cultural Impact Assessment and the subsequent engagement of a cultural expert (Mr Buddy Mikaere) to assist the individual applicants such as WHL Killermont to relate the findings of the CIA to their property. The applicant made an effort to consult with Ngāi Tahu interests to clarify and mitigate identified cultural issues, this included on site visits by Ngāi Tahu. While the applicant has developed mitigation measures to reduce or remove the negative impacts of the proposed activity, we note that the scale of the proposed development has made it difficult for Ngāi Tahu to be confident that the cumulative effects are no more than minor. Their position at the close of the hearing was that they remained opposed to this application unless we (the Commissioners) were assured that in granting this consent (with conditions) effects on water quality would be no more than minor. We cannot give that assurance.

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

16.9 Turning now to the overall purpose of the RMA, that is, "*to promote the sustainable management of natural and physical resources*".

16.10 We consider that taking all issues into account, the take and use of water from the Ahuriri River for spray irrigation of 1,100 ha of crops and pasture is not consistent with the purpose of sustainable management. Although it will make positive economic contribution to the overall regional (Waitaki) wellbeing and will have the positive environmental effect of reducing soil erosion and managing terrestrial invasive species, the life supporting capacity of aquatic ecosystems will not be safeguarded, but rather, it will be degraded.

16.11 In our view, the scale of the proposal is such that unacceptable adverse effects on the quality of downstream ecosystems are highly likely.

16.12 This leaves section 5(2)(c) RMA and the obligation to avoid, remedy or mitigate any adverse effects of activities on the environment.

16.13 The applicant has proposed significant measures to mitigate nutrients generated by its activities. These include the use of cubicle stables to house dairy cows for much of the year, which will largely eliminate urine spotting, and result in an even distribution of dung and urine across the irrigation command area. We are reasonably confident that the reduction in nutrients predicted from this change in management practice over conventional dairying systems will be achieved. However despite that mitigation, our view is that the scale of the proposal is such that remaining (unmitigated) nutrient leaving the property will be of sufficient magnitude such that adverse environmental effects will ensue.

- 16.14 The applicant has also proposed four other farming systems from the irrigated pasture, being cut and carry (no animals), sheep and beef finishing, and a mixed farm enterprise. The applicant has made it clear that the cubicle dairying system is the favoured option, but the other systems remain as options. Indeed Mr Whata invited us to nominate which system(s) would be acceptable. We decline to do so because apart from the cut and carry system, predicted nutrient losses from the other systems are very similar (well within error of the modelling). Apart from cubicle dairying and the proposal to export the effluent from the property (about which we have insufficient detail) there are no other mitigation options tabled that will prevent significant nutrient from being lost from the property and entering aquatic ecosystems. The problem is not so much the mitigation proposed, but the overall scale of the proposal leading to significant nutrient losses (albeit at relatively low rates/unit area compared with other systems).
- 16.15 We acknowledge that the cut and carry system has about half the predicted nutrient losses of any of the other options. However, we do not consider that granting an application for consent for this option is consistent with sustainable management because:
- (a) The predicted nutrient load still represents a significant nutrient load in the context of this sensitive catchment,
  - (b) the regional return on investment for this option is low, particularly as we have declined other dairy applications in the catchment that might have been a market for the forage, and,
  - (c) the same changes to landscape and terrestrial vegetation would ensure as for the other options for relatively little economic return
- 16.16 The applicant has proposed a lock-step approach as a means of ensuring that the uncertainties discussed during the hearing are addressed prior to full exercise of the consent. The applicant has also discussed adaptive management approach with us. However, for the reasons discussed in Part A, we do not consider that to be appropriate for several reasons, which in summary are:
- (a) We considered the assessment of environmental effects carried out by MWRL on behalf of all applicants inadequate for a proposal (all applications before us) of this scale and our view was gathering the required data after the issue of consents is not the appropriate way to address this deficiency;
  - (b) The lock-step approach is not acceptable in our view because of the potential effects of the activity, the paucity of knowledge and our high degree of concern that potential effects will be significant. Even if adaptive management conditions were utilised, we are not comfortable that consent holders would be able to adjust scale or timing of their activity or change practices, particularly where there was a register of adverse effects on the receiving environment.
  - (c) There are groundwater travel times to consider. Because they could be very lengthy (in terms of travel time) causing lag, they do not fit in with the proposed timetable of the lock-step approach. Such lags make adaptive management conditions, in our view, inappropriate.

## **17 OVERALL EVALUATION**

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- 17.1 Under s104B of the RMA, we have a discretion as to whether or not to grant consent. This requires an overall judgment to achieve the purpose of the Act and is arrived at by:
- (a) Taking into account all the relevant matters identified under s 104;
  - (b) Avoiding consideration of any irrelevant matters;
  - (c) Giving different weight to the matters identified under s 104 — depending on our opinion as to how they are affected by the application of s 5(2)(a), (b), and (c) and ss 6-8 — to the particular facts of the case; and then in light of the above; and
  - (d) Allowing for comparison of conflicting considerations, the scale or degree of conflict, and their relative significance or proportion in the final outcome.
- 17.2 We consider that the key conflicting considerations in this case are that there will be:

- (a) considerable economic benefits to the wider district, positive environmental outcomes in terms of controlling wind-borne soil erosion and invasive weed species; but
  - (b) adverse environmental effects on the Ahuriri Arm of Lake Benmore and the Ahuriri River.
- 17.3 We have considered the scale or degree of conflict and note that major focus of this hearing is to sustain the water quality of streams, rivers and lakes in the Upper Waitaki catchment. We therefore consider that because of our finding that the Ahuriri Arm of Lake Benmore likely to increase in trophic state from oligotrophic to mesotrophic, this has to be our overriding consideration. We note that the total lack of data supporting the modelling of groundwater played a significant role in coming to our conclusion as did the position of applicant's property in relation to the Ahuriri River. The potential adverse effects are significant, which meant that we took a conservative approach in coming to our decision, which we consider to be justified approach given the long-term consequences of granting the consents, and the potential effects being realised.
- 17.4 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 decline consent for these applications.

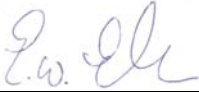
## 18 DECISION

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- 18.1 Pursuant to the powers delegated to us by the Canterbury Regional Council:
- 18.2 For all of the above reasons and pursuant to sections 104 and 104B of the Resource Management Act 1991, we **DECLINE** applications CRC041788 and CRC073115 by Williamson Holdings Limited.

**DECISION DATED AT CHRISTCHURCH THIS 22ND DAY OF NOVEMBER 2011**

Signed by:

Paul Rogers	 _____
Dr James Cooke	 _____
Michael Bowden	 _____
Edward Ellison	 _____