

**Before the Hearing Panel appointed by Canterbury
Regional Council**

IN THE MATTER OF The Resource Management Act
1991

AND

IN THE MATTER OF resource consent applications by
various parties to: take, divert,
dam and use water from rivers,
streams, and ground water; to
discharge water into water; and
for works in the bed and banks of
rivers and lakes in the Upper
Waitaki catchment

Section 42A Report

Date of Presentation: Week commencing 1 February 2010

ADDENDUM REPORT OF CLAIRE PENMAN

1. This report deals with a number of matters that have arisen during the course of the hearing and on which I offer further comment in addition to the material contained within my original section 42A report.
2. Where appropriate, other 42A report writers have also prepared addendum reports which will be presented separately.

SCOPE OF REPORT

3. This report is limited to:
 - (a) Identifying additional matters or amendments to applications that have arisen during the course of the hearing or since my original section 42A report was prepared; and
 - (b) Providing further comment on the proposed changes identified in (a) above; and
 - (c) Summarising outstanding matters for each application; and
 - (d) Providing general comment on mitigation proposed by the applicants and recommended by the Reporting Officers; and
 - (e) Providing updated recommendations regarding specific applications.
4. The applicants that are the subject of this addendum report are the following:
 - (a) KJ, DK & SR Anderson – (Paragraph 32)

- (b) Otamatapaio Station (1993) Ltd – (Paragraph 57)
 - (c) Otematata Station Ltd – (Paragraph 81)
 - (d) Bellfield Land Co Ltd – (Paragraph 132)
 - (e) D W McAughtrie – (Paragraph 159)
 - (f) D W McAughtrie, Greenfields Rural Opportunities Ltd & Ellis-Lea Farming (2000) Ltd – (Paragraph 174)
 - (g) Grays Hills Station Ltd – (Paragraph 191)
 - (h) Birchwood Run Ltd – (Paragraph 208)
 - (i) Irishman Creek Station Ltd – (Paragraph 226)
 - (j) M Horo – (Paragraph 247)
 - (k) Southdown Holdings Limited – (Paragraph 268)
 - (l) Five Rivers Ltd – (Paragraph 293)
5. In addition, matters raised in the evidence of applicants and submitters in relation to the matters discussed in Reports 1 and 2A, of which I am the author, are discussed where those matters result in my opinion changing.
6. Following this introductory section of the report, supplementary Report 1 matters are covered, followed by supplementary Report 2 matters and finally each applicant is covered in the order they appear above (on a separate page per applicant).

REVIEW OF DOCUMENTS

7. In preparing this report, I have reviewed the documents and evidence in relation to the applications I am providing comment on (see Appendix A).

REPORT 1 – INTRODUCTORY MATTERS

8. My views on the matters identified in the introductory s42A report (Report 1) have not changed after reviewing the evidence presented to date. However, I offer the additional comments on the matters below.

Annual Volumes/Irricalc

9. This was not previously discussed in Report 1, and was instead covered in individual s42A reports. To avoid further duplication, I cover this matter here.
10. The method of determining suitable annual volumes for irrigation of land within the Waitaki catchment has been discussed by a number of witnesses. Whether these are consistent with Policy 16 of the WCWARP has been the main issue. Applicants are in general proposing annual volumes based on one of the following: the method outlined in Schedule WQN9v2; Irricalc; or a 600mm application depth based on Mackenzie Irrigation Co shares.
11. Where the use of an irrigation depth of 600mm is consistent with the method in Schedule WQN9v2, I consider that the proposed annual volumes would be consistent with Policy 16 of the WCWARP.
12. I consider that the Irricalc method is also consistent with Policy 16 of the WCWARP. However, whether the proposed volume is suitable requires further information to be provided by the applicants'. The key factors of the Irricalc method which affect the output irrigation volumes are the input parameters (namely rainfall and PET). Currently NIWA's gridded climate data (5km) is used for rainfall and PET. As this data is based on modelled averages, it is essential that the applicant compare this data with field measurements of rainfall and PET. Provided these are a close match for each other, then I consider that the Irricalc method would be a suitable method under Policy 16(c) of the WCWARP for determining suitable irrigation volumes.
13. In addition, I note that Irricalc assumes an application rate of 0.8l/s/ha. This is a relatively high rate and could only be achieved by newer, well designed spray irrigation systems. If an applicant proposes a volume using Irricalc and if this rate cannot be shown to be achievable through the irrigation systems proposed, then the annual volume should be reduced.

Conditions

14. Ms Susannah Vesey has provided further comment on the conditions listed in Appendix 6 of Report 1 in her addendum report.

REPORT 2 – MINIMUM FLOWS

Flow reduction graphs

15. There appears to have been some confusion throughout the course of the hearing in relation to flow sharing and flow reduction graphs.
16. The WCWARP defines flow sharing as “*the apportioning of flow between in-stream uses and the cumulative taking and diverting of water, as specified in Rule 2(c)*”. Rule 2(c) requires that no more than half of the water above or between the thresholds in Table 3 can be taken or diverted. In other words, a 1:1 flow sharing regime is required between the thresholds specified in Table 3. For all other rivers and streams this is above the mean flow.
17. In providing the recommended minimum flow conditions in Report 2, including the flow reduction graphs, I have been guided by current minimum flow conditions and those being attached to new consents in other parts of the Canterbury region (outside of the Waitaki catchment). The flow reduction graphs are not intended to provide for 1:1 flow sharing as required by the WCWARP. They are designed to ensure that, whether the minimum flow site is upstream or downstream of the abstraction point, no more water than what is available above the minimum flow is being abstracted.
18. Where the minimum flow site is upstream of all abstractions, I note that Mr Boraman (paragraph 4.7) and Mr de Joux (paragraph 6.2) have no issue with the flow reduction graph proposed as it will ensure the minimum flow is maintained at the downstream end of the catchment. However, where the minimum flow site is downstream of all abstractions, they consider the current wording of this condition would result in residual flows higher than the minimum. This was not my intention, and following discussions with Mr Boraman, he and I agreed that if the condition was re-worded to specify that it was the “natural flows” that were to comply with the reduction graph (i.e. measured flow plus any abstraction), then he would be satisfied with the inclusion of this condition (refer to paragraph 25 of Mr Boraman’s evidence for the application by Falconer, McCassey & Cook Allan Gibson Trustees – presented 10 November 2009).
19. As an example, take a water body where there are two abstractors and the minimum flow site is at the downstream end of the catchment. If there was no requirement for flow reduction, then should the minimum flow be breached, there would be no way to determine which abstractor was responsible. If there is a flow reduction graph which sets out that no more than the available flow can be abstracted, then using the records of abstraction, and the minimum flow records, the abstractor that may have caused the breach can be identified. This will also ensure that both users share the available water.
20. Should another method of sharing be preferred among users, a water users group condition can be used alongside, but not instead of, the flow reduction graph (e.g. alternate days rather than pro-rata ramping down rates of abstraction). An example where only a water users group condition is proposed is on the Grays River (see evidence of Ms Cathy Begley for Grays Hills Station).
21. After further consideration of this matter, I maintain my position above, but also consider that where there is only one abstractor on a water body, the minimum flow site is downstream, and there is unlikely to be any other abstractor in the future, there would be no need for a flow reduction graph condition, as there would be only one user responsible for maintaining minimum flows. This would apply to applications on

the East Branch Ahuriri River, Coal Creek, Shepherds Creek, Glen Bouie Creek and Stony River.

Minimum flow sites

22. Commissioner Bowden requested, in questioning of Mr Dave Boraman, a revised table of minimum flow sites and whether they are located upstream or downstream of abstractions on that water body. This has not yet been provided so I include a table showing the locations of minimum flow sites below (Table 1).

WCWARP Rule 2	Stream/River	Location of min flow site	Abstraction upstream of min flow site	Abstraction downstream of min flow site
Row i	Mistake River	NZMS 260 I37:080-040		X
	Cass River	NZMS 260 I37:062-007		X
	Station Stream	NZMS 260 I36:125-212		X
Row iv	Irishman Creek	NZMS 260 I38:978-766	X	
Row v	Grays River	NZMS 260 I38:037-601	X	
Row viii	Wairepo Creek (upstream SH8)	NZMS 260 H39:710-463	X	
	Wairepo Creek (downstream SH8)	NZMS 260 H39:7618-5177	X	
Row xi	Quailburn	NZMS 260 H39:6553-3542	X	
Row xii	Henburn	NZMS 260 H39:631-337	X	
Row xxii	Ahuriri River East Branch	NZMS 260 G39: 483-355	X	
	Shepherds Creek	NZMS 260 H39:866-356	X	
	Coal Creek	NZMS 260 H39:866-356	X	
	Manuka Creek	NZMS 260 H39:541-225		X
	Otamatapaio River	NZMS 260 H40:759-168		X
	Scrubby Creek	NZMS 260 H39:855-440		X
	Stony River	NZMS 260 I39:909-451	X	
	Sutton Stream	NZMS 260 I39:967-216		X
	Glen Bouie Creek	NZMS 260 H40:792-084	X	
	Omarama Stream (5y7dlf site, not WCO site)	NZMS 260 H40:612-154		X

Table 1: Location of minimum flow sites in respect of abstraction locations

Individual water bodies

23. Where not specifically mentioned below, after reviewing all relevant evidence, my opinions on the flow regimes for individual water bodies as identified in Rule 2, Table 3 have not altered from my original s42A Report 2.

Ahuriri Water Conservation Order (1990)

24. I have reviewed the evidence presented in relation to the Ahuriri catchment and the Water Conservation Order (WCO), in particular the evidence of Mr John Kyle, Mr Ian McIndoe, Mr Richard de Joux and Mr Frank Scarf. Having reviewed their evidence, my opinion on the WCO, presented in my original Report 2, has not changed.
25. Mr Ian McIndoe, provides in paragraphs 53 and 330 of his evidence, his calculated total allocation on the Ahuriri River for existing and proposed permits as being 2.5038 m³/s (1.4788 m³/s existing permits). This differs from the allocation identified in Report 2 of 1.9784 m³/s for existing permits plus 1.225 m³/s for proposed permits, giving a total of 3.2034 m³/s. A breakdown is provided by Mr McIndoe in Table 2 of his supplementary evidence (dated October 2009). I note that he has only included the rates of take in his calculations and not the diversion rates. This accounts for the difference of about 0.5 m³/s.
26. Mr John Kyle, in his evidence for SHL Killermont and Killermont Station, provides an amended minimum flow condition (condition (7)) from that provided in Report 2, for Ahuriri River abstractions. His minimum flow condition simply sets out the flows required to be maintained in the Ahuriri River under the WCO. This condition does not set out how the minimum flow will be maintained, taking into consideration existing abstractors.
27. As noted in paragraph 94 of my original report, given that existing allocation is close to 2 m³/s, without any water users group or flow sharing (which existing users are not subject to), there would be no way of identifying when water might be available for these applicants at Gorge flows of less than 25 m³/s. I note that the WCO requires the minimum flow in the river to be sustained along its whole length not at a discrete point on the river.

Omarama Stream

28. Further discussion on the minimum flow recommendations for the applications by Dunstan Peaks Station are included in the addendum report of Ms Yvette Rodrigo. However, I note that the minimum flow condition in relation to the Omarama Stream flows, included as condition (20) in my original Report 2 (Attachment Four), was incorrect. I failed to incorporate the fact that this is a replacement application and should retain its existing priority rather than account for the allocation to existing permits. The revised condition should read as follows (changes in red):

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

SITE	MAP REFERENCE	FLOW (l/s)
Omarama Station Bridge	NZMS 260 H39:678-306	[916] [250]
Tara Hills Recorder	NZMS 260 H39:624-260	[910] [500]

(b) For the period 1 May to 31 October the taking of water for irrigation purposes in terms of

this consent shall cease whenever the flow in the Omarama Stream as estimated by the Canterbury Regional Council at either of the following sites is at or below the following flows.

SITE	MAP REFERENCE	FLOW (l/s)
Omarama Station Bridge	NZMS 260 H39:678-306	[1616] [750]
Tara Hills Recorder	NZMS 260 H39:624-260	[1410] [1200]

Manuka Creek

29. Following substantial discussion on flows in Manuka Creek during the course of the hearing, further comment on this has been provided by Mr Dave Stewart in his addendum s42A report.

Otamatapaio River catchment

30. Further detail on the proposed minimum flow and sharing of available water among users has been provided in the evidence of Mr Dave Boraman (section 10). I am satisfied with the proposed flow regime and minimum flow condition for the applications in the Otamatapaio River catchment.

High natural character water bodies

31. Ms Maria Bartlett in her addendum s42A report provides comment on the evidence submitted on the flow regimes for the Cass River, Mistake River and Station Stream.

KJ, DK & SR ANDERSON

32. The applicant is seeking:
- (a) CRC012017 – to divert, take and use water from Corbies Creek at a maximum rate of 110 litres per second with an annual volume of 1,820,016 cubic metres for spray irrigation of 105 hectares of pasture and stockwater supply for Bog Roy Station, Otematata Station and Rostriever Station.
 - (b) CRC012019 – to divert, take and use water from Otamatapaio River at a maximum rate of 110 litres per second with an annual volume of 1,747,686 cubic metres for spray and border-dyke irrigation of 105 hectares of pasture and stockwater supply for Bog Roy Station.
 - (c) CRC012032 – Discharge excess irrigation and stockwater from a diversion race at a maximum rate of 110 litres per second into Backyard Stream.
 - (d) CRC012033 – Discharge excess irrigation and stockwater from a diversion race at a maximum rate of 110 litres per second into Lake Benmore.

ORIGINAL SECTION 42A REPORT

33. The original section 42A report for this applicant was Report 6A.
34. Matters that were identified as outstanding in my original section 42A report included the following
- (a) CRC012017 and CRC012019 (Report 6A, paragraph 125 & Report 6B, paragraph 124):
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient & reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (iii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail, and flow sharing has not been proposed;
 - (iv) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
 - (v) *Other users* – An appropriate flow sharing regime needs to be established and agreed on.
 - (b) CRC012032 & CRC012033 (Report 6C, paragraph 41) – I did not consider there to be any outstanding matters in my original report.

ADDITIONAL MATTERS OR AMENDMENTS

35. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC012017

36. Ms Johnston considered the proposed increase in command area is within the scope of the original application. I raised concern with her about this in respect of an increase in scope prior to the commencement of the hearing (paragraphs 12-17 of Ms Johnston's evidence). My view on this remains unchanged.
37. A draft Farm Environmental Management Plan (FEMP) for Bog Roy Station and Rostriever Station and assessment of cumulative water quality effects was included with Ms Johnston's evidence (Appendix E). I note that the table for Rostriever at the top of page 9 indicates that the OVERSEER N outputs are 5,243kg, greater than the threshold of 5,226kg.
38. I note that in relation to the OVERSEER input parameters used by the applicant:
- (a) Total irrigation area of 228ha, but only 165ha is applied for under these applications (CRC012019 and Bog Roy portion of CRC012017).
 - (b) 600mm irrigation application depth is used, but 696mm is applied for under this application.
 - (c) Otematata Station parameters which form a portion of this irrigation area are discussed under that stations other applications (at section 4.4 of Ms Begley's evidence).
 - (d) Only 28ha of irrigation is included for Rostriever under an existing consent, but an additional 60ha is being sought under this application. This may be because the property boundary identified in the FEMP (section 2.2) does not include the proposed irrigation area.
 - (e) The annual rainfall for Rostriever Station used is 325mm, however, the rainfall isohyets shown in section 2.7 of the FEMP indicate the property is within the 450mm to 550mm band.
39. A flow sharing regime for all users in the Otamatapaio River catchment was put forward by Mr Boraman (paragraph 10.32 of his evidence). I am satisfied with this proposed flow sharing regime.
40. In paragraph 51, Ms Johnston notes that the proposal is to include a fish screen in the race downstream of the intake, and that has been agreed to by DoC and Fish & Game via email. This has been reflected in the proposed condition (6) in Appendix C which provides for the fish screen to be installed within 5 years. I am satisfied with this amendment.
41. Condition (2) has been amended to include "water storage" on Otematata Station. I agree with this amendment.

CRC012019

42. As with paragraphs 37 above, the draft FEMP was included with Ms Johnston's evidence (Appendix E).
43. I note that in relation to the OVERSEER input parameters used by the applicant:
- (a) Total irrigation area of 228ha, but only 165ha applied for under these applications (CRC012019 and Bog Roy portion of CRC012017).
 - (b) 600mm irrigation application depth used, but 728mm applied for under this application once converted to spray (1275mm for first 5 years under border-dyke).
44. Comments on flow sharing are the same as for CRC012017.
45. In the table at section 4.3 of her evidence, Ms Johnston proposes an annual volume of 1,820,016m³ per year, reducing to 1,231,150m³ after 5 years due to a conversion to spray irrigation. The reduced volume was determined using Irricalc, however, I note that it was based on border-dyke assuming 70% efficiency and 14 day return periods (Attachment A&B of Appendix B). Policy 16(b) requires an irrigation efficiency of 80%.
46. The fish screen comments for CRC012017 are applicable here. This has been reflected in the proposed condition (5) in Appendix C.

CRC012032 and CRC012033

47. The applicant noted during questions that these discharge consents would only be required for a term of 5 years until the spray conversion has been completed. I consider that they would still be required after the conversion to allow for excess stock water discharges.
48. Condition (5) (Appendix C) for both discharges has been deleted as Ms Johnston does not consider it necessary to meter the rate of discharge. I agree with removing this condition.

COMMENT ON OUTSTANDING MATTERS

49. I have reviewed the additional information identified above and as such make the following comments.
50. **Water quality** – The draft FEMP and water quality assessment provided by Ms Johnston, and MWRL, has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report) who consider that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae's s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for both CRC012017 and CRC012019.
51. **Efficient & reasonable use** – I am not satisfied that the proposed annual volume for CRC012019 adequately considers the matters outlined in Policy 16(b), and unless an

efficiency of 80% is used, efficient and reasonable use remains an outstanding concern. For CRC012017 (and CRC012019 should the 80% efficiency be addressed), provided a favorable comparison of the Irricalc input parameters against field measurements is undertaken prior to granting of consent, I would be satisfied that the proposed volume is reasonable for the property, and therefore, efficient and reasonable use would no longer be a concern..

52. **Ecosystems** – I note that the evidence presented by Dr Allibone for the Department of Conservation, identified a significant habitat for lowland longjaw galaxias in Corbies Creek (relevant to CRC012017), however, I am satisfied with the applicant’s proposal to upgrade the intake to a gallery or include a fish screen once the system is converted to spray. I consider that effects on ecosystems no longer remain a concern for CRC012017 or CRC012019.
53. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.
54. **Other users** – I am satisfied with the proposed flow sharing regime and consider that the applicant has adequately addressed by concerns.
55. **Landscape** – This was not identified as an outstanding matter if appropriate buffer distances as recommend by Mr Chris Glasson were included. However, as the applicant has not included these recommended buffer distances of 100m from Lake Benmore and 50m from all streams, I am not satisfied that the effects on landscape values are acceptable.

SUMMARY

56. In summary, the applicant has provided more information on the impacts on ecosystems and other users and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with these applications:
 - (a) Water quality
 - (b) Annual Volume (for CRC012019)
 - (c) Landscape
 - (d) Cultural values.

OTAMATAPAIO STATION (1993) LTD

57. The applicant is seeking:

- (a) CRC012047 – Divert, take and use up to 200 litres per second, but usually at a rate of 140 litres per second, from the Otamatapaio River with an annual volume of 2,442,840 cubic metres, for domestic supply, stock water and irrigation of 200 hectares of pasture and winter crop for stock at Otamatapaio Station, State Highway 83.
- (b) CRC012049 – Discharge excess irrigation and stock water from a diversion race at a maximum rate of 200 litres per second into Clarks Creek;
- (c) CRC012727 – Undertake works in the bed of Otamatapaio River for the purposes of maintaining an intake structure.

ORIGINAL SECTION 42A REPORT

58. The original section 42A reports for this applicant were Reports 29A and 29B.

59. Matters that were identified as outstanding in my original section 42A report included the following:

- (a) CRC012047 (Report 29A, paragraph 139) -
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality.
 - (ii) *Efficient and reasonable use* – There is a lack of conclusive information to support the Irricalc methodology used and subsequently the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP.
 - (iii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail, a reduction in flows above the minimum will be required to sustain the minimum flow.
 - (iv) *Landscape and amenity* – The irrigation area is close to sensitive amenity areas and will be visible to the public using the State Highway.
 - (v) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
 - (vi) *Other users* – An appropriate flow sharing regime needs to be established and agreed on.
- (b) CRC012049 & CRC012727 (Report 29B, paragraph 47) – I did not consider there to be any outstanding matters in my original report.

ADDITIONAL MATTERS OR AMENDMENTS

60. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC012047

61. Ms Scanlan (manager of Otamatapaio Station) noted (at paragraph 47), that the requirement to undertake a Farm Environmental Risk Assessment within 12 months was proposed by the applicant as a condition of consent. This was not included in the proposed condition set (Appendix C of Ms McCabe's evidence). Alongside this was a proposed condition of 50m layback from Lake Benmore which would be fenced, a 25m layback from waterways for fertiliser application and riparian planting along Clarks Creek (paragraph 48), however, these were not included in the proposed condition set. I recommend these be included as conditions.
62. Ms McCabe confirmed that the rate of abstraction will be usually at 140l/s but will be up to 200l/s when the flows in the Otamatapaio River are greater than 600l/s (paragraphs 13-15). These amendments should be reflected in the proposed conditions.
63. In paragraphs 53-54, Ms McCabe notes that the fish screen will be located within the race downstream of the intake itself to avoid work in the river bed. Provided this complies with the NIWA guidelines I would be satisfied with this amendment.
64. A draft FEMP for the applicant and assessment of cumulative water quality effects was included with Ms McCabe's evidence (Appendix D).
65. I note that in relation to the OVERSEER input parameters used by the applicant:
- (a) Total irrigation area of 166ha is included for Otamatapaio blocks, but 200ha is applied for under this application. Also, while this FEMP is for Glenburn and Otamatapaio Stations, the proposed irrigation under application CRC012330 (not at this hearing), has not been included.
 - (b) 600mm irrigation application depth is used, but 748mm is applied for under this application over the 200ha area.
66. Condition (3) is proposed to be amended to include "storage" and "domestic use" under this consent. I agree with this amendment.

67. Condition (3) was also amended to remove the reference to "excluding milking dairy cows". If this condition is amended, I recommend it specify that irrigated pasture will be "only for grazing of sheep and beef cattle" instead.

CRC012049

68. Condition ((5)) (Appendix C) for the discharges has been deleted as Ms McCabe does not consider it necessary to meter the rate of discharge. I agree with this condition being deleted.

CRC012727

69. Ms McCabe deleted the proposed condition ((13)) relating to didymo protocols, but in email correspondence (5 November 2009) confirmed this was an error and should be retained. I agree that this condition should be retained.

70. Recommended condition (6) in the s42A Report 29B, for CRC012727 notes that in undertaking the works authorised under that consent, any diversion of a braid within the bed, shall not be more than 50m in length. This was a condition proposed by the applicant in their application to mitigate effects on water quality. However, it should be noted that, while this may be a minor diversion necessary to mitigate impacts during construction, legally consent for this activity is required under the WCWARP.
71. I consider that there is sufficient information provided by the applicant within the application material to enable issue of a permit to temporarily divert water during works (in accordance with Rule 24 of the WCWARP, given that exemption is not provided in the plan for diversions of this nature). If the commissioners are inclined to grant this application, then a consent number can be generated for the diversion permit. Conditions recommended to be attached to that permit, yet to be given a number, are provided below.

COMMENT ON OUTSTANDING MATTERS

72. I have reviewed the additional information identified above and can provide the following comment.
73. **Water quality** – The draft FEMP and water quality assessment provided by Ms McCabe, and MWRL, has been audited by Environment Canterbury’s technical experts (refer to Dr Mike Freeman’s s42A addendum report) who consider that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae’s s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding.
74. **Efficient & reasonable use** – Provided a favorable comparison of the Irricalc input parameters against field measurements is undertaken prior to granting of consent, I would be satisfied that the proposed volume is reasonable for the property, and therefore, efficient and reasonable use would no longer be a concern.
75. **Ecosystems** – I am satisfied with the applicant’s proposal to upgrade the intake to include a fish screen. I consider that effects on ecosystems no longer remain a concern.
76. **Landscape** – Mr Chris Glasson is now satisfied with this proposal and considers effects to be acceptable.
77. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.
78. **Other users** – I am satisfied with the proposed flow sharing regime and consider that the applicant has adequately addressed by concerns.

SUMMARY

79. In summary, the applicant has provided more information on the impacts on ecosystems, efficient and reasonable use and other users, and it appears that these impacts may be adequately mitigated by the implementation of appropriate

conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with these applications:

- (a) Water quality
- (b) Landscape
- (c) Cultural values.

80. The following conditions are recommended to be attached to the permit number generated for temporary diversion of water during works, in association with consent number CRC012727

1. *Water shall only be temporarily diverted within the bed of Otamatapaio River for the purpose of installation and maintenance of an irrigation supply pipeline, installed and maintained in accordance with consent CRC012727.*
2. *The diversion of water referred to in Condition 1 shall only occur over a maximum reach of 50 metres at map reference NZMS 260 H40:744-195.*
3. *The diversion of water shall not impede fish passage or cause the stranding of fish in pools or channels.*
4. *(a) For the period of diversion, all water diverted shall remain within the bed.
(a) When diversion ceases, water shall be returned to its original course.*
5. *The Canterbury Regional Council may, once per year, on any of the last five working days of March or July serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.*
6. *The lapsing date for the purposes of section 125 shall be 31 December 2014.*

OTEMATATA STATION LTD

81. The applicant is seeking:

- (a) CRC020355 – Take and use water from Lake Waitaki at a maximum rate of 35 litres per second with an annual volume of 222,000 cubic metres for spray irrigation of 37 hectares at Otematata Station.
- (b) CRC041033 – Divert up to 200 litres per second of water from Glen Bouie Creek into an open water race; divert up to 200 litres per second from Backyard Stream into an open water race; take and use water from a storage dam at a maximum rate of 75 litres per second, and an annual volume not exceeding 999,820 (or 1,179,820?) cubic metres per year for spray irrigation of up to 120 hectares of crops and pasture, in conjunction with consent application CRC012017 (K J, D K & S R Anderson)
- (c) CRC052739 – To discharge up to 200 litres per second of water from an open water race into Backyard Stream; to discharge up to 200 litres per second of water from an open water race into a storage dam.
- (d) CRC052740 – To disturb the bed of Glen Bouie Creek for the purposes of construction and maintenance of an intake structure for an open water race; to disturb the bed of Backyard Stream for the purposes of construction and maintenance of an intake structure for an open water race.
- (e) CRC052741 – To construct and maintain a compacted earth dam with a capacity of 300,000 cubic metres in an unnamed tributary of Corbies Creek.
- (f) CRC052742 – To dam up to 300,000 cubic metres of water in an unnamed tributary of Corbies Creek.
- (a) CRC052743 – To discharge water from the emergency spillway of a storage dam in an unnamed tributary of Corbies Creek.

ORIGINAL SECTION 42A REPORT

82. The original section 42A reports for this applicant were Reports 30A, 30B and 30C.

83. Matters that were identified as outstanding in my original section 42A reports included the following:

- (a) CRC020355 (Report 30A, paragraph 94):
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient and reasonable use* – The soil water demand information is inconclusive to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;

- (iii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
 - (iv) *Landscape and amenity* – The irrigation area is close to sensitive amenity areas and will be visible to the public using the lake and State Highway;
 - (v) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- (b) CRC041033 (Report 30B, paragraph 112)
- (i) The same matters as in (a) above, excluding landscape and amenity.
 - (ii) *Other users* – An appropriate flow sharing regime has not yet been proposed by the applicant;
- (c) CRC052739 (Report 30B, paragraph 112)
- (i) *Flood carrying capacity & erosion* – No mitigation for effects of erosion on Backyards Stream.
- (d) CRC052740 (Report 30B, paragraph 112)
- (i) *Water quality & ecosystems* – No mitigation has been provided to ensure that the effects of the installation of the diversion structure are minor.
- (e) CRC052741 (Report 30C, paragraph 64)
- (i) *Flood-carrying capacity & erosion* – No mitigation for effects of erosion during the construction works;
 - (ii) *Water quality* – No mitigation to ensure water quality effects will be minor;
 - (iii) *Scope* – I am unsure as to the scale of works required including when works will occur and for how long.
- (f) CRC052742 (Report 30C, paragraph 64)
- (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from creating a dam at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Effects on other users/Dam break analysis* – No assessment has been provided to determine the potential effects on people below the dam;
 - (iii) *Scope* – The applicant has only provided limited design details and no plan of the proposed dam;

- (iv) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- (g) CRC052743 (Report 30C, paragraph 64)
 - (i) *Water quality & ecosystems* – No mitigation has been provided to ensure that the effects of the discharge are minor;
 - (ii) *Flood-carrying capacity & erosion* – No assessment to ensure emergency discharge will not erode or damage downstream water bodies;
 - (iii) *Downstream users* – No assessment of discharge on downstream users in terms of likelihood of damage or inundation;
 - (iv) *Cultural values* - The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.

ADDITIONAL MATTERS OR AMENDMENTS

84. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant:

CRC020355

85. Ms Begley notes that a fish screen will be located at the intake as proposed in the amended condition (7) in Appendix C. The s42A addendum of Ms Vesey comments on this amendment of the standard fish screen condition. Based on her comments, I recommend the proposed fish screen condition be retained.
86. A draft FEMP for the applicant and assessment of cumulative water quality effects was included with Ms Begley's evidence (Appendix D).
87. I note that in relation to the OVERSEER input parameters used by the applicant the rainfall used is 400mm rainfall, however, the map included in the FEMP indicates the block falls within the 450 to 550mm band of isohyets.
88. Condition (2) in Appendix C has been amended to refer to an area of 35ha, however, the remainder of the evidence has been based on irrigation of 37ha (paragraph 1 and section 4.3.1). I consider that the condition should be retained with 37ha.

CRC041033

89. Ms Begley proposed a reduced rate of diversion from Glen Bouie Creek which will be up to 100l/s, when flows in the Otamatapaio River are between 200l/s and 600l/s, but will be up to 200l/s when the flows in the Otamatapaio River are greater than 600l/s (paragraph 3 and 35). This is down from up to 1,000l/s originally proposed, however, this conflicts with the table on page 1 and conditions (1) and (2) in Ms Begley's evidence presented on 21 October 2009 which states the diversion will be 400l/s. This appears to have been corrected back to 200l/s in her revised evidence (received 7 December 2009).

90. In addition to the required rates of flow in the Otamatapaio River before diversion occurs, Ms Begley, at paragraph 10 and 34, also notes that the rate of diversion will be restricted by flows in Glen Bouie Creek as follows:
- (a) Up to 30l/s when flows are between 10l/s and 70l/s;
 - (b) Increasing up to 200l/s as flows increase between 70l/s and 410l/s (allowing for 1:1 flow sharing above the mean flow).
91. I am satisfied with the proposed reduction and flow sharing regime.
92. As above in paragraph 85 a fish screen will be located at the intake.
93. In respect of efficient use of water, Ms Begley identified the following components of the proposed annual volume (see paragraphs 38-43) in combination with Otematata Station's share of CRC012017:
- (a) For the "new" 30ha covered by this application, a volume of 180,000m³;
 - (b) For the "replacement" 90ha covered by CRC012017, a volume of 999,820m³. I note that no mention of how this share of the water is apportioned between the three properties subject to CRC012017 is provided in the evidence of Ms Begley or Ms Johnston;
 - (c) A combined annual volume of 1,179,820 m³ between both consents (paragraph 41 and condition (3) of the original brief of evidence presented on 21 October 2009). However this is in conflict with the proposed annual volume in condition (5) of Ms Begley's revised evidence (received 7 December 2009), which provides a combined annual volume of 999, 820m³.
94. I do not agree that the above represents an efficient volume of water for irrigation.
95. The draft FEMP and water quality assessment discussed in paragraphs 86 above applies for this consent.
96. I note that in relation to the OVERSEER input parameters used by the applicant:
- (a) 600mm irrigation application depth is used, but 983mm is applied for under this application and CRC012017 over the 120ha area;
 - (b) 350mm rainfall is used, however, the map included in the FEMP indicates the block falls within and across the boundaries of the 450 to 550mm isohyets, and the 550 to 650mm isohyets.
97. All the water metering conditions (16) to (20) in Ms Begley's revised evidence (received 7 December 2009) have been amended from her original brief of evidence and differ from those proposed in the s42A report (30B). I recommend that the conditions proposed in the original s42A report be retained. Comment on these is provided by Ms Susannah Vesey in her addendum s42A report.
98. Ms Begley has also removed the condition to install a water meter in Glen Bouie Creek to record flows as proposed in condition (14) (WP08). Without this I am not satisfied that the applicant will be able to demonstrate compliance with the proposed minimum flow. As such, I recommend the conditions be retained on this consent.

99. Condition (7) in Ms Begley's revised evidence was amended to remove the reference to "excluding milking dairy cows". My comments in paragraph 67 are applicable here.

CRC052742

100. Ms Begley has assumed that my concerns with the water quality in the dam relate to the use of that water for irrigation (paragraphs 73-75 of her evidence). My prime concern was whether any deteriorated water in the dam would seep out below the dam, or overflow into downstream water bodies. I consider that this has now been assessed under the discharge permits below.
101. A dam breach assessment has been provided by Ms Begley which concludes that the effects of the dam would be no more than minor. I have reviewed this assessment, and agree with the applicant's assessment.
102. Ms Begley has provided proposed conditions for the dam permit in Appendix C. I am satisfied that these conditions are suitable to mitigate any adverse effects.

CRC052740

103. Ms Begley provided an assessment of effects on water quality for the installation of the new intake (paragraphs 76-87). She notes that Backyard Stream is predominantly ephemeral during the summer months when construction would occur with no or very low flows, and therefore effects on water quality would be minor. I agree with this assessment.

CRC052741

104. Ms Begley provided an assessment of effects on the construction of the proposed dam (paragraphs 88-94). She emphasised that the dam will be constructed in a grassed depression that only contains sheet flow runoff approximately twice each year, and as such, may not even be considered a water body. She concludes that effects will be minor.
105. While Ms Begley has provided no further detail as to the scope of the proposed works (duration and extent), I agree with her assessment due to the nature of the grassed depression.

CRC052739 & CRC052743

106. Ms Begley has provided an assessment on water quality, other users and erosion for both applications (paragraphs 95-102), and concluded the effects are minor.
107. I agree that the location of the discharge for CRC052743 is into an ephemeral waterway, and therefore, agree with the assessment provided by Ms Begley.
108. I agree with Ms Begley's assessment for CRC052739, and consider that with the recommended conditions, and the reduced rate of discharge, the effects will be minor.
109. Condition (5) (Appendix C) for the discharges has been deleted as Ms Begley does not consider it necessary to meter the rate of discharge. I agree with this amendment.

COMMENT ON OUTSTANDING MATTERS

110. I have reviewed the additional information identified above and can provide the following comment.

CRC020355 & CRC041033

111. **Water quality** – The draft FEMP and water quality assessment provided by Ms Begley, and MWRL, has been audited by Environment Canterbury’s technical experts (refer to Dr Mike Freeman’s s42A addendum report). For CRC020355, they consider that there is a high level of certainty that the actual or potential adverse effects will be less than minor, and given the scale of the development and/or receiving environment, suggest that on the basis of cumulative water quality effects, this application can be granted. However, I note the table attached to Mr McNae’s s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Until such a time that correct parameters are submitted, I consider these concerns may contribute in particular to localised effects on water quality.
112. For CRC041033, they consider that there is a high level of uncertainty about potential adverse effects, and given the scale of the development and potential consequences of those adverse effects, suggest that the applications should not be granted. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae’s s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for CRC041033.
113. **Efficient & reasonable use** – For the reasons outlined in paragraph 93 above, I am not satisfied that the volume proposed for the 120ha block under CRC041033 (and CRC012017) is a suitable volume for irrigation of this property. For CRC020355, provided a favorable comparison of the Irricalc input parameters against field measurements is undertaken prior to granting of consent, I would be satisfied that the proposed volume is reasonable for the property.
114. **Ecosystems** – I am satisfied with the applicant’s proposal to include a fish screen at the respective intakes, provided the conditions are as reflected in Ms Vesey’s addendum s42A report. I consider that effects on ecosystems no longer remain a concern.
115. **Landscape** – For CRC020355, this was not identified as an outstanding matter if appropriate buffer distances as recommend by Mr Chris Glasson were included. However, as the applicant has not included these recommended buffer distances of 100m from Lake Benmore, I am not satisfied that the effects on landscape values are acceptable.
116. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.
117. **Other users** – For CRC041033, I am satisfied with the proposed flow sharing regime and consider that the applicant has adequately addressed by concerns.

CRC052742

118. **Scope** – A more detailed design of the proposed dam has been included and is no longer an outstanding concern.
119. **Water quality** – Water quality effects have been addressed via the discharge permits.

120. **Effects on other users/Dam break analysis** – A suitable dam failure assessment has been provided by the applicant and no longer remains an outstanding concern.

121. **Cultural values** – Given I have yet to hear the submission from Ngai Tahu and the applicant has not provided an assessment of effects on cultural values, my comments in the original s42A report remain applicable

CRC052740

122. **Water quality & ecosystems** – I note that Ms Begley has not provided an assessment of the effects on riparian plants and animals from the installation of the intake structure and therefore, effects on ecosystems remain outstanding. However, effects on water quality are no longer a concern.

CRC052741

123. **Scope** – I am still unsure as to the scale of works required including when works will occur and for how long.

124. **Flood-carrying capacity & erosion** – I am satisfied with the assessment provided by Ms Begley and no longer consider this to be an outstanding matter.

125. **Water quality** – As above, I no longer consider this to be an outstanding matter based on the assessment provided by Ms Begley

CRC052739

126. **Flood carrying capacity & erosion** – I am satisfied with the assessment provided by Ms Begley and no longer consider this to be an outstanding concern as the discharge volume has been reduced, and appropriate conditions proposed.

CRC052743

127. **Water quality & ecosystems** – Ms Begley has provided an assessment and I no longer consider this to be an outstanding concern as the discharge is into a grassed depression.

128. **Flood-carrying capacity & erosion** – Ms Begley considers that the discharge into the grassed depression, with appropriate conditions, will not result in any effects on erosion. I no longer consider this to be an outstanding concern.

129. **Downstream users** – There are no immediate downstream users who might be affected by this discharge and it is therefore no longer an outstanding concern.

130. **Cultural values** - Given I have yet to hear the submission from Ngai Tahu and the applicant has not provided an assessment of effects on cultural values, my comments in the original s42A report remain applicable.

SUMMARY

131. In summary, the applicant has provided more information on the impacts from the land use, damming and discharge activities, and for the water permits more information on the impacts on ecosystems, and other users and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. The outstanding matters identified in my original section 42A report have not been resolved and I disagree with either the applicant's assessment or proposed

mitigation. I have listed, In order of importance, the outstanding issues associated with these applications:

CRC041033

- (a) Water quality
- (b) Annual Volume
- (c) Cultural values.

CRC020355

- (a) Landscape
- (b) Annual Volume
- (c) Cultural values.

Land use, dam and discharge permits

- (a) Cultural values

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132. The applicant is seeking:

- (a) CRC011987 – Divert, take and use 140 litres per second with an annual volume of 1,920,662 cubic metres, from the Quailburn Stream, for stockwater and spray irrigation of 190 hectares for grazing sheep and beef.
- (b) CRC012733 – Discharge up to 140 litres per second excess bywash water and stock water into tributaries of the Quailburn Stream.
- (c) CRC071649 – Take and use 30 litres per second with a volume not exceeding 312,000 cubic metres per year from Hen Burn Stream from one of two locations, for spray irrigation of 52 hectares within a command area of 130 hectares for grazing sheep and beef.
- (d) CRC071650 – Disturb the bed of Hen Burn Stream at one of two locations to construct a minor structure to facilitate the abstraction of water and associated maintenance.

ORIGINAL SECTION 42A REPORT

133. The original section 42A reports for this applicant were Reports 8A and B.

134. Matters that were identified as outstanding in my original section 42A report included the following:

- (a) CRC011987 (Report 8A, paragraph 108).
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient and reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (iii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
 - (iv) *Landscape and amenity* – The irrigation area is close to sensitive amenity areas and will be visible to the public using Hen Burn Road;
 - (v) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- (b) CRC071649 (Report 8B, paragraph 94)
 - (i) The same matters as in (a) above, excluding ecosystems and landscape and amenity.

- (c) CRC012733 & CRC071650 (Report 8A, paragraph 107 and Report 8B, paragraph 93) – I did not consider there to be any outstanding matters in my original report.

ADDITIONAL MATTERS OR AMENDMENTS

135. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC011987

136. In paragraph 45, Ms McCabe notes that the fish screen will be located at the intake in accordance with NIWA guidelines. I am satisfied with this proposal.
137. A draft FEMP for the applicant and assessment of cumulative water quality effects was included with Ms McCabe's evidence for the Hen Burn application (at Appendix E). In paragraph 71, Ms McCabe outlines some of the proposed mitigation being a 20m buffer from waterways for both irrigation and fertiliser use, and riparian fencing and planting. I recommend these be included as conditions.
138. I note that the OVERSEER input parameters used for irrigation depth were 750mm on the Quailburn block, but 820mm has been applied for under this application over the 190ha area.
139. Condition (1), Appendix C was amended to correct the map reference. I agree with the correction.
140. Condition (3) was amended to remove the reference to "excluding milking dairy cows". My comments in paragraph 67 are applicable here
141. Condition (9) has been amended to provide the option of telemetry, not a requirement of it. This is discussed by Ms Vesey in her addendum s42A report. I recommend it be retained as a requirement where it can be implemented.

CRC012733

142. Condition (1) had a map reference corrected as there was an error. I agree with this amendment.
143. Condition (5) (Appendix C) for the discharges has been deleted as Ms McCabe does not consider it necessary to meter the rate of discharge. I agree this can be removed.

CRC071649

144. Ms McCabe proposes a gallery intake at least 1m below the bed to prevent fish intrusion into the intake. Mr Adrian Meredith and Ms Susannah Vesey have provided comment on this approach in their addendum s42A reports.
145. The draft FEMP and water quality assessment discussed in paragraph 137 above applies for this consent. The proposed mitigation described in paragraph 55 of Ms McCabe's evidence should be included as conditions on this consent.
146. The same amendments to conditions as outlined in paragraphs 139-141 above have been made. My comments for those also apply for this consent.

147. In relation to concerns about the proposal to adopt a minimum flow of 20l/s for this consent, I note that this consent is effectively replacing their existing consent (condition to surrender their existing consent proposed). Therefore, I do not consider that they should be required to provide for the existing consent holder and have a minimum flow of 70l/s (50l/s abstraction + 20l/s minimum flow). I recommend the minimum flow of 20l/s be retained.

CRC071650

148. Ms McCabe has amended the proposed condition (4) relating to the timing of the installation works to allow for it to take up to one day. I agree with this amendment.
149. Recommended condition (6) in the s42A Report 8B, for CRC071650 notes that in undertaking the works authorised under that consent any diversion of a braid within the bed, shall not be more than 50m in length. This was a condition proposed by the applicant in their application to mitigate effects on water quality. However, it should be noted that, while this may be a minor diversion necessary to mitigate impacts during construction, legally consent for this activity is required under the WCWARP.
150. I consider that there is sufficient information provided by the applicant within the application material to enable issue of a permit to temporarily divert water during works (in accordance with Rule 24 of the WCWARP, given that exemption is not provided in the plan for diversions of this nature). If the commissioners are inclined to grant this application, then a consent number can be generated for the diversion permit. Conditions recommended to be attached to that permit, yet to be given a number, are provided below.

COMMENT ON OUTSTANDING MATTERS

151. I have reviewed the additional information identified above and can provide the following comment.
152. **Water quality** – The draft FEMP and water quality assessment provided by Ms McCabe, and MWRL, has been audited by Environment Canterbury’s technical experts (refer to Dr Mike Freeman’s s42A addendum report) they consider that there is a high level of uncertainty about potential adverse effects, and given the scale of the development and potential consequences of those adverse effects, suggest that the applications should not be granted. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. I also note that there is a discrepancy in the depth of irrigation applied for CRC011987 in the OVERSEER inputs. Additionally I note the table attached to Mr McNae’s s42A report identifies there to be further areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for both CRC011987 & CRC071649.
153. **Efficient & reasonable use** – Provided a favorable comparison of the Irricalc input parameters against field measurements is undertaken prior to granting of consent, I would be satisfied that the proposed volume is reasonable for the property, and therefore, efficient and reasonable use would no longer be a concern.
154. **Ecosystems** – I refer to you the addendum s42A report prepared by Dr Meredith discussing submerged intake structures. I note these streams have a relatively low flow and the terrain adjacent to the Quail Burn and Hen Burn is relatively flat. I do not consider sufficient information has been provided describing the materials proposed

to be used to backfill the gallery, however I consider an appropriate condition could be worded to ensure effects on ecosystems are mitigated.

155. **Landscape** – For CRC011987, Mr Chris Glasson recommends that the mitigation recommended in his original s42a report be adopted in order for effects to be acceptable. For CRC071649, the same applies.
156. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

SUMMARY

157. In summary, the applicant has provided more information on the impacts on ecosystems, and efficient and reasonable use and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. The outstanding matters identified in my original section 42A report have not been resolved and I disagree with either the applicant's assessment or proposed mitigation. I have listed, in order of importance, the outstanding issues associated with these applications:
- (a) Water quality
 - (b) Landscape
 - (c) Cultural values.
158. The following conditions are recommended to be attached to the permit number generated for temporary diversion of water during works, in association with consent number CRC071650
- 7. *Water shall only be temporarily diverted within the bed of Hen Burn Stream for the purpose of installation and maintenance of an irrigation supply pipeline, installed and maintained in accordance with consent CRC071650.*
 - 8. *The diversion of water referred to in Condition 1 shall only occur over a maximum reach of 50 metres between map references NZMS 260 H39:615-337 and H39:615-339 or H39:619-339 and H39:621-338.*
 - 9. *The diversion of water shall not impede fish passage or cause the stranding of fish in pools or channels.*
 - 10. (a) *For the period of diversion, all water diverted shall remain within the bed.*
(b) *When diversion ceases, water shall be returned to its original course.*
 - 11. *The Canterbury Regional Council may, once per year, on any of the last five working days of March or July serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.*
 - 12. *The lapsing date for the purposes of section 125 shall be 31 December 2014.*

D W MCAUGHTRIE

159. The applicant is seeking:

- (a) CRC011940 – Take and use water from a water race fed from Wairepo Creek at a maximum rate of 50 litres per second with an annual volume of 432,228 cubic metres for stock water and spray irrigation of 85 hectares of pasture.
- (b) CRC011939 – To discharge irrigation bywash water to Willowburn Swamp at a rate not exceeding 50 litres per second.

ORIGINAL SECTION 42A REPORT

160. The original section 42A report for this applicant was Reports 26.

161. Matters that were identified as outstanding in my original section 42A report included the following:

- (a) CRC011939 (Report 26, paragraph 109).
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient & reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (iii) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- (b) CRC011939 (Report 26, paragraph 111) – I did not consider there to be any outstanding matters in my original report.

ADDITIONAL MATTERS OR AMENDMENTS

162. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC011940

163. Ms Johnston states at paragraph 9 that the rate of take (and discharge) has been reduced from 85l/s to 50l/s. The annual irrigation volume has also been reduced to that recommended in the s42A report of 421,388 cubic metres. Proposed conditions (1) and (2) have been amended accordingly (Appendix B). I am satisfied with these amendments.

164. In paragraph 30, Ms Johnston notes that there is an existing fish screen of 5mm mesh on the intake pump, but has not provided any further details of this screen. She has removed proposed condition (5) relating to the fish screen requirements. I am not

satisfied with this deletion, however, as the intake is on a man-made water race I recommend an amended fish screen condition requiring a 5mm mesh be retained.

165. A draft FEMP and assessment of cumulative water quality effects for the applicant was included with Ms Johnston's evidence (at Appendix D).
166. Concern was raised by Mr Frank Scarf for Fish & Game (at paragraph 142) regarding the inclusion of this consent in the Wairepo Creek allocation and the requirement for an additional consent. My views on this remain as stated in my original s42A report for this applicant and in Report 2.

CRC011939

167. Condition (5) (Appendix B) for the discharge has been deleted as Ms Johnston does not consider it necessary to meter the rate of discharge. I agree with the removal of this condition.

COMMENT ON OUTSTANDING MATTERS

168. I have reviewed the additional information identified above and can provide the following comment.
169. **Water quality** – The draft FEMP and water quality assessment provided by Ms Johnston, and MWRL, has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report), who consider that there is a high level of uncertainty about potential adverse effects, and given the scale of the development and potential consequences of those adverse effects, suggest that the application should not be granted. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae's s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for this application.
170. **Efficient & reasonable use** – I am now satisfied that the volume proposed using the method outlined in Schedule WQN9v2 of the PNRRP is a suitable volume for irrigation of this property.
171. **Ecosystems** – I am satisfied with the applicant's proposal if they retain their 5mm mesh fish screen. I consider that effects on ecosystems would no longer be a concern.
172. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

SUMMARY

173. In summary, the applicant has provided more information on the impacts on ecosystems and efficient and reasonable use, and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with these applications:

- (a) Water quality

(b) Cultural values.

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174. The applicant is seeking:

- (a) CRC991473 – Divert, take and use 170 litres per second and up to 1,619,410 (NB: 1,523,500 requested in evidence, excluding diversions?) cubic metres per year from the Quailburn Stream, into the Quailburn Government Race at Quailburn Road, Twizel Omarama Road and State Highway 8, Omarama, for stockwater and spray irrigation of 255 hectares within a command area of 2,100 hectares of pasture and crops.
- (b) CRC991474 – Disturb the bed of Quailburn Stream to facilitate the diversion of water at Quailburn Road, Omarama.
- (c) CRC991475 – Discharge up to 170 litres per second surplus irrigation water into Quailburn Stream at Quailburn Road, Omarama

ORIGINAL SECTION 42A REPORT

175. The original section 42A report for this applicant was Report 27.

176. Matters that were identified as outstanding in my original section 42A report included the following:

- (a) CRC991473 (Report 27, paragraph 113).
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient and reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (iii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
 - (iv) *Landscape and amenity* – The irrigation area is close to sensitive amenity areas and will be visible to the public using SH83;
 - (v) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- (b) CRC991474 and CRC991475 (Report 27, paragraph 112) – I did not consider there to be any outstanding matters in my original report.

ADDITIONAL MATTERS OR AMENDMENTS

177. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC991473

178. The annual irrigation volume has also been reduced to that recommended in the s42A report of 1,304,050 cubic metres. Proposed condition (2) has been amended accordingly (Appendix B).
179. In the table at section 4.3, the diversion volume for stockwater is considered to be 315,360 cubic metres per year, while the amount used is only 219,000 cubic metres. I recommend that the diversion volume rather than the take volume be included in condition (2), as required by the WCWARP. This would give a total volume of 1,619,410 cubic metres per year for irrigation and stockwater.
180. In paragraph 46, Ms Johnston notes that after consultation with Fish & Game, a fish screen will be installed in accordance with the NIWA guidelines. I am satisfied with this proposal and retention of the proposed condition.
181. A draft FEMP and assessment of cumulative water quality effects for the applicant was included with Ms Johnston's evidence (at Appendix D).
182. I note that the OVERSEER input parameters used for rainfall were 500mm while the map in the FEMP indicates it falls within the 550mm to 650mm band isohyets.

CRC991475

183. Condition (5) (Appendix B) for the discharge has been deleted as Ms Johnston does not consider it necessary to meter the rate of discharge. I agree with the deletion of this condition.

COMMENT ON OUTSTANDING MATTERS

184. I have reviewed the additional information identified above and as such make the following comments.
185. **Water quality** – The draft FEMP and water quality assessment provided by Ms Johnston, and MWRL, has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report) who consider that there is a high level of uncertainty about potential adverse effects, and given the scale of the development and potential consequences of those adverse effects, suggest that the application should not be granted. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae's s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for this application.
186. **Efficient & reasonable use** – I am now satisfied that the volume proposed using the method outlined in Schedule WQN9v2 of the PNRRP is a suitable volume for irrigation of this property.
187. **Ecosystems** – I am satisfied with the applicant's proposal to upgrade the intake to include a fish screen. I consider that effects on ecosystems no longer remain a concern.

188. **Landscape and amenity** – The appropriate buffer distances from Quail Burn Road as recommend by Mr Chris Glasson have not been adopted, therefore, I am not satisfied that the effects on landscape values are acceptable.
189. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

SUMMARY

190. In summary, the applicant has provided more information on the impacts on ecosystems and other users and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with these applications:
- (a) Water quality
 - (b) Landscape
 - (c) Cultural values.

GRAYS HILLS STATION LTD

191. The applicant is seeking:

CRC042661 – Take and use water from two galleries each at a combined maximum rate not exceeding 100 litres per second with a volume not exceeding 1,140,000 cubic metres per year for the irrigation of 190 hectares within a 1500 hectare command area at Grays Hills Station, Haldon Road.

ORIGINAL SECTION 42A REPORT

192. The original section 42A report for this applicant was Report 17.

193. Matters that were identified as outstanding in my original section 42A report included the following (Report 17, paragraph 123):

- (a) *Ecosystems* – There are submissions to be heard in relation to the values of the Grays River and the suitable minimum flow. No detailed assessment of effects in regards to the lower minimum flow has been provided.
- (b) *Efficiency* – the applicant has not demonstrated the volume of water sought is reasonable and efficient.
- (c) *Landscape values* – no mitigation has been provided to mitigate potential effects on landscape.
- (d) *Water quality* - No detailed impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
- (e) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from Ngai Tahu in opposition to this proposal.

ADDITIONAL MATTERS OR AMENDMENTS

194. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

195. Ms Begley in the table at section 4.3, has determined that the annual volume using Schedule WQN9v2 would be 1,129,800 cubic metres per year, however, I have determined that it would be 1,101,050 cubic metres per year using the same parameters (see table below).

Soil type	Area (ha)	Seasonal rainfall (mm)	Seasonal demand (mm)	Irrigation Demand (mm)	Total volume (m ³ /yr)
Heavy	66.5	175	670	495	329,175
Medium	28.5	175	750	575	163,875
Light	95	175	815	640	608,000
Total	190				1,101,050

196. A draft FEMP and assessment of cumulative water quality effects for the applicant was included with Ms Begley's evidence (at Appendix E).
197. I note that the OVERSEER input parameters used by the applicant for rainfall were 400mm, while the map in the FEMP indicates it falls within the 550mm to 650mm band isohyets.
198. All the water metering conditions (10) to (15) in Ms Begley's revised evidence (received 7 December 2009) have been amended from her original brief of evidence and differ from those proposed in the s42A report 17. I recommend that the conditions proposed in the original s42A report be retained. Comment on these is provided by Ms Susannah Vesey in her addendum s42A report.
199. Ms Begley has also removed the condition to install a water meter in Grays River to record flows as proposed in condition (11) (WP08). Without this I am not satisfied that the applicant will be able to demonstrate compliance with the proposed minimum flow. As such, I recommend the conditions be retained on this consent.
200. Condition (7) in Ms Begley's revised evidence was amended to remove the reference to "excluding milking dairy cows". My comments in paragraph 67 are applicable here.

COMMENT ON OUTSTANDING MATTERS

201. I have reviewed the additional information identified above and as such make the following comments.
202. **Water quality** – The draft FEMP and water quality assessment provided by Ms Begley, and MWRL, has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report) who consider that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae's s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for this application.
203. **Efficient & reasonable use** – Provided a favorable comparison of the Irricalc input parameters against field measurements is undertaken prior to granting of consent, I would be satisfied that the proposed volume is reasonable for the property, and therefore, efficient and reasonable use would no longer be a concern.
204. **Ecosystems** – I note that the evidence presented by Mr Webb and Mr Scarf for Fish & Game, identified a concern with the proposed minimum flow being sought outside of a plan change. However, despite the lack of a detailed assessment of effects on instream values from the lower minimum flow than the WCWARP, I am satisfied that the minimum flow proposed by the applicant has taken into consideration the matters outlined in Policy 4. I consider that effects on ecosystems no longer remain a concern.
205. **Landscape and amenity** – Mr Chris Glasson's opinion has not changed from his original s42a report and considers that without appropriate mitigation (i.e. buffers from river and riparian planting) the effects would not be acceptable.

206. **Cultural (*Tangata whenua*) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

SUMMARY

207. In summary, the applicant has provided more information on the impacts on ecosystems and other users and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with these applications:

- (a) Water quality
- (b) Landscape
- (c) Cultural values.

BIRCHWOOD STATION LTD

208. The applicant is seeking:

- (a) CRC012291 – Divert, take and use water from Wairepo Creek at a maximum rate of 57 litres per second with an annual volume of 336,000 cubic metres for stock water and border-dyke irrigation of 56 hectares at Glenbrook Station.
- (b) CRC012290 - Disturb the bed and banks at the confluence of Wairepo Creek and Spring Creek for the purpose of maintaining a diversion bund.

ORIGINAL SECTION 42A REPORT

209. The original section 42A report for this applicant was Report 9.

210. Matters that were identified as outstanding in my original section 42A report included the following (Report 9, paragraph 109):

CRC012291

- (a) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
- (b) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
- (c) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.

CRC012290

- (d) *Flood-carrying capacity & erosion; man-made structures; water quality; riparian plants and animals; cultural values* – No assessment or measures to address these effects have been provided. The effects on these matters may not be acceptable.

ADDITIONAL MATTERS OR AMENDMENTS

211. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC012291

212. The name of the water body from which water is proposed to be abstracted has been changed to Wairepo Creek from Spring Creek by the applicant. I do not consider this to be significant as the abstraction point is at the confluence of the two waterways.

213. There is some confusion over the rate of take and irrigation area being mixed up between 56l/s or 57l/s and 56ha or 57ha throughout Ms Begley's evidence. I note that the application as applied for is for 57l/s for 56ha irrigation. This is correctly reflected in the proposed conditions (1) and (2).

214. Ms Begley notes in paragraph 26 that a fish screen will be installed on the intake and an amended condition (6) has been proposed. The s42A addendum of Ms Vesey comments on this amendment of the standard fish screen condition
215. A draft FEMP and assessment of cumulative water quality effects for the applicant was included with Ms Begley's evidence (at Appendix D).
216. I note that in relation to the OVERSEER input parameters used by the applicant, for irrigation area, 3 blocks are identified of 113 ha (Pivot 1&2), 40 ha(border-dyke) & 40 ha(k-line) respectively, in OVERSEER. I note that a 56ha border dyke area is applied for under this consent and I assume the remaining area is covered by Benmore Irrigation Co shares and their existing water permit.
217. Ms Begley has made some changes to the proposed conditions in her original evidence, and further changes in her revised evidence (received 7 December 09). I comment on those not raised above or in Ms Vesey's addendum s42A report:
- (a) Condition (4) relating to a backflow preventer has been deleted as this is an open race system. I agree with this amendment.
 - (b) Condition (13) requiring the applicant to install a water meter in Wairepo Creek to record flows has been deleted. Without this I am not satisfied that the applicant will be able to demonstrate compliance with the proposed minimum flow. As such, I recommend the conditions be retained on this consent

CRC012290

218. Ms Begley has provided an assessment of the effects of the works to maintain the existing diversion structure, however, she has not provided a description of what the maintenance works will entail. Whilst some "standard" mitigation measures can be recommended to minimise effects of general works in watercourses, I cannot determine what the effects might be from the proposed maintenance works or comment on Ms Begley's proposed conditions.

COMMENT ON OUTSTANDING MATTERS

219. I have reviewed the additional information identified above and as such make the following comments.

CRC012291

220. **Water quality** – The draft FEMP and water quality assessment provided by Ms Begley, and MWRL, has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report) who consider that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae's s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for this application.
221. **Ecosystems** – I am satisfied with the applicant's proposal to include a fish screen in accordance with the NIWA Guidelines. However, I consider the condition reflecting

this should be in the form proposed in the original s42A report. I would not be satisfied with the applicant's amended proposal to have no flow recording device in Wairepo Creek and would consider this may result adverse effects on aquatic ecosystems if the minimum flow is breached.

222. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

CRC012290

223. **Flood-carrying capacity & erosion; man-made structures; water quality; riparian plants and animals; cultural values** – As no specific detail has been provided on the proposed scope of works, these matters remain an outstanding concern.

SUMMARY

224. In summary, for CRC012291, the applicant has provided more information on the impacts on ecosystems in relation to fish screens, and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with these applications:

- (a) Water quality
- (b) Ecosystems
- (c) Cultural values.

225. For CRC012290, the outstanding matters associated with this proposal, in no order of importance, are:

- (a) Flood-carrying capacity & erosion
- (b) Man-made structures
- (c) Water quality
- (d) Riparian plants and animals
- (e) Cultural values.

IRISHMAN CREEK STATION LTD

226. The applicant is seeking:

- (a) CRC011845 – to take and use water from Irishman Creek at a rate of 140 litres per second with an annual volume not exceeding 720,000 cubic metres for border-dyke irrigation of 48 hectares of crop and pasture, at Irishman Creek Station, State Highway 8, Lake Tekapo.
- (b) CRC084263 – Divert and use water from Irishman Creek at a rate of 500 litres per second for micro-hydroelectricity power generation with a capacity of 20kw.
- (c) CRC011846 – Discharge water into Irishman Creek at a rate of 500 litres per second from the diversion and use of water for micro-hydroelectricity generation.

ORIGINAL SECTION 42A REPORT

227. The original section 42A reports for this applicant were Reports 22A and 22B.

228. Matters that were identified as outstanding in my original section 42A reports included the following:

- (a) CRC011845 (Report 22A, paragraph 102)
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient and reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (iii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
 - (iv) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- (b) CRC084263 & CRC011846 (Report 22B, paragraph 58) – I did not consider there to be any outstanding matters in my original report.

ADDITIONAL MATTERS OR AMENDMENTS

229. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC011845

230. Mr Wills (owner of Irishman Creek Station) noted (in section C(2)), that a draft FEMP was included with his evidence and an assessment of cumulative water quality effects was undertaken by MWRL.
231. In section C(1)(c), Mr Wills notes that a daily application depth of 7mm would be appropriate for the soils and climate, which equates to 672,670m³ per year (including 10% race losses). I note that this gives a total depth of 1400mm per year. I note that under Policy 28, the investment in the system must be considered. The applicant has proposed some improvements, however, it would still appear to be a poor system in terms of irrigation efficiency. Using Mr Potts method of 1300mm application depth (paragraph 27.3 of his brief of evidence on water allocation matters), would give a total volume of 624,000m³ per year. This may be more appropriate for this border-dyke system, however, I also recommend a condition be included that a report be prepared looking into the system efficiencies. This should be completed within 12 months of grant of consent to ensure that the system is being operated efficiently, with the intent of achieving a higher application efficiency than at present.
232. In his supplementary evidence, Mr Wills makes the following changes to recommended conditions:
- (a) A maximum mesh size of 5mm for the fish screen and removal of the requirements set out in the NIWA Guidelines (paragraph 3.12).
 - (b) Removal of the backflow preventer (paragraph 3.10). I agree that this is inappropriate for an open race system.
 - (c) No requirement for flow sharing in condition (5) (paragraph 3.11). I agree with this amendment as set out in my addendum report for the original s42A report 2A.
 - (d) Removal of the requirement for telemetry to be installed on the intake meter and instream flow recorder (paragraph 3.13 and 3.15). I disagree with this deletion. The requirement for telemetry is discussed further by Ms Vesey in her addendum report.
 - (e) Deletion of the requirement for an electromagnetic or ultrasonic meter (paragraph 3.14). I agree with this amendment as it is not practicable for an open race system. I recommend amended metering conditions for open race systems which are detailed further in Ms Vesey's addendum report.

CRC084263

233. Mr Wills at section B(3) of his primary evidence (and paragraph 3.3 of his supplementary evidence), notes that a suitable fish screen is already placed on the penstock and turbine and that one on the race is not necessary as it provides good aquatic habitat. I am satisfied that as this race has been operating successfully since 1925, and the creek is not a significant habitat for native fish, that this is appropriate. However, I recommend that a report be prepared which certifies that the current fish screen will be effective at preventing fish from entering the penstock and turbine in accordance with the NIWA Guidelines and that there is a suitable bypass in place for fish to avoid the intake. Should this not be the case then a fish screen should be included at the head of the diversion race, constructed in accordance with the NIWA Guidelines.

234. At section B(4) (and paragraph 3.2 of his supplementary evidence), Mr Wills also proposes that there should be no minimum flow requirement. I do not agree with his assessment of Rule 2(3) of the WCWARP. I agree that the diversion, take and use of water for micro hydro-electricity generation is exempt from the allocation limits, but I do not consider that it should be exempt from the minimum flow requirements. Therefore, the proposed minimum flow should be retained.
235. At this same section (and paragraphs 3.4 and 3.5 of his supplementary evidence), Mr Wills considers that the water metering requirement be waived as the governor system is incapable of using more than 500l/s. I do not agree with the applicant, and consider that a flow measuring device should be maintained to ensure no more than 500l/s is diverted out of Irishman Creek. Comments on these recommended conditions are contained in the addendum s42A report of Ms Vesey.
236. In his supplementary evidence (at paragraph 3.6), Mr Wills proposes no flow recording device in Irishman Creek as no minimum flow is proposed. This relates to my comments in paragraph 234 above, and I consider should be retained.
237. Finally, Mr Wills suggests a change to the review condition (at paragraph 3.7), to be consistent with the discharge permit. I recommend that the condition as recommended in the s42A report be retained.
238. Mr Mark Webb, of Fish and Game, notes that the diversion for micro-hydro use at Irishman Creek Station may have the ability to dewater the entire reach of river between the diversion and discharge if they only have to comply with a minimum flow condition at SH8. Mr Webb also notes that there is a resident brown and rainbow trout population in the upper reaches of Irishman Creek, about 3km upstream of the proposed diversion. I have considered this recommendation, and note that this system has been operating with no minimum flow since the 1920s and as all flows go underground downstream of the intake, there are very few, if any, migratory fish present in the vicinity of the diversion. I consider that the environment would have adapted to the current system. In addition, the power system is predominantly operated in winter months when flows in the creek will be well above the minimum flow. Therefore, I consider that the effects of this system will be acceptable with only a minimum flow at SH8 and not downstream of the diversion.

CRC011846

239. Condition (4) (paragraph 3.8 of supplementary evidence) for the discharge has been deleted as Mr Wills does not consider it necessary to meter the rate of discharge. I agree with the deletion of this condition.

COMMENT ON OUTSTANDING MATTERS

240. I have reviewed the additional information identified above and can provide the following comment.
241. **Water quality** – The draft FEMP and water quality assessment provided by Mr Wills, and MWRL, has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report) who consider that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae's s42A

report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for CRC011845.

242. **Efficient & reasonable use** – I am not currently satisfied that the volume proposed is a suitable volume for irrigation of this property. I recommend amended conditions in paragraph 231 above.
243. **Ecosystems** – I am now satisfied that the proposed fish screen requirements, if conditions are amended appropriately, however, I would not be satisfied with the applicant's amended proposal to have no minimum flow or flow recording for the micro hydro-electricity application and would consider this may result adverse effects on aquatic ecosystems in the reach of the diversion.
244. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

SUMMARY

245. In summary, the applicant has provided some more information on the impacts on ecosystems in relation fish screens and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. The outstanding matters which I identified in my original section 42A report that have not been resolved are identified below. I have listed, in order of importance, the outstanding issues associated with these applications:
- (a) Water quality
 - (b) Ecosystems
 - (c) Annual Volume
 - (d) Cultural values.

M HORO (OHAU CO TRUST)

246. The applicant is seeking:

- (a) CRC042011, CRC042015, CRC042017 & CRC042018 – Divert, take and use up to 30 litres per second, from any one of three locations on the Quail Burn and one location on East Diadem Creek, with a combined rate of no more than 100 litres per second and an annual volume of 738,800 cubic metres, for irrigation of 180 hectares of pasture and winter crop at Ribbonwood Station, Quailburn Road, Omarama.
- (b) CRC042020 – Divert, take and use up to 174 litres per second from the East Branch Ahuriri River with an annual volume of 1,350,000 cubic metres, for irrigation of 300 hectares of pasture and winter crop at Ribbonwood Station, Quailburn Road, Omarama.
- (c) CRC042022 & CRC042025 – Divert, take and use up to a combined rate of 30 litres per second, from one of two locations on the Wairepo Creek, and an annual volume of 213,200 cubic metres, for irrigation of 52 hectares of pasture and winter crop at Ribbonwood Station, Quailburn Road, Omarama.

ORIGINAL SECTION 42A REPORT

247. The original section 42A reports for this applicant were Reports 21A, 21B and 21C.

248. Matters that were identified as outstanding in my original section 42A report included the following

- (a) CRC042011, CRC042015, CRC042017 & CRC042018 (Report 21A, paragraph 105):
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient and reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (iii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
 - (iv) *Landscape and amenity* – The irrigation area is close to sensitive wetland areas;
 - (v) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.
- (b) CRC042020 (Report 21B, paragraph 97) –
 - (i) As above in paragraph 248(a), excluding landscape and amenity values

(c) CRC042022 & CRC042025 (Report 21C, paragraph 102) –

(i) As above in paragraph 248(a).

ADDITIONAL MATTERS OR AMENDMENTS

249. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC042020

250. Ms Johnston confirmed (at section 4.3 and paragraphs 5 and 28), that the annual volume being sought is 1,350,000m³. I agree with the reflection of this volume in the proposed conditions.

251. A draft Farm Environmental Management Plan (FEMP) for Ribbonwood Station and assessment of cumulative water quality effects was included with Ms Johnston's evidence (Appendix D).

252. I note that in relation to the OVERSEER input parameters used by the applicant:

(a) A total irrigation area of 950ha is identified, but they are only seeking a combined total of 532ha under these applications.

(b) For the irrigated blocks, no irrigation water was included.

(c) For all blocks, 500mm rainfall depth is used, which appears to be based on applicant's knowledge of rainfall on the property (section 2.5 of the FEMP). However, the rainfall map included with the FEMP suggests the rainfall isohyets should be 850-1000mm for the East Ahuriri block and 750-850mm for the Quail Burn and Wairepo blocks.

253. In paragraph 25, Ms Johnston notes that the proposal is to include a fish screen designed in accordance with the NIWA Guidelines. I am satisfied with this proposal.

CRC042011, CRC042015, CRC042017 & CRC042018

254. Ms Johnston confirmed (at section 4.3 and paragraphs 2, 4 and 30), that the annual volume being sought is 738,800m³ and that the combined rate of take would be 100l/s across all four locations. I agree with the reflection of this rate and volume in the proposed conditions.

255. As with paragraph 251 above, the draft FEMP was included with Ms Johnston's evidence (Appendix D).

256. The comments on fish screens above are also applicable here (paragraph 253).

CRC042022 & CRC042025

257. Ms Johnston confirmed (at section 4.3 and paragraphs 5 and 30), that the annual volume being sought is 213,200m³ I agree with the reflection of this volume in the proposed conditions.

258. As with paragraph 251 above, the draft FEMP was included with Ms Johnston's evidence (Appendix D).

259. The comments on fish screens above are also applicable here (paragraph 253).

COMMENT ON OUTSTANDING MATTERS

260. I have reviewed the additional information identified above and as such make the following comments.

261. **Water quality** – The draft FEMP and water quality assessment provided by Ms Johnston, and MWRL, has been audited by Environment Canterbury’s technical experts (refer to Dr Mike Freeman’s s42A addendum report). For CRC042022 & CRC042025, they consider that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. For CRC042011, CRC042015, CRC042017, CRC042018 & CRC042020, they consider that there is a high level of uncertainty about potential adverse effects, and given the scale of the development and potential consequences of those adverse effects, suggest that the applications should not be granted. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae’s s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for these applications.

262. **Efficient & reasonable use** – I am now satisfied that the proposed annual volumes for the above applications adequately consider the matters outlined in Policy 16, and therefore, efficient and reasonable use is no longer a concern.

263. **Ecosystems** – I am satisfied with the applicant’s proposal to include a fish screen in accordance with the NIWA Guidelines. I consider that effects on ecosystems no longer remain a concern.

264. **Landscape and amenity** – For the Quail Burn applications, Mr Chris Glasson considers that protection of the wetland area is still required in order for effects to be acceptable. For the Wairepo applications, Mr Glasson considers that to be acceptable, the irrigation area should be modified to be more compatible with existing landforms and retain a buffer of landform and tussock along the road.

265. **Cultural (Tangata whenua) values** – Given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

SUMMARY

266. In summary, the applicant has provided more information on the impacts on ecosystems and efficient and reasonable use, and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with these applications:

- (a) Water quality
- (b) Landscape & amenity
- (c) Cultural values.

SOUTHDOWN HOLDINGS LTD

267. The applicant is seeking:

- (a) CRC040835 – Take water from Lake Ohau at a maximum rate not exceeding 1,200 litres per second, and a volume not exceeding 103,680 cubic metres per day, and 12,408,000 cubic metres per year for spray irrigation of up to 2,068 hectares for crops and pasture for grazing stock, including milking dairy cows, at Glen Eyrie Downs, Lake Ohau.
- (b) CRC040836 – To construct, maintain and operate an irrigation pump station and intake on the shoreline and lake bed of Lake Ohau, to pump water to Glen Eyrie Downs; to disturb the bed and banks of Maori Creek to construct and maintain a pipeline underneath Maori Creek.

ORIGINAL SECTION 42A REPORT

268. The original section 42A report for this applicant was Report 35A.

269. Matters that were identified as outstanding in my original section 42A report included the following

- (a) CRC040835 (Report 35A, paragraph 121):
 - (i) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
 - (ii) *Efficient and reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
 - (i) *Allocation to activities* – No assessment of the effects of entitlements to other activities has been provided;
 - (ii) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
 - (i) *Landscape and amenity* – The irrigation area is close to sensitive amenity areas and will be visible to the public using the lake and Lake Ohau Road;
 - (ii) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from Runanga in opposition to this proposal.
- (b) CRC040836 (Report 35A, paragraph 122) :
 - (i) *Erosion, water quality, riparian plants & animals, cultural values* – The applicant has not provided the final details of the proposal to determine the scale of effects.

ADDITIONAL MATTERS OR AMENDMENTS

270. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

CRC040835

271. Mr McIndoe, at paragraph 658, confirms that the use of water for irrigation on Shelton Downs (400ha) and Ohau Downs (400ha) are no longer being sought under this application. The area and annual volume has subsequently been reduced to 2,068 ha and 12,408,000 m³. This has been reflected in the proposed conditions included with the evidence of Mr Kyle. I am satisfied with this amendment.
272. A Farm Environmental Management Plan (FEMP) for Glen Eyrie Downs was included with Dr Robson's evidence and assessment of cumulative water quality effects was undertaken by Dr Bright.
273. In paragraph 365, Mr McIndoe notes that the proposal is to include a fish screen gallery designed in accordance with the NIWA Guidelines. I am satisfied with this proposal. However, as noted by Dr Adrian Meredith in his addendum s42A report, *"these type of structures require careful scrutiny of design, installation, and maintenance, such that adequate performance is maintained. Once installed such installations (like foundation reinforcing in building construction consents) are very difficult to assess or review, so it is appropriate that consent conditions require explicit demonstration of appropriate construction phases (by inspection or photographic evidence)."* Amendments to the currently proposed conditions will be required to provide for this staged evidence demonstrating compliance with the NIWA guidelines as discussed in the addendum s42A report of Ms Vesey. I consider this should be included on the water permit, not the land use permit, as proposed in the conditions in evidence of Mr Kyle.
274. Mr McIndoe, has noted that the proposed centre pivot irrigators may cross or come close to some creeks within the property (e.g. Serpentine Creek, Wairepo Creek, Six Mile Creek) (paragraphs 413-418). He also notes that consent will be sought to divert the southern branch of Six Mile Creek into the northern branch to avoid crossing the water body. This application has yet to be lodged.
275. I note that a lack of information has been provided as to how the irrigation over water bodies would work in the context of the dairy effluent applications and the proposal to use one irrigation system for both water and effluent. However, this may be addressed through the evidence still to come for the effluent applications.
276. Mr McIndoe has also provided further detail about the potential effects on noise of the pump station and works required to install the pipeline along the boundary with the property owned by the Blue Family Trust. If the noise generated by the proposed pump station is as anticipated, then I would be satisfied that the effects on amenity values are acceptable. However, I note that it is difficult to be certain of the noise levels at this stage. A condition could be included on the consent requiring the noise levels to be limited in some way to protect the amenity values of Maori Bay for neighbours and other users. In addition, the applicant has proposed to limit construction works to avoid weekends and public holidays.
277. Dr Ruth Bartlett has provided evidence on terrestrial ecological effects and concludes that the effects would be acceptable. She also provides details regarding the cultivation/planting proposed (paragraphs 4.27, 4.29 & 4.30) and monitoring that she

would recommend be undertaken (paragraphs 4.35 & 4.36). These do not appear to have been incorporated into conditions by Mr Kyle. I consider that this would be necessary to ensure Dr Bartlett's conclusions are achieved.

278. Dr Greg Ryder has provided an assessment of effects on avifauna and aquatic ecology from the proposed irrigation and pipeline installation. He concludes that with appropriate mitigation, effects will be acceptable. Examples of his recommended mitigation include (paragraphs 5.8-5.12 and paragraphs 7.1-7.7): restricting construction to outside the avifauna breeding season, and monitoring of Canada geese populations and mammalian predators. It does not appear that these mitigation measures are included in the proposed conditions in the evidence of Mr Kyle. I consider that this would be necessary to ensure Dr Ryder's conclusions are achieved.
279. Mr Stephen Brown has provided a detailed landscape assessment. This has been reviewed by Mr Chris Glasson in his addendum s42A report.
280. Mr Buddy Mikaere provided an assessment of effects on cultural values for this application.

CRC040836

281. Mr McIndoe has provided further detail of the proposed gallery intake and pipeline (paragraphs 361-375). He has confirmed that the gallery will be a total of 170m in length along the lake shore buried to a depth of at least 2 metres. He has also outlined the mitigation measures proposed to minimise effects on water quality, erosion and riparian plants and animals (paragraphs 430-442 and paragraphs 697-705). I am satisfied that the proposed method of construction and mitigation measures will ensure that effects on the above are minor.
282. Mr Kyle has provided conditions for the proposed land use permit. While I consider this addresses most of the mitigation proposed by the applicant, further detail of the construction methods need to be included in the scope to ensure that the works are carried out as described in the evidence of Mr McIndoe.

COMMENT ON OUTSTANDING MATTERS

283. I have reviewed the additional information identified above and as such make the following comments.

CRC040835

284. **Water quality** – The FEMP and water quality assessment provided by Mr Bright and Ms Robson, and MWRL, has been audited by Environment Canterbury's technical experts (refer to Dr Mike Freeman's s42A addendum report) who consider that, for the area of the property within the Ahuriri Arm catchment, there is a high level of uncertainty about potential adverse effects, and given the scale of the development and potential consequences of those adverse effects, suggest that the application should not be granted. For the area of the property within the Haldon Arm catchment, they consider that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae's s42A report identifies there to be areas of concern with the parameters

used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for these applications.

285. **Efficient & reasonable use** – Provided a favorable comparison of the Irricalc input parameters against field measurements is undertaken prior to granting of consent, I would be satisfied that the proposed volume is reasonable for the property, and therefore, efficient and reasonable use would no longer be a concern.
286. **Allocation to activities** – The applicant has provided an assessment of the effects of the proposed abstraction on other users and activities. I consider that as derogation approval has been received from Meridian Energy Ltd, who would be the primary affected party, that this matter has been adequately dealt with. However, I do note that granting this consent over the allocation limit may have a precedent effect as the WCWARP is an operative plan.
287. **Ecosystems** – I am satisfied with the applicant's proposal to include a gallery fish screen in accordance with the NIWA Guidelines, however, I do not consider this is appropriately reflected in the conditions of consent at this stage. In addition, I note that conditions recommended by Dr Ryder in regards to effects on avifauna have not been included in the applicant's proposed conditions/mitigation. If these aspects are addressed, I would be satisfied that effects on aquatic ecosystems and avifauna would no longer be a concern. In respect of terrestrial ecosystems, a detailed assessment was provided by the applicant; however Dr Susan Walker presented evidence in opposition, and disagreed with Dr Bartlett's conclusions. Therefore at this time I cannot conclude that the effects on terrestrial ecosystems are acceptable.
288. **Landscape and amenity** – Mr Chris Glasson has reviewed the evidence of Mr Stephen Brown, but remains of the opinion that a buffer is required from Quail Burn Road, Serpentine Creek, Wairepo Creek and the DoC reserve, as well as a buffer around the OLA and removal of south-western pivots, in order for effects to be acceptable.
289. **Cultural (Tangata whenua) values** – I acknowledge the assessment provided by Mr Mikaere; however, given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

CRC040836

290. **Erosion, water quality, riparian plants & animals, cultural values** – I am satisfied that the assessment provided by the applicant concludes effects from the proposed works will be minor. However, as noted above, I consider that further detail should be included in the scoping conditions to ensure that the construction works are undertaken as described in the evidence of Mr McIndoe.

SUMMARY

291. In summary, the applicant has provided more information on the impacts on other activities and efficient and reasonable use for the water permit, and erosion, water quality and riparian plants and animals for the land use permit, and it appears that these impacts may be adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with the water permit application (CRC040835):

- (a) Water quality

- (b) Landscape & amenity
- (c) Ecosystems (predominantly terrestrial ecosystems)
- (d) Cultural values.

FIVE RIVERS LTD

292. The applicant is seeking:

CRC061154 – To take and use 950 litres per second, with a volume not exceeding 8,958,000 cubic metres per year, from Lake Ohau at Ohau Downs Station, adjacent to Lake Ohau Road and State Highway 8, for spray irrigation of 1,493 hectares of crops and pasture, excluding dairy cows.

ORIGINAL SECTION 42A REPORT

293. The original section 42A report for this applicant was Report 13.

294. Matters that were identified as outstanding in my original section 42A report included the following:

CRC061154 (Report 13, paragraph 108):

- (a) *Water quality* - No impact assessment or measures to address the water quality impacts that could arise from irrigation at this site. Given the conclusion regarding the potential cumulative adverse effects on water quality, it is premature to make any recommendation to grant or refuse this application as it relates to cumulative water quality;
- (b) *Efficient and reasonable use* – There is a lack of conclusive information to support the annual volume requested in accordance with the direction provided by Policies 15-20 of the WCWARP;
- (c) *Allocation to activities* – No assessment of the effects of entitlements to other activities has been provided;
- (d) *Ecosystems* – The applicant has proposed a fish screen but has not included any details of what this will entail;
- (e) *Landscape and amenity* – The irrigation area is close to sensitive amenity areas and will be visible to the public using the lake and Lake Ohau Road;
- (f) *Cultural values* – The applicant has not provided any assessment on cultural values and there are outstanding submissions from runanga in opposition to this proposal.

ADDITIONAL MATTERS OR AMENDMENTS

295. The following additional matters have been identified throughout the hearing, or changes have been proposed by the applicant.

296. Mr Whata, in his legal submissions (section 9), provides a response to my paragraph 21 (s42A Report 13) in which I raised concern about the proposal for dairying as being outside the scope of the original notified application as there would likely be an increase in effects on water quality. Mr Whata noted that evidence has been presented by Ms Robson using OVERSEER, to show that the dairying system as proposed (using cubicle stables for the majority of the year) would result in a lower nutrient discharge than would an intensive sheep and beef operation.

297. I have reviewed this information and considered the fact that this applicant has subsequently applied for the related effluent consents and those have been notified with a large number of submissions received. As the main effects of concern in relation to dairying, are the impacts of the effluent, and those are being considered under those notified applications, I consider that those parties who have an interest in the dairying aspect of this proposal would have had the chance to submit. Therefore, I no longer consider the proposal for dairying under CRC061154, to be beyond the scope of the application in this instance.
298. The applicant has lodged an application for a land use permit to install the intake gallery in the bed of Lake Ohau (CRC100225). This application has been notified and has submissions to be heard. The location of the intake has been proposed at NZMS 260 H38:6563-5352, adjacent to the northern boundary, but outside of, the QEII covenant area.
299. A Farm Environmental Management Plan (FEMP) for Glen Eyrie Downs was included with Dr Robson's evidence and assessment of cumulative water quality effects was undertaken by Dr Bright.
300. In paragraph 472, Mr McIndoe notes that the proposal is to include a fish screen gallery designed in accordance with the NIWA Guidelines. I am satisfied with this proposal. However, as noted by Dr Adrian Meredith in his addendum s42A report, *"these type of structures require careful scrutiny of design, installation, and maintenance, such that adequate performance is maintained. Once installed such installations (like foundation reinforcing in building construction consents) are very difficult to assess or review, so it is appropriate that consent conditions require explicit demonstration of appropriate construction phases (by inspection or photographic evidence)."* Amendments to the currently recommended conditions will be required to provide for this staged evidence demonstrating compliance with the NIWA guidelines as discussed in the addendum s42A report of Ms Vesey. I note that no fish screen condition has been proposed in the conditions in evidence of Mr Kyle.
301. Mr McIndoe has also provided further detail about the potential effects on noise of the pump station and works required to install the pipeline. If the noise generated by the proposed pump station is as anticipated, then I would be satisfied that the effects on amenity values are acceptable. However, I note that it is difficult to be certain of the noise levels at this stage. While the proposed pump station is located some distance from any residential property, a condition could be included on the consent requiring the noise levels to be limited in some way to protect the amenity values of Maori Bay for neighbours and other users.
302. Dr Ruth Bartlett has provided evidence on terrestrial ecological effects and concludes that the effects would be minor.
303. Dr Greg Ryder has provided an assessment of effects on avifauna and aquatic ecology from the proposed irrigation and pipeline installation. He concludes that with appropriate mitigation, effects will be acceptable. Examples of his recommended mitigation include (paragraphs 11.1-11.4 and paragraphs 13.1-13.6): restricting construction to outside the avifauna breeding season, and monitoring of Canada geese populations and mammalian predators. It does not appear that these mitigation measures are included in the proposed conditions in the evidence of Mr Kyle. I consider that this would be necessary to ensure Dr Ryder's conclusions are achieved.
304. Mr Stephen Brown has provided a detailed landscape assessment. This has been reviewed by Mr Chris Glasson in his addendum s42A report.

305. Mr Buddy Mikaere provided an assessment of effects on cultural values for this application.

COMMENT ON OUTSTANDING MATTERS

306. I have reviewed the additional information identified above and as such make the following comments.
307. **Water quality** – The FEMP and water quality assessment provided by Mr Bright and Ms Robson, and MWRL, has been audited by Environment Canterbury’s technical experts (refer to Dr Mike Freeman’s s42A addendum report) who consider that, that there are some uncertainties about the potential adverse effects and suggest that either more information is needed or strict monitoring and response conditions would be needed to address cumulative water quality effects. I note that to date, no appropriate conditions addressing water quality on a local or cumulative scale have been proposed by the applicant. Additionally I note the table attached to Mr McNae’s s42A report identifies there to be areas of concern with the parameters used in the running of OVERSEER for this applicant. Therefore, at this time local and cumulative water quality effects remain outstanding for these applications.
308. **Efficient & reasonable use** – Provided a favorable comparison of the Irricalc input parameters against field measurements is undertaken prior to granting of consent, I would be satisfied that the proposed volume is reasonable for the property, and therefore, efficient and reasonable use would no longer be a concern.
309. **Allocation to activities** – The applicant has provided an assessment of the effects of the proposed abstraction on other users and activities. I consider that as derogation approval has been received from Meridian Energy Ltd, who would be the primary affected party, that this matter has been adequately dealt with. However, I do note that granting this consent over the allocation limit may have a precedent effect as the WCWARP is an operative plan.
310. **Ecosystems** – I am satisfied with the applicant’s proposal to include a gallery fish screen in accordance with the NIWA Guidelines, however, I do not consider this is appropriately reflected in the conditions of consent at this stage. In addition, I note that conditions recommended by Dr Ryder in regards to effects on avifauna have not been included in the applicant’s proposed conditions/mitigation. If these aspects are addressed, I would be satisfied that effects on aquatic ecosystems and avifauna would no longer be a concern. In respect of terrestrial ecosystems, a detailed assessment was provided by the applicant, however Dr Susan Walker presented evidence in opposition, and disagreed with Dr Bartlett’s conclusions. Therefore at this time I cannot conclude that the effects on terrestrial ecosystems are acceptable.
311. **Landscape and amenity** – Mr Chris Glasson has reviewed the evidence of Mr Stephen Brown, but remains of the opinion that buffers from Lake Ohau Road are still required, in order for effects to be acceptable.
312. **Cultural (Tangata whenua) values** – I acknowledge the assessment provided by Mr Mikaere; however, given I have yet to hear the submission from Ngai Tahu, my comments in the original s42A report remain applicable.

SUMMARY

313. In summary, the applicant has provided more information on the impacts on other activities and efficient and reasonable use, and it appears that these impacts may be

adequately mitigated by the implementation of appropriate conditions. There are outstanding matters which I identified in my original section 42A report that have not been resolved. I have listed, in order of importance, the outstanding issues associated with the application:

- (a) Water quality
- (b) Landscape & amenity
- (c) Ecosystems (predominantly terrestrial ecosystems)
- (d) Cultural values.

Claire Penman

11 January 2010

APPENDIX A – REPORTS AND EVIDENCE

314. All evidence presented by applicants and submitters during the course of the hearing has been reviewed, but in particular, the evidence below.

- (a) For Report 1 and Report 2 matters:
 - (i) All evidence presented from the commencement of the hearing, but in particular:
 - a. Planning evidence of Bob Batty for UWAG (presented to the Commissioners on 6 October 2009)
 - b. Planning evidence of John Kyle for MWRL (presented to the Commissioners on 24 September 2009)
 - c. Planning evidence of John Kyle (presented on 16 October 2009 and tabled on 26 November 2009)
 - d. Evidence of Richard Turner for Meridian Energy Ltd (presented to the Commissioners on 30 November 2009)
 - e. Planning evidence of Ken Gimblett for Meridian Energy Ltd
 - f. Hydrology evidence by Dave Boraman (presented to the Commissioners on 6 October 2009)
 - g. Hydrology evidence by Richard de Joux (presented to the Commissioners on 6 October 2009)
- (b) For all UWAG applications:
 - (i) Landscape evidence of Andrew Craig for UWAG (presented to the Commissioners on 6 October and 22 October 2009)
- (c) KJ, DK & SR Anderson
 - (i) Two briefs of evidence prepared by the applicant's consultant Ms Keri Johnston (presented to the Commissioners on 20 October 2009)
 - (ii) Hydrology evidence by Dave Boraman (presented to the Commissioners on 6 October 2009)
- (d) Otamatapaio Station (1993) Ltd
 - (i) Evidence prepared by the applicant's consultant Ms Haidee McCabe (presented to the Commissioners on 19 October 2009)
 - (ii) Hydrology evidence by Dave Boraman (presented to the Commissioners on 6 October 2009)
- (e) Otematata Station Ltd
 - (i) Evidence prepared by the applicant's consultant Ms Cathy Begley (presented to the Commissioners on 21 October 2009)

- (ii) Revised evidence of Cathy Begley (received 7 December 2009)
 - (iii) Hydrology evidence by Dave Boraman (presented to the Commissioners on 6 October 2009)
- (f) Bellfield Land Co Ltd
 - (i) Evidence prepared by the applicant's consultant Ms Haidee McCabe (presented to the Commissioners on 19 October 2009)
- (g) D W McAughtrie
 - (i) Evidence prepared by the applicant's consultant Ms Keri Johnston (presented to the Commissioners on 19 October 2009)
- (h) D W McAughtrie, Greenfields Rural Opportunities Ltd & Ellis-Lea Farming (2000) Ltd
 - (i) Evidence prepared by the applicant's consultant Ms Keri Johnston (presented to the Commissioners on 19 October 2009)
- (i) M Horo
 - (i) Evidence prepared by the applicant's consultant Ms Keri Johnston (presented to the Commissioners on 20 October 2009)
- (j) Birchwood Run Ltd
 - (i) Evidence prepared by the applicant's consultant Ms Cathy Begley (presented to the Commissioners on 20 October 2009)
 - (ii) Revised evidence of Cathy Begley (received 9 December 2009)
- (k) Grays Hills Station Ltd
 - (i) Evidence prepared by the applicant's consultant Ms Cathy Begley (presented to the Commissioners on 7 October 2009)
 - (ii) Revised evidence of Cathy Begley (received 7 December 2009)
 - (iii) Hydrology evidence by Dave Boraman (presented to the Commissioners on 6 October 2009)
- (l) Irishman Creek Station Ltd
 - (i) Evidence prepared by the applicant Mr Justin Wills (presented to the Commissioners on 19 October 2009)
- (m) For applications by Five Rivers Ltd and Southdown Holdings Ltd
 - (i) Evidence of Ian McIndoe (presented to the Commissioners on 12 October 2009)
 - (ii) Water quality evidence of Melissa Robson (presented to the Commissioners on 13 October 2009)

- (iii) Landscape evidence of Stephen Brown (presented to the Commissioners on 14 October 2009)
- (iv) Cultural evidence of Buddy Mikaere (presented to the Commissioners on 15 October 2009)
- (v) Aquatic & avifauna ecological evidence of Greg Ryder (presented to the Commissioners on 15 October 2009)
- (vi) Terrestrial ecological evidence of Ruth Bartlett (presented to the Commissioners on 15 October 2009)
- (vii) Planning evidence of John Kyle (presented to the Commissioners on 16 October 2009)
- (n) For all relevant applications, evidence of submitters:
 - (i) Evidence of Mark Webb, Fish & Game
 - (ii) Evidence on Frank Scarf, Fish & Game
 - (iii) Evidence of Richard Allibone, DoC
 - (iv) Evidence of Susan Walker, Mackenzie Guardians
 - (v) Evidence of Blue Family Trust