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**IN THE MATTER OF** the Resource Management Act  
1991

**AND**

**IN THE MATTER OF** resource consent applications  
CRC041002 by WN Cameron for  
a water permit to take ground  
water, CRC41003 by WN  
Cameron for a water permit to  
take surface water and  
CRC0512795 for a water permit  
to divert and discharge surface  
water.

## **Evidence of Ian McIndoe**

### **INTRODUCTION**

#### **Background and Qualifications**

1. My full name is Ian McIndoe. I am a Soil and Water Engineer and hold the qualifications of BE (Hons) from Canterbury University and Dip Bus Stud (Finance) from Massey University. I am currently employed as Principal Engineer by Aqualinc Research Ltd, of which I am a director.
2. I have 30 years experience in water resources and irrigation related work. From 1984-90, I was the Ministry of Agriculture's water resources specialist involved in surface and groundwater allocation and management, including preparing the Ministry of Agriculture submissions on several water plans in Canterbury and other areas in New Zealand.
3. I have specialised in water allocation for irrigation and the effect of water restrictions on irrigation reliability and performance.
4. I am also an expert in irrigation design and irrigation efficiency, and have provided information and recommendations to Canterbury Regional Council covering several subjects including seasonal allocations, irrigation efficiency and irrigation reliability to help Council formulate their NRRP policies.
5. I was MAF's water resources specialist in Canterbury involved in surface and groundwater allocation and groundwater modelling from 1984-90.
6. I am a board member of Irrigation New Zealand.

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7. I acknowledge that I have read the code of conduct for expert witnesses contained in the Environment Court's Practice Note dated 31 March 2005. I have complied with it when preparing my written statement of evidence and agree to comply with it when giving oral evidence.

## **Applicants Represented**

8. I have prepared this evidence at the request of Wainui Station and Papamoa Enterprises who have applied to divert, discharge and abstract water from the Waitaki River and/or Wainui Stream to irrigate land below Waitaki Dam, as follows:

CRC041002 WN Cameron, now R Smith of Papamoa Enterprises

CRC041003 WN Cameron, Wainui Station

CRC051795 WN Cameron, now R Smith of Papamoa Enterprises

9. On 28 July 2008, the land to be irrigated associated with CRC041002 was sold to Mr Robert Smith. This was under a separate title to Wainui Station known as Corrie. Mr Smith has taken over the relevant applications from Mr Cameron. To reduce the potential for confusion I have retained the use of the name of the original applicant. Canterbury Regional Council also refer to the original applicant in their Officers' report.
10. Please note that I am representing WN Cameron and R Smith at the hearing, not Ms Keri Johnston of Irricon Resource Solutions.

## **Scope of Evidence**

11. The commissioners have already heard evidence on behalf of the applicants from other experts regarding issues common to all consent applications in this hearing. My evidence here specifically addresses localised and site specific issues relating to the three applications listed above.
12. All information for each application is provided in a separate section for clarity.

## **Sources of information**

13. In preparing this evidence, I have reviewed or referred to the following documents:
  - The original applications and assessments of environmental effects.
  - Any S92 requests for further information, and the information supplied.
  - Canterbury Regional Council S42(a) reports prepared by W Pascoe.
  - Waitaki Catchment Water Allocation Regional Plan.
14. The Investigating Officers' reports have been viewed and where appropriate comments are made within this evidence.

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15. My evidence uses information obtained from others. These include Mrs Sandy Cameron (Wainui Station), Mr Stephen Douglass & Ian Fraser (URS) I have discussed the use of that information with those parties.
16. The Investigating Offers' reports have been viewed and where appropriate comments are made within the body of this evidence.

## **WN CAMERON - CRC041002**

### **Background**

17. Mr WN Cameron of Wainui Station Ltd (the applicant) has applied for a replacement consent to abstract groundwater from gallery I40/0526 for the spray irrigation of up to 102 ha of farmland between State Highway 82 and the Waitaki River.
18. CRC041002 essentially seeks to replace consent WTK875192 issued originally by the Waitaki Catchment Commission & Regional Water Board. CRC041002 is an application that has been involved in the call-in process and was re-notified in the process. A 15 l/s increase in flow rate is requested.
19. The existing consent WTK875192, which authorises the taking of 38 l/s, and 540,000 m<sup>3</sup>/year, expired on 30 June 2007, is currently operated under RMA S124 continuation.
20. Mr Neal Borrie of Lincoln Environmental (now Aqualinc) prepared the application for the applicant. Mr Stephen Douglass of URS New Zealand Ltd (URS) subsequently supplied supplementary information on the application from December 2006.
21. Details of the application are as follows:
  - (a) To take and use groundwater from gallery I40/0526 (4 m deep, 1 m diameter), at map reference NZMS 260 I40:1853-9845, at a maximum rate of 53 l/s, 4,388 m<sup>3</sup>/day, with an annual volume not exceeding 647,700 m<sup>3</sup>/year.
  - (b) Water shall only be used for the spray irrigation of up to 102 hectares of pasture and feed crops on the area shown on the attached plan (see Attachment 1).
  - (c) A minimum flow for the Lower Waitaki River of 100 m<sup>3</sup>/s is sought, to be reviewed after five years of the WCWARP becoming operative.
  - (d) A consent duration of 35 years is sought.
22. The land on the margins of the Waitaki River has changed in the past due the river changing its path, taking some Wainui land. Some of that land has been returned as the river has changed again.
23. The land is used for growing pasture and greenfeed crops. The original consent was for 38 l/s, which was insufficient to reasonably irrigate the 102 ha in dry years.

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The increase in flow proposed takes the total flow to 53 l/s, which equates to approximately 0.52 l/s/ha or 4.5 mm/day.

### **Description of Irrigation System**

24. Water is pumped from gallery I40/0483 to a lateral move irrigation system via pipelines and hydrants. This method of irrigation is in my view an efficient applicator of water.
25. The gallery is located about 100 m from a flowing braid of the Waitaki River, although another braid that only flows during high river flows is about 30 m from the gallery.
26. Soils in this area tend to be light, with a water holding capacity of approximately 70 mm (based on soil testing carried out by T. Webb of Landcare), although there is some variability about this value.
27. The irrigation system is operated on a 10 day return interval, applying a gross application depth of 45 mm, or a net application of 36 mm, if application efficiency is 80%. This is a suitable method of application for this enterprise.

### **Submissions**

28. Twenty valid submissions were received, six in support, twelve opposed and two neither supporting or opposed.
29. Of the twenty submissions, twelve were of a general nature and are addressed in the response to general submissions. The remaining eight are addressed below.
30. C Easton, RD Fenwick, GF Keeling, the Lower Waitaki Irrigators and the Waitaki Valley Irrigators all support the application. Meridian Energy conditionally supports the application.
31. S McMahan and A Erickson oppose the application. However, their submission relates to the Upper Waitaki area, the Mackenzie Basin and in particular Lakes Tekapo and Pukaki. The submission is probably a general submission and does not relate to this application at all.
32. PF McIlraith also opposes the application. He is a neighbour of Wainui Station. Parker Creek is below (east of) Wainui Station about 5 km from the activities associated with application CRC051795. It is likely his submission is more relevant to another application made by Wainui Station CRC041003.
33. His reference to “self irrigated soils” probably relates to the area of land associated with CRC041003. There is an area of “self irrigating soils” in the Station Peak area, but that is not on Wainui Station land.

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### Effects on the Environment

34. Potential effects on the environment are:

- Adverse effects on ecosystems
- Adverse effects on other water users
- Adverse effects on people, community and amenity values
- Adverse effect on water quality
- Adverse effects of inefficient use of water
- Adverse effects on Tangata Whenua values

35. Information on effects of the proposal was supplied to CRC with the application or subsequently through S92 requests for further information. This information has been fully reviewed by Warwick Pascoe and summarised in the Officers S42a report.

#### ***Adverse effects on ecosystems***

36. The only potential adverse effect on ecosystems from this take is on the freshwater ecosystems of the Lower Waitaki River and its tributaries by indirectly reducing surface water flows through stream depletion effects. It is not a direct take effect.

37. In terms of mitigating or avoiding cumulative adverse effects on ecosystems of the Waitaki River mainstem, the applicant has proposed a 100m<sup>3</sup>/s minimum flow, based on flow measured at the Kurow recorder.

38. The Officer states in the S42a report that the adequacy of this minimum flow was strongly contested at the NBTC and Hunter Downs hearings, therefore he was unable to conclude whether or not the applicant's mitigation is adequate to protect instream values from cumulative adverse effects.

39. He continued to say that, unless the applicant provided more information on this matter at the hearing, his recommendation is that no decision is made on this aspect of the applications until a decision has been made as to an acceptable low flow and allocation regime for the Lower Waitaki River.

40. Regardless of the final decision regarding minimum flow on the Lower Waitaki River, the applicant is proposing to take an additional 15 l/s of water via a groundwater take (gallery) that has been assessed as having a high degree of connection with the Waitaki River.

41. The stream depletion assessment carried out by URS (02 Feb 07 Response to S92 letter of 16 Jan 08) showed that 91% of the water would come from the Waitaki River after 150 days of pumping. This equates to 13.6 l/s of the 15 l/s after 150 days.

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42. This assessment does not allow for the 20%<sup>1</sup> of water returned to the groundwater system via the irrigation system or additional rainfall going into groundwater via irrigated land. Given the very conservative nature of the assessment method, the 13.6 l/s is a conservatively high assessment.
43. The actual impact that an additional take of at most 13.6 l/s (and that is assuming no return water and after 150 days of continuous pumping – over 149 days it will be less) would have on the Waitaki River flowing at least at 100 m<sup>3</sup>/s (100,000 l/s), is clearly extremely small. In practical terms, it would have no measurable impact on flows in the River.
44. Other than the indirect effect on flow in the Waitaki River, which I contend is extremely small, there are no outstanding issues with respect to adverse effects on ecosystems.

### ***Adverse effect on other water users***

45. URS provided information in the Feb 02 S92 reply to show why there are no adversely affected groundwater users resulting from pumping from gallery I40/0526. The nearest operational bore not on Wainui Station property is I40/0417, some 1,100m away.
46. The additional proposed take is 15 l/s, of which up to 13.6 l/s has been assessed as coming from the Waitaki River. The remaining 1.4 l/s therefore, is coming from groundwater, which will not cause any adverse effects on other users, particularly one 1100 m distant.
47. The only remaining issue with respect to potential adverse effects on other users is the relationship with other consent holders and applicants taking or seeking to take water from the Waitaki River.
48. This is only an issue if (a) there is insufficient water within the 90 m<sup>3</sup>/s allocation block to provide water to all users, which I understand is not the case, or (b) if restrictions are proposed. The proposals put forward by the applicant group, if accepted, address this issue.

### ***Adverse effects on people, community and amenity values***

49. The only adverse effect on people, community and amenity values is the effect on Waitaki River flows. As I have stated above, this effect is extremely small.
50. The original abstraction of 38 l/s, albeit at a flow rate of 15 l/s lower than is now proposed, has been in existence for a long time. There have been no known adverse effects during operation of the consent. On the other hand, the ability to irrigate has been beneficial to Wainui Station enabling them to grow pasture and fodder for stock over many years. Secondary benefits such as reducing erosion and fire risk have also occurred.

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<sup>1</sup> Based on an application efficiency of 80% as specified in the Plan.

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51. Given that there were six submissions in support and no relevant site-specific submissions against (only general submissions against), the wider community is not strongly opposed to this application.
52. The existing consent has been effectively operated with a minimum flow of 80 m<sup>3</sup>/s. A minimum flow of 100 m<sup>3</sup>/s is proposed by the applicant. On that basis, the impact on people, community and amenity values will not be increased.

### ***Adverse effect on water quality***

53. The land to be irrigated under CRC041002 has been irrigated since the 1970's. It has been primarily used for growing pasture and fodder crops for livestock (sheep and cattle). There are no plans to change the land use.
54. The irrigation system being used is a lateral move irrigator, which has the potential to apply water very efficiently, minimising drainage and loss of nutrients.
55. As a precaution, the applicant proposes mitigating conditions to help to ensure that there are no adverse effects on water quality.
56. The conclusion of the Investigating Officer is consistent with the applicant's position, which is granting of the consent will be acceptable in terms of effects on water quality and will be consistent with the relevant objectives and policies identified in the S42a report.

### ***Adverse effects of inefficient use of water***

57. The current land use on this area of Wainui Station is raising and fattening sheep and beef. Pasture and greenfeed are grown to feed stock. In terms of the Schedule WQN9 allocation methodology, this land comes under the intensive pasture category.
58. Soils are generally light, typical of those found along the river margins and would typically fit into the <75 mm PAW category.
59. Allocations have been calculated using the WQN9v2 method and checked against soil water balance modelling to provide more certainty to the estimates. The requested volume is 647,700 m<sup>3</sup>/year.
60. The applicant has installed a water meter and recording devices will be installed as described in the proposed condition set.

### ***Adverse effects on Tangata Whenua values***

61. Ngai Tahu has put in a general submission against this application, which is addressed under general submissions. There are no site specific issues associated with the take.

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### **Conditions**

62. In general, the condition set proposed by the MRNAG will be adopted by the applicant. Where differences occur, these will be presented at the hearing.
63. The applicant has applied for a condition that requires the abstraction to cease at a minimum flow of 100 m<sup>3</sup>/s in the Waitaki River, to be reviewed five years after the Waitaki Catchment Water Allocation Regional Plan became operative. (See Attachment 4, which is a letter to Bianca Sullivan of CRC explaining the applicant's position.)
64. However, the applicant realises that there is a significant amount of uncertainty in what minimum flows will eventuate, given recent applications by NBTC and HDI, and confirmed in discussions led by Bianca Sullivan at a workshop in Waimate on 17<sup>th</sup> July 2008. (See Attachment 5)
65. The applicant's preferred position is to continue the application with a minimum flow of 100 m<sup>3</sup>/s through until the issue is finally decided. However, the applicant is prepared to consider the alternative flow regime presented by the MRNAG, which is essentially based on the NBTC variable minimum flow conditions.

### **WN CAMERON - CRC041003**

#### **Background**

66. Mr WN Cameron of Wainui Station Ltd (the applicant) has applied for a replacement consent to abstract surface water from Wainui Stream or its tributaries for the spray irrigation of up to 60 ha of farmland between the foothills of Wainui Station and the Waitaki River.
67. CRC041003 essentially seeks to replace consent WTK875191 issued originally by the Waitaki Catchment Commission & Regional Water Board on 6 August 1987. CRC041003 is an application that has been involved in the call-in process and was re-notified.
68. WTK875191 permitted 600,000 m<sup>3</sup> of water to be taken each year at a maximum flow rate of 38 l/s for spray irrigation of up to 200 ha of Wainui Station. A special condition required that the exercise of the right on drainage channels on Wainui not significantly reduce available habitat for aquatic fauna.
69. WTK875191, which authorised the taking of 38 l/s, expired on 30 June 2007 and is currently operated under RMA S124 continuation.
70. Mr Neal Borrie of Lincoln Environmental prepared the new application for the applicant. Mr Stephen Douglass of URS New Zealand Ltd (URS) subsequently supplied supplementary information on the application from December 2006 onwards.

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71. A number of changes to what was permitted under WTK875191 are proposed.
72. The flow rate is to reduce from 38 l/s to 30 l/s. The annual volume is to reduce from 600,000 m<sup>3</sup>/year to 381,000 m<sup>3</sup>/year.
73. When combined with CRC041002, the overall effect is to increase the combined flow rate for the two consents from 76 l/s to 83 l/s, but to reduce the annual volume from 1,140,000 m<sup>3</sup>/year to 1,028,700 m<sup>3</sup>/year.
74. The irrigated area for CRC041002 is to be limited to 60 ha at any one time within a larger area of the property. The primary areas of irrigation are approximately 20 ha on the low terraces at the bottom of the foothills of the property and up to 40 ha along the Waitaki River. Water for the terraces will come from Wainui Stream or its tributaries. Water for the River area will come directly from the Waitaki River.
75. Up to 200 ha of the area between the terraces and the Waitaki River is currently irrigated under CRC020744. Application CRC041003 has been worded to allow the flexibility to irrigate some of this area from Wainui Stream or its tributaries, but not irrigate the same land concurrently with that irrigated under CRC020744.
76. Maps of the three respective areas (the terraces, the Waitaki River margin and the common area in the middle) are included as Attachment 2.
77. The application proposes a minimum flow of 200 l/s on Wainui Stream. No minimum flow was listed on the original consent.
78. Specific details of the application are as follows:
  - (a) To take and use surface water from the Waitaki River, and/or various unnamed tributaries of Wainui Stream, between at or about map references NZMS 260 I40:204-994 and I40:231-965, at a maximum rate of 30 l/s, 2,592 m<sup>3</sup>/day, with an annual volume not exceeding 381,000 m<sup>3</sup>/year.
  - (b) Water shall only be used for the spray irrigation of up to 60 hectares of pasture and feed crops on the area shown on the attached plan (see Attachment 2).
  - (c) A minimum flow for the Lower Waitaki River of 100 m<sup>3</sup>/s is sought, to be reviewed after five years of the WCWARP becoming operative.
  - (d) When water is being taken from the unnamed tributaries of Wainui Stream, an additional minimum flow shall apply of 200 l/s in Wainui Stream, as estimated by ECan, upstream of the confluence of Wainui Stream with Penticotico Stream.
  - (e) Water shall not be applied to land being irrigated concurrently under CRC020744.
  - (f) A consent duration of 35 years is sought.
79. As with the lateral area, the land on the margins of the Waitaki River have changed in the past due the river changing its path, taking some Wainui land. Some of that land has been returned as the river has changed again.

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80. The land is used primarily for growing pasture and greenfeed crops. The original consent was for 38 l/s, which was insufficient to reasonably irrigate the full 200 ha in dry years. The proposed decrease in flow and area equates to approximately 0.50 l/s/ha or 4.3 mm/day.

## **Description of Irrigation System**

81. Water is pumped from Wainui Stream, its tributaries or the Waitaki River using a movable diesel-driven pump. A mixture of portable pipes or permanently installed mainlines are used to deliver the water to either a hard hose gun or K Lines or a similar form of irrigation.
82. The soils in this area tend to be light along the river area, with a water holding capacity of approximately 70 mm (based on soil testing carried out by T. Webb of Landcare), and variable, some light, some heavier soils on the terraces.
83. The irrigation system is operated on a variable return interval, applying a gross application depth of 35-40 mm, or a net application of 28-32 mm, if application efficiency is assumed to be 80%. Hard hose guns or K Lines are a suitable method of application for this location, given the variability in paddock shapes and other obstructions.

## **Submissions**

84. As with CRC041002, twenty valid submissions (the same submissions) were received, six in support, twelve opposed and two neither supporting or opposed.
85. Comments made previously apply, except for the submission put in by Mr McIlraith.
86. PF McIlraith opposes the application. He is a neighbour of Wainui Station. He takes water from Wainui Stream about 100 m upstream of the Wainui Station boundary (within Wainui land). His take is about 25 m below the point of flow measurement in Wainui Stream. Wainui Stream runs into the Penticotico Stream about 2.5 km below Wainui Homestead, which runs into the Waitaki River
87. Under Wainui Station's current consent WTK875191, water can be taken at 38 l/s, with no minimum flow on Wainui Stream. The applicant proposes to reduce the flow to 30 l/s, reduce the annual allocation substantially, and implement a 200 l/s minimum flow condition on Wainui Stream.
88. The fact is, under the Wainui proposal, Mr McIlraith's irrigation take reliability will increase, not decrease.
89. I note that in the officers report, Mr Pascoe states that there will be a 7 l/s increase in take under CRC041003. That is not correct. The take from Wainui Stream will

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reduce by 8 l/s, so there will not be a reduction in supply reliability for Mr McIlraith.

90. Mr McIlraith's reference to "self irrigated soils" I assume relates to the area of land associated with CRC041003, as his take is from Wainui Stream. It is correct that when groundwater levels are high, a significant part of the lower land around Wainui Stream and its tributaries will not need irrigating because it is kept moist from capillary water moving up from the groundwater below. The applicant will not irrigate those areas unless it is necessary. However, the terraces don't have high water tables and the light soils along the River dry out quickly during high evaporative periods. Both area will need more frequent irrigating.
91. In addition, there is no guarantee that groundwater levels will remain as high as they have been historically, if the NBTC project goes ahead. Wainui Station is rightfully covering that possibility.
92. Regardless of that, Mr McIlraith will not be adversely affected by Wainui's proposals.

## **Effects on the Environment**

93. Potential effects on the environment are:

- Adverse effects on ecosystems
- Adverse effects on other water users
- Adverse effects on people, community and amenity values
- Adverse effect on water quality
- Adverse effects of inefficient use of water
- Adverse effects on Tangata Whenua values

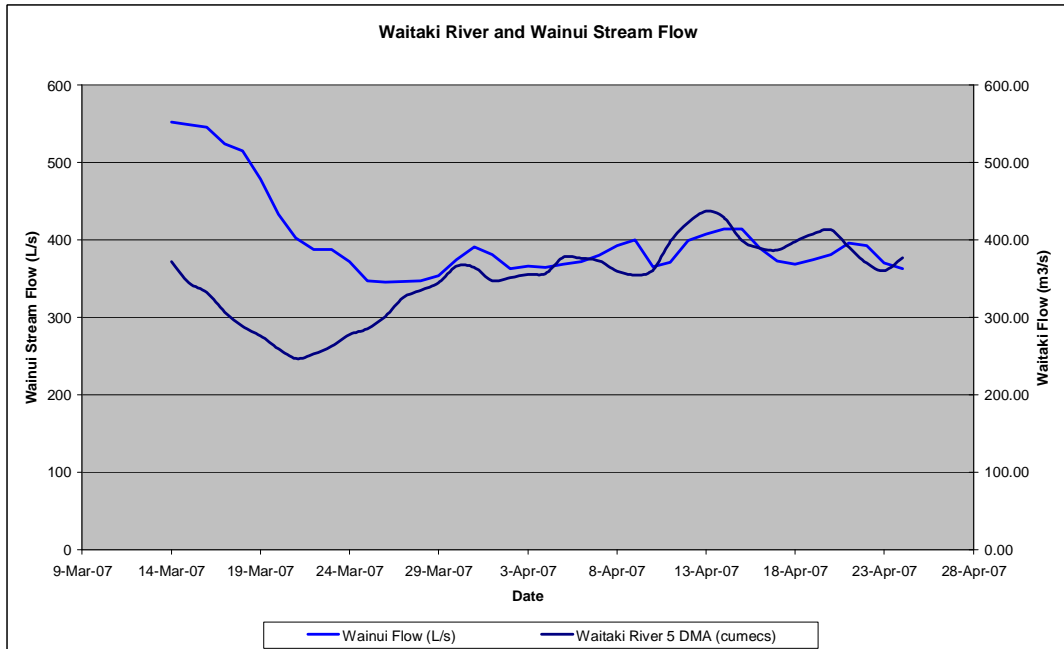
94. As with CRC041002, information on effects of the proposal was supplied to CRC with the application or subsequently through S92 requests for further information. This information has been fully reviewed by Warwick Pascoe and summarised in the Officers S42a report.

### ***Adverse effects on ecosystems***

95. There is a potential adverse effect on ecosystems from this take on Wainui Stream and its tributaries. To mitigate this possibility, the applicant has proposed a minimum flow of 200 l/s in Wainui Stream at the culvert located at NZMS 260 I40:2274-9680. Previously WTK875191 was not subject to a minimum flow condition.
96. The applicant has support of Fish & Game New Zealand Central South Island, the Department of Conservation, Te Runaka o Waihao and Te Runanga o Ngai Tahu. No submissions have been received specifically opposing the take on the basis of adverse effects on Wainui Stream or its tributaries.

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- 97. An ecological study has not been carried out because Wainui Station (and/or Mr McIlraith) have been taking water from this source for several decades. The effects of those takes will be part of the current environment.
- 98. The applicant proposes to (a) reduce the take and (b) implement a minimum flow conditions, which will result in more water being left in Wainui Stream or its tributaries. Assuming an increase in flow will improve the aquatic environment, the result of implementing the proposals will improve ecological values. On that basis, an ecological study has not been implemented.
- 99. Only a limited number of gaugings of Wainui Stream were taken pre March 2007. Since March 2007, the flow recorder in the Wainui Stream culvert above the Wainui Station boundary has provided some data (supplied by URS), as shown below.



- 100. This shows that flows in Wainui Stream generally lag flows in the Waitaki River. It also shows that flows have ranged from 350 l/s up to 550 l/s over the period from Mid March 07 to the end of April 07.
- 101. A short record is insufficient to develop a flow duration curve, but the data above shows that a minimum flow of 200 l/s may be realistic. Over time, as more measurements are taken, a flow duration curve will be able to be developed. It is important to note that the risk of low flows is with the applicant, not the stream, because the applicant will cease abstraction at flows below 200 l/s.
- 102. The effect of the proposed take on the Waitaki River will also be reduced, because the take will reduce compared to that allowed under the previous consent. In

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addition, in terms of mitigating or avoiding cumulative adverse effects on ecosystems of the Waitaki River mainstem, the applicant has proposed a 100m<sup>3</sup>/s minimum flow, based on flow measured at the Kurow recorder.

### ***Adverse effect on other water users***

103. The proposed take is 8 l/s less than allowed under WTK875191, and given that the previous take has been operating since 1987, any effects are within the current environment. Therefore decreasing the take will reduce any potential adverse effects on the environment.

104. The Investigating Officer has been unable to conclude that the effects of this proposal will be minor. However, that is on the basis that this application will increase the take, which is incorrect.

105. In my comments on submissions above, I have explained why the proposed take will have a beneficial effect on Mr McIlraith's take, not an adverse effect.

### ***Adverse effects on people, community and amenity values***

106. The only potential adverse effect on people, community and amenity values is the effect on Waitaki River flows. As the existing take allowed water to be taken from Wainui Stream or its tributaries, and Wainui Stream flows into Penticotico Stream and into the Waitaki River, Waitaki River flows would have been reduced by about the same as the rate of take from Wainui Stream.

107. The original abstraction of 38 l/s has been in existence for at least since 1987. There have been no known adverse effects during operation of the consent. The flow will be reduced by 8 l/s, so any impacts, if they did exist, will be reduced.

108. The ability to irrigate has been beneficial to Wainui Station enabling them to grow pasture, forage and other crops for stock feed over many years. Secondary benefits such as reducing erosion and fire risk have also occurred.

109. Given that there were six submissions in support and only one site-specific submissions against, (Mr McIlraith, who will not be adversely affected), the wider community is not strongly opposed to this application.

110. A minimum flow of 100 m<sup>3</sup>/s on the Waitaki River has been proposed as a further mitigating measure. Assuming that the proposed minimum flow is accepted, the impact on people, community and amenity values will not be increased.

### ***Adverse effect on water quality***

111. The Officer agrees with the conclusion of the applicant that there will not be any adverse effects on water quality.

112. The land to be irrigated under CRC041003 has been irrigated for many decades. It was one of the first areas to be irrigated in the region. The irrigated land has

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been primarily used for growing pasture and fodder crops for livestock (sheep and cattle) and for growing some crops such as feed barley. There are no plans to change the land use.

113. Some land use intensification has been occurring over time, as has happened on most farm properties. That will continue, but there are no plans to convert to dairying, for example.

114. Wainui Station has been carrying out water quality testing of surface water, including Wainui Stream, and bore water from time to time since 2003. Nitrate nitrogen values range from about 0.1 mg/l up to about 1.2 mg/l. The tests have been carried out by the ECan Laboratory.

115. Compared to the MAV (health) drinking water standard of 11.3 mg/l, the values are very low. Given that Wainui Stream and its tributaries are groundwater fed, the low values indicate that the groundwater also has low nitrate nitrogen levels.

116. If irrigation has had any impact on nitrate levels, they have been small. Furthermore, the proposed reduced take (flow rate and volume) will help to ensure that any effect there might have been will be reduced.

117. As a precaution, the applicant proposes mitigating conditions to help to ensure that there are no adverse effects on water quality.

118. The applicant's position is that granting of the consent will be acceptable in terms of effects on water quality and will be consistent with the relevant objectives and policies identified in the S42a report. This is consistent with the conclusion of the Investigating Officer.

### ***Adverse effects of inefficient use of water***

119. The current land use on Wainui Station is primarily related to the raising and fattening of livestock, such as sheep and beef. Pasture and greenfeed are grown to feed stock. Also, cereal crops such as feed barley are grown from time to time.

120. The WQN9v2 assessments of reasonable use define farms that grow some crops as "mixed cropping" and place them in the arable category. In my view, that is an incorrect approach for Wainui Station. The reasonable use figures for mixed cropping are based on typical mixed cropping farms as found in Mid and Central Canterbury, where crops and stock are grown in a largely cropping-based rotation. That is not the case for Wainui Station where the predominant use is livestock, with some crop grown, primarily for stockfeed, eg feed wheat or barley. As there are only two categories - arable and intensive pasture, Wainui Station logically belongs in the intensive pasture category.

121. Soils are variable, and to ensure that sufficient water is available for irrigation, allocations have been determined on the basis of the lighter soils. The soils

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along the riverbed area are light and in some areas stony, and will have soil water holding capacities below 75 mm. Other soils are heavier, and irrigation will be managed according to water requirements of the crops.

122. Allocations have been calculated using the WQN9v2 method and checked against soil water balance modelling to provide more certainty to the estimates. The requested volume is 381,000 m<sup>3</sup>/year (reduced from 600,000 m<sup>3</sup>/year previously).

123. The applicant will install water measuring and recording devices (water metering) as described in the proposed condition set.

### ***Adverse effects on Tangata Whenua values***

124. Ngai Tahu has put in a general submission against this application, which is addressed under general submissions. There are no site specific issues associated with the take.

### **Conditions**

125. The comments on conditions made above for CRC041002 also apply for this application..

## **WN CAMERON - CRC051795**

### **Background**

126. I have been engaged to represent Wainui Station with respect to CRC051795. I am not representing Station Peak. This is contrary to paragraph 18 in the Officers S42a report.

127. WN Cameron (Wainui Station) applied jointly with Station Peak Ltd to divert water from an active braid of the Waitaki River and to discharge surplus water back to the Waitaki River.

128. The consent to take and use water associated with the divert and discharge is CRC960030.1, which authorises the taking and use of water from two locations off a main supply race, one for Station Peak and the other for Wainui Station.

129. The water is shared between Station Peak and Wainui Station on a 10 day cycle. Station Peak takes the water for 7 days out of 10, while Wainui Station takes the water for 3 days out of 10.

130. Details of the application CRC051795 are as follows:

(a) To continuously divert surface water from the Waitaki River between at or about map references NZMS 260 I40:124-034 and I40:134-027, at a maximum rate of 720 l/s for six to eight months per irrigation season (a nominal 206 days).

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(b) To discharge any unused surface water from an irrigation race back to the Waitaki River, at or about map reference NZMS 260 I40:1565-00403.

(c) Water is to only be diverted to enable water to be taken and used for irrigation under CRC960030.1, for the border-dyke irrigation of up to 102 ha of pasture and feed crops.

(d) An expiry date of 23 August 2030 is sought, which is the same as for CRC960030.1.

131. The background to the application is complex, but adequately described in the S42a report prepared by Mr Warwick Pascoe.

132. In short, the irrigation system has been operational for many years. It originally started in about 1983, operating under Waitaki Catchment Commission water rights. Up to 720 l/s was diverted to enable 568 l/s to be used on-farm for irrigation.

133. With replacement of the original Waitaki Catchment Commission water rights, the scheme has been operating initially under CRC960030, which allowed for diverting and taking 570 l/s or 150,000 m<sup>3</sup>/7 day period, and latterly under CRC960030.1, which was an amendment to CRC960030 that addressed an issue relating to annual volumes for use of the water.

134. In 2004, it became apparent that the rate and volume consented under CRC960030 was insufficient to allow the system to operate as designed, because of incorrect volumes and because the diversion did not allow for leakage from the main race, resulting in less water being able to be delivered on-farm than the use consent allowed for. The on-farm volume was corrected through a change of condition CRC960030.1. The diversion rate was not.

135. Application CRC051795 has been made to address the volume issue and to increase the diverted rate by 150 l/s, i.e. up to the original 720 l/s and to allow for bywash of excess water, if any, back to the Waitaki River.

## **Description of Irrigation System**

136. The intake on the braid of the Waitaki River above the Station Peak Homestead supplies water to an irrigation supply main race. The intake consists of a concrete structure containing an adjustable radial gate, which is used to control the flow into the main race.

137. About 800 m below the main intake, there is an automated flow monitoring system (concrete weir with water level recorder and data logger) that continuously monitors flow through the main race. About 50 m above the flow monitoring station, a fully operational fish screen prevents fish from entering the on-farm races. A calibrated staff gauge is located below the fish screen. This was

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illustrated to the Commissioners as part of the Wainui Station evidence for NBTC.

138. The Wainui Station intake is approximately 2.35 km from the main race intake and 1.4 km below the flow recorder. An Agriflow Series 3 recorder at the Wainui intake will measure the divert and/or record the flow taken by Wainui under CRC960030.1 condition 1(b). A staff gauge at the Wainui Station intake will also allow flows to be checked so that flow taken through the intake does not exceed 570 l/s.
139. The diversion back to the river will occur from the Wainui Station intake directly to the Waitaki River, i.e. on Wainui Station land. Note: the location of the diversion race differs slightly from the original application where the diversion was to be further upstream. The length of diversion channel is approximately 250 m.
140. Leakage through the 2.75 km of race from the main intake to the Wainui Station intake can be significant, as detailed in a report prepared by Environmental Consultancy Services October 2005. The report showed that up to 25% of the water could leak out of the race between the main intake and the Wainui Station intake. That is the reason why an increase in flow of 150 l/s is sought.
141. Since it was noticed that the scheme was not consented to allow additional water to be taken to compensate for race leakage, flow at the main intake has been restricted to 570 l/s. Previously, flow was manually adjusted to compensate for leakage, and given that bywash was avoided, it was difficult to maintain the correct flow at the Wainui Intake. Over the past four years the flow has been measured at the existing monitoring site (number 71142) administered by Environmental Consultancy Services. All records have gone to CRC.
142. The proposed increase in flow compensates for leakage and provides sufficient capacity for a bywash system to be able to be operated, simplifying scheme operation and ensuring the correct amount of water can be taken through the Wainui intake.

## **Submissions**

143. Nineteen valid submissions were received, four in support, thirteen opposed and two neither supporting or opposed.
144. Of the nineteen submissions, eleven were of a general nature and are addressed in the response to general submissions. The remaining eight are addressed below.
145. C Easton, RD Fenwick, GF Keeling and the Lower Waitaki Irrigators all support the application. Meridian Energy conditionally supports the application.

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146.S McMahan and A Erickson oppose the application. However, their submission relates to the Upper Waitaki area, the Mackenzie Basin and in particular Lakes Tekapo and Pukaki. The submission is probably a general submission and does not relate to this application at all.

147.PF McIlraith also opposes the application. He is a neighbour of Wainui Station. Parker Creek is below (east of) Wainui Station about 10 km from the activities associated with application CRC051795. It is likely his submission is more relevant to one of the other applications made by Wainui Station CRC041003.

148. His reference to “self irrigated soils” probably relates more to the area of land associated with CRC041003. However, there are areas of “self irrigated soils” on Station Peak land. There are no “self irrigated soils” in Wainui land associated with CRC051795. The issues with CRC041003 have been addressed above.

## **Effects on the Environment**

149.Potential effects on the environment are:

- Adverse effects on ecosystems
- Adverse effects on other water users
- Adverse effects on people, community and amenity values
- Adverse effect on water quality
- Adverse effects of inefficient use of water
- Adverse effects on Tangata Whenua values
- Adverse effects on flood carrying capacity and erosion

150.Information on effects of the proposal was supplied to CRC with the application or subsequently through S92 requests for further information. This information has been fully reviewed by Warwick Pascoe and summarised in the Officers S42a report.

### ***Adverse effects on ecosystems***

151.There are no outstanding issues with respect to adverse effects on ecosystems. The Investigating Officer agrees with the applicant that actual and potential adverse effects on aquatic ecosystems from the diversion of an additional 150 l/s from the Lower Waitaki River to the Wainui Station irrigation race, and the discharge of up to 150 l/s back to the Waitaki River, will have a minor effect on aquatic ecosystems.

### ***Adverse effects on other water users***

152.The Investigating Officer also agrees with the applicant that the adverse effects on other water users will be minor. The application is to restore an activity that took place between 1983 and 2004. The take is non-consumptive in that the additional

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150 l/s diverted will either go into groundwater or be discharged back to the Waitaki River.

153. The distance between the main intake and discharge point is about 2.5 km. There are no other water users taking water over that stretch of the braid.

154. The Station Peak and Wainui flats are underlain with groundwater that is interlinked with the Waitaki River either directly or from groundwater fed streams such as Wainui Stream that flow into the Waitaki River. Leakage from the race will enter that groundwater and is not consumed or lost. It becomes part of the hydrology of the area and may in fact help to maintain groundwater levels.

155. The Officer's view is that an annual volume is required for a divert and discharge consent. The applicant has proposed an annual volume of 2,669,760 cubic metres per year, which is the equivalent of taking 150 l/s for 206 days per year. This corresponds to 124 weeks, which is the maximum length of irrigation season expected.

### ***Adverse effects on people, community and amenity values***

156. The applicant's position is that there will not be adverse effects on people, communities and amenity values. The Investigating Officer agrees. Four local community members or organisations supported the application. Those who opposed are not adversely affected by the proposal.

### ***Adverse effect on water quality***

157. The applicant's position is that there will not be any adverse effects on water quality. The Investigating Officer agrees with that conclusion.

### ***Adverse effects of inefficient use of water***

158. Leakage in the main race (up to 25% of diverted flow) is not water that is lost. It is effectively moved from the Waitaki braid at the point of diversion to the groundwater system between the main intake and the Wainui Station intake. That water returns to the Waitaki River. Because water is not consumed, i.e. permanently removed from the hydrological system, efficiency of use is not an issue.

159. However, recognising that leakage of up to 25% is high (although within the normal range for open race systems in Canterbury as noted by Mr Pascoe), the applicant will ensure maintenance of the race is kept up and implement improvements as necessary. Some improvements have already been made and more are scheduled. The Investigating Officer agrees the applicant that the effects of the use of water are minor.

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### ***Adverse effects on Tangata Whenua values***

160. Ngai Tahu has put in a general submission against this application, which is addressed under general submissions. There are no site specific issues associated with the take.

### ***Adverse effects on flood carrying capacity and erosion***

161. The bywash will be discharged into an inactive river braid at a velocity consistent with that in the normal river braids. The topography of the river bed will ensure that occurs. It is extremely unlikely that at a flow of 720 l/s maximum and less than 150 l/s in normal circumstances that any erosion will occur.

162. If necessary, the applicant will place riprap or rocks in the base of the channel near the discharge point to reduce erosion potential before the water enters the braid. Once in the braid, natural river flow mechanisms will occur.

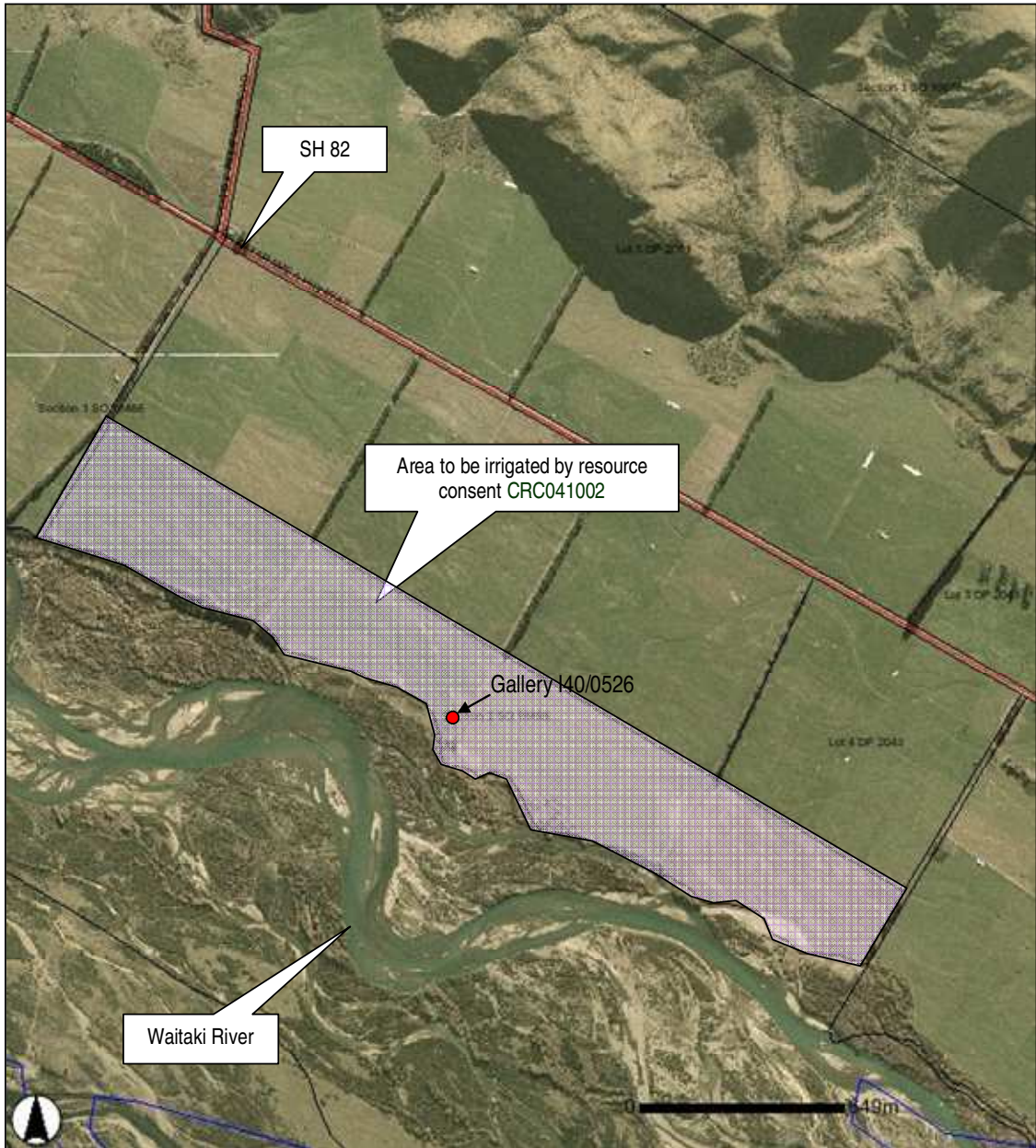
163. The applicant and the Investigating Officer agree that the effects on the environment will be minor, of what is essentially a non-consumptive long-standing small scale activity.

### **Comment on Proposed Conditions**

164. The Officer has proposed a set of conditions pertaining to the diverting and discharging of water under CRC051795 (included as Attachment 6 in the officers report).

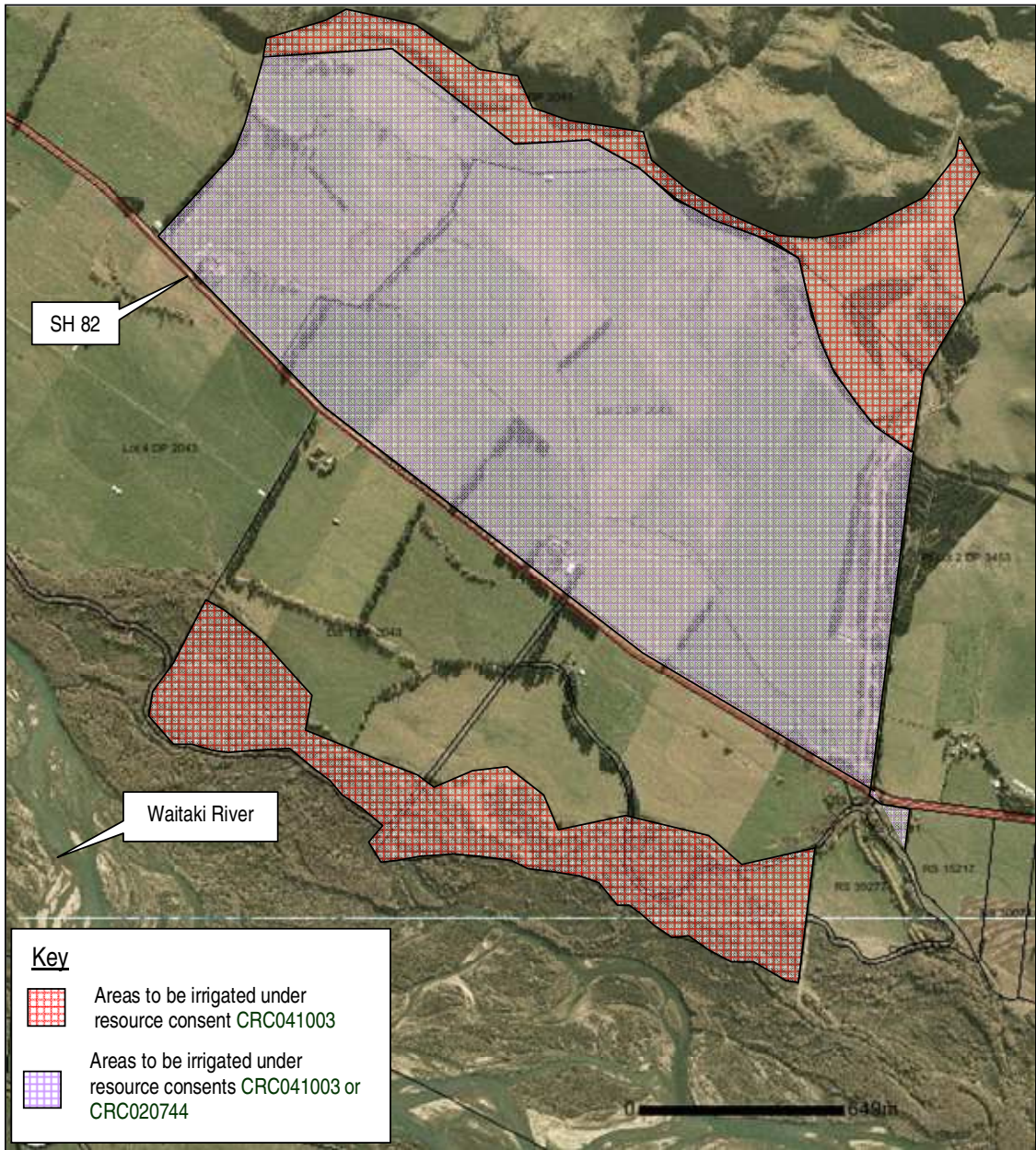
165. The applicant agrees to these conditions. Of particular importance is the condition that Waitaki River minimum flows be the same as the condition on minimum flow condition on CRC960030.1.

Attachment 1



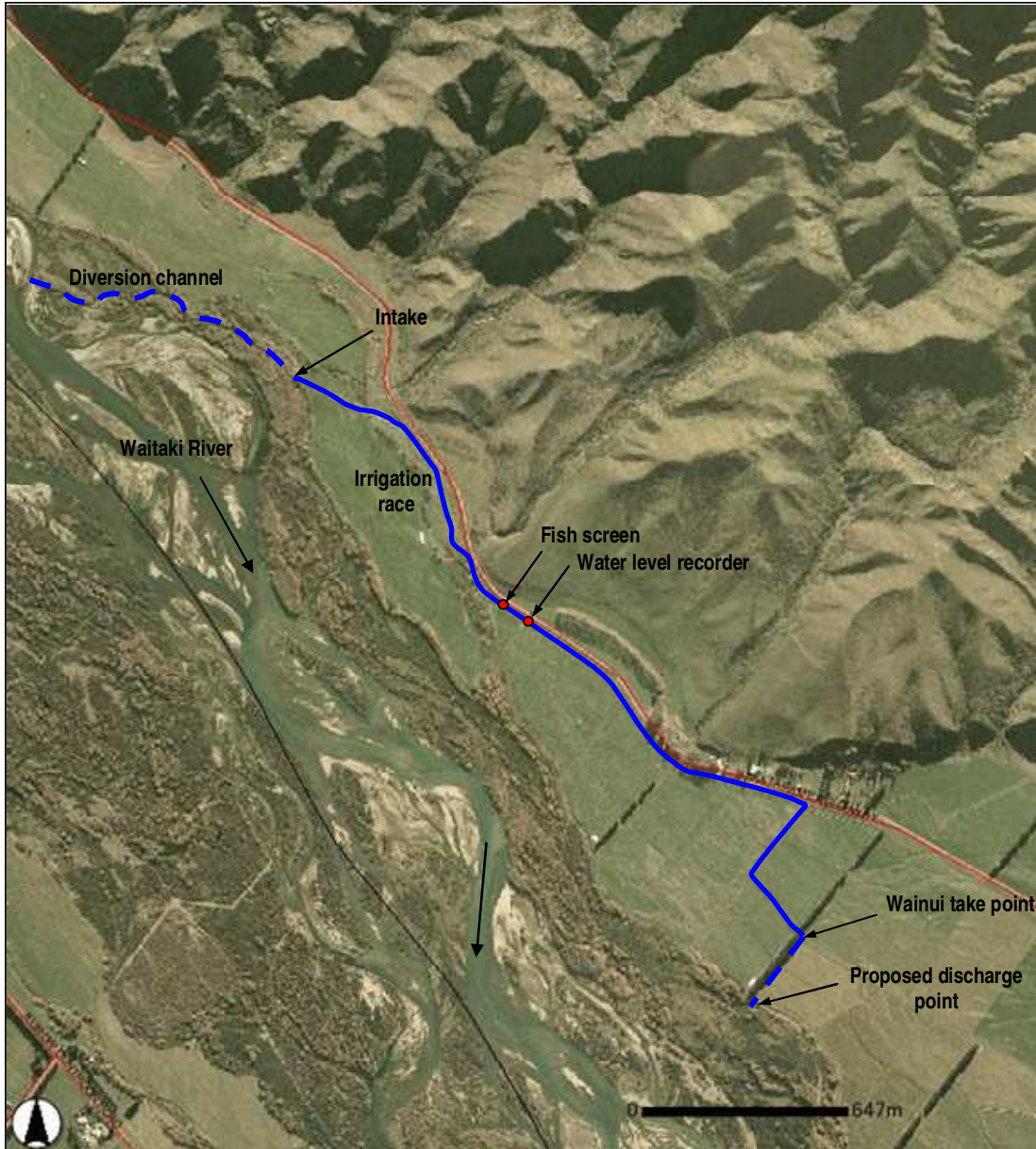
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Attachment 2



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Attachment 3.



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**Attachment 4**

29 March 2007  
Project No. 42157567

Environment Canterbury  
PO Box 345  
Christchurch

Attention: Bianca Sullivan  
Principal Investigating Officer

**Subject: Consent Applications CRC041002 & CRC041003 - Wainui Station**

Dear Bianca,

We have already corresponded with you on a number of occasions regarding the above consents and each time stated Wainui Station Limited would agree to comply with the minimum flow and level regimes provided for in the Waitaki Regional Plan, currently set at 150 m<sup>3</sup>/s.

We would like now, however to propose a minimum flow of 100 m<sup>3</sup>/s be applied to CRC041002 and CRC041003, to be reviewed after the 5 year period of the Plan becoming operative when all existing consents are reviewed and brought into play with the minimum flow. Technical evidence supporting a minimum flow of 100 m<sup>3</sup>/s is being presented at the hearings by other applicants and if successful we would like the same minimum flow be applied to our consents.

This decision does not preclude Wainui Station Limited's ability to object or support any aspect of the Hunter Downs or North Bank Tunnel schemes.

May we also take this opportunity to request a draft of the notification wording relating to the above consents that will be advertised in the press, so that we can check that the details are correct, given the wrong information printed last time.

Please contact the undersigned if you wish to follow up on the contents of this letter.

Yours sincerely,

Error! Unknown document property name.  
Stephen Douglass  
Environmental Scientist

Ian Fraser  
Principal

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**Attachment 5**

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### **Possible change to the Waitaki Catchment Water Allocation Regional Plan**

*Bianca Sullivan – Principal Consents Advisor*

#### **Introduction**

There has been considerable pressure from the Lower Waitaki community to change the annual allocation limit between the Waitaki Dam and Black Point that is specified in the Waitaki Catchment Water Allocation Regional Plan (the Waitaki Regional Plan). In addition, there are a number of other issues with the Plan that are coming to light through the processing of resource consent applications in the Waitaki. This paper summarises the issues with the Waitaki Regional Plan and discusses the implications for a plan change for the processing of resource consent applications currently in process.

#### **Background**

The Waitaki Regional Plan was prepared by the Waitaki Catchment Water Allocation Board (WAB), which was appointed by the Minister for the Environment. The Plan preparation process was initiated following lodgement of consent applications associated with the proposed Project Aqua hydro-electricity scheme and the subsequent call-in by the Minister of Project Aqua applications and all other water permits in process in the catchment. Applications in the Waitaki process date back to 1998.

The Waitaki Regional Plan became operative in July 2006 and is now ECan's regional plan for water allocation in the Waitaki catchment. Within the catchment, the Plan takes precedence over the Proposed Natural Resources Regional Plan (PNRRP) for resource consent applications to take, use, dam or divert groundwater or surface water.

ECan is currently processing the consent applications that were called-in by the Minister as well as applications that have been subsequently lodged. Hearings for applications for activities below the Waitaki Dam commence on 11 August, while those for activities above the Waitaki Dam are scheduled to commence early next year. Applications associated with the North Bank Tunnel Concept hydro-electricity proposal (NBTC) and Hunter Downs Irrigation Scheme (HDIS) were heard in the second half of last year, with decisions yet to be released.

#### **Waitaki Regional Plan issues**

*Annual allocation between the Waitaki Dam and Black Point*

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The Waitaki Regional Plan sets an annual volume limit for agricultural and horticultural activities between the Waitaki Dam and Black Point of 150 million cubic metres per year. Any applications within this allocation are discretionary activities; those that exceed this limit are non-complying activities.

Most existing resource consents do not have an annual volume limit as a condition of consent and, at the time the Plan was prepared, ECan had no estimate of the annual volume abstracted by consented activities. Mr Rob Potts (Duffill Watts Group), who presented evidence to the WAB on behalf of Meridian Energy Limited (Meridian), estimated that 112 million m<sup>3</sup>/yr is allocated to consents between the Waitaki Dam and Black Point. In the absence of other evidence, it is assumed that the WAB adopted Mr Potts' evidence. Therefore, assuming an allocation of 112 million m<sup>3</sup>/year to existing consents, the WAB allowed for 38 million m<sup>3</sup>/yr to be allocated as discretionary activities.

Following the WAB's decision, ECan undertook its own work to estimate the annual allocation to existing activities, releasing a report in March 2007<sup>1</sup>. This work has since been further developed in consultation with Mr Potts. The allocation to existing activities for agricultural and horticultural activities between the Waitaki Dam and Black Point is currently considered by ECan to be 144,432,859 million m<sup>3</sup>/yr. Note that this allocation is subject to change as existing consents expire, lapse, are surrendered or transferred.

There are currently 42 applications for water permits between the Waitaki Dam and Black Point, seeking a combined annual volume of 41,337,480 million m<sup>3</sup>/yr. Of this, eight applications are to replace existing consents, with a total annual volume of 3,440,700 million m<sup>3</sup>/yr.

The commissioners deciding the resource consent applications between the Waitaki Dam and Black Point have two options in considering the applications. They could:

1. Disregard ECan's estimate of annual allocations and adopt that assumed by the WAB in preparing the Plan. In this way, the Plan would be implemented as envisaged by the WAB, with 38 million m<sup>3</sup>/yr of water to be allocated as a discretionary activity.
2. Adopt ECan's estimate (or similar) of annual allocation, thus classifying most of the applications as non-complying, while having regard to the decision of the WAB to allow 38 million m<sup>3</sup>/yr of water to be allocated.

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<sup>1</sup> Sullivan P, Sullivan B & Page J. 1997. Implementation of Waitaki Catchment Water Allocation Regional Plan: current annual allocation. Prepared for Environment Canterbury. March 2007.

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These options will be discussed in the ECan officers' section 42A reports for the upcoming hearings.

Should ECan propose a plan change to alter the annual allocation between the Waitaki Dam and Black Point prior to the hearing of applications, the applications would still be considered under the operative plan with regard had to the proposed plan change. The applications would therefore still be non-complying activities.

### *Environmental Flows*

Applications for the North Bank Tunnel Concept and HDIS sought minimum flows in the Waitaki River lower than that included in Rule 2 of the Waitaki Regional Plan. Both sought a seasonally variable minimum flow, with the lowest flow sought for NBTC being 110 cumecs and the lowest for HDIS being 100 m<sup>3</sup>/s. The minimum flow specified in Rule 2, Table 3 (xvii) is 150 m<sup>3</sup>/s from the Waitaki Dam to the sea.

Should these applications be granted with the minimum flows sought, it would indicate that the minimum flow specified in the Plan is perhaps incorrect. It would follow that the Plan should be changed to reflect the flow in these applications to enable a consistent flow regime to be implemented across all resource consents.

### *Other issues with the Waitaki Regional Plan*

The processing of resource consents under the Waitaki Regional Plan is highlighting some key issues with the plan. It is likely that as consent processing continues, more issues will come to light. Below is a list of the key issues identified to date:

- Some flow regimes in Rule 2, Table 3 of the Plan are unworkable or difficult to implement, eg the Grays River, Hen Burn and Quail Burn minimum flows, and the Maerewhenua River minimum flow site.
- A description of the location of Black Point should be included in the Plan, including a grid reference and a map showing the boundary.
- Under Rule 2, Table 3(xvii) (other rivers and streams) a consent application is considered a non-complying activity where the minimum flow is linked to an alternative water body. In some instances where the tributary stream being abstracted from has minimal flow information or is unsuitable for flow gaugings, hydrologists have recommended a

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mainstem minimum flow. To be consistent with the plan, this should be allowed for as a discretionary activity.

- The annual volume limit of 275 million m<sup>3</sup>/yr for agricultural and horticultural activities above the Waitaki Dam is also under some pressure. ECan's estimate of existing allocation is in exceedance of that assumed by the WAB, resulting in some applications being non-complying activities.
- Clarification as to whether consented farm stockwater is included in Rule 6, Table 5. This is currently a matter of considerable debate, especially in the upper Waitaki.
- The Waitaki Regional Plan incorporates provisions of the PNRRP by reference (via clause 30 of Schedule 1 of the RMA). This incorporation is static, ie when decisions on the PNRRP are released the Waitaki Regional Plan will not automatically refer to the updated provisions. This can only be achieved by a plan change.

### **When should the Waitaki Regional Plan be changed?**

In my view, the Waitaki Regional Plan requires changing. The key question is therefore when this should occur. The timing of such a plan change is discussed below in relation to the consent applications in process and existing consents which will require review to enable the Waitaki Regional Plan to be implemented.

#### *Implications of a plan change for consent applications in process*

A plan change would need to be considered in relation to all consent applications in process at the time the change was notified. Thus, if a plan change were to be notified within the next three months and assuming no decisions are released within that time, the plan change would need to be considered in relation to all consent applications in process. This would include applications for the Hunter Downs Irrigation Scheme and North Bank Tunnel Concept, which would likely result in the hearings for those applications recommencing. This would result in further delays in hearing and deciding applications.

The benefits of a plan change at this time are debateable. As stated above, the applications would still have the activity status afforded by the operative plan unless hearings were delayed until the plan change completed the RMA process. Such a process could easily take in excess of two years. Until that process was complete, applications that are non-complying would remain non-complying.

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### *Implications of a plan change for existing consents*

Rule 25 of the Waitaki Regional Plan provides for existing resource consents to be reviewed to implement Rule 2, which sets environmental flow and level regimes for rivers and streams. It allows for Rule 2 to affect consents from 7 years after the Plan became operative (3 July 2013) in the Maerewhenua catchment and from 5 years after the Plan became operative (3 July 2011) for the rest of the catchment.

Given that there are issues with implementing the environmental flow and level regimes, ideally any changes to the Plan should be made prior to initiating any consent reviews. If consent reviews were completed prior to a plan change, the consents would have to be reviewed again following a plan change to enable the Plan to be implemented. This would result in unnecessary costs and pressures to both the consent holders and ECan.

### **Recommendation**

1. That a plan change not be proposed until decisions are made on resource consent applications currently in process.

Initiating a plan change prior to consent decisions would, in my view, unnecessarily complicate the consent process and lead to additional delays through the reopening of hearings. For applications between the Waitaki Dam and Black Point, unless the hearings were delayed to allow the plan change to become operative, the applications would still be considered as non-complying activities. The commissioners have the discretion to either adopt the WAB's allocation assumptions, which would result in the applications being considered as discretionary activities, or to place weight on the WAB's allocation assumptions when considering the applications as non-complying activities.

2. That a plan change be completed prior to existing consents being reviewed under Rule 25 of the Plan.

Any plan change is likely to alter allocation and flow regime figures in the Plan. Existing consents should not be reviewed until a plan change is complete. Otherwise, consent holders would likely to be subjected to two reviews.