APPLICANT: DW MCAUGHTRIE, GREENFIELD RURAL OPPORTUNITES LTD AND ELLIS-LEA FARMS (2000) LTD

REPORT OF KERI JOHNSTON

Consent ID	Description	Table 3 Location	Table 5 Location
CRC991473	To divert, take and use surface water from Quailburn Stream into the Quailburn Government Race at a maximum rate not exceeding 170 litres per second, and a volume not exceeding 14,688 cubic metres per day, and 1,304,500 cubic metres per year, for spray irrigation of up to 255 hectares of pasture & winter feed crops, and 219,000 cubic metres per year for stock water purposes at The Glens, Willowburn Station and Riverside Station.	Quailburn River	Upstream of Waitaki Dam, but not upstream of the outlets of the glacial lakes

Activity Status

Rule 2, Table 3 WCWARP: The take is within the allocation limit for Quailburn Stream of 310 L/s, and the applicant accepts the minimum flow as specified in the WCWARP for Quailburn Stream.

Rule 6, Table 5 WCWARP: The proposed annual volume is within the allocation limit for "Upstream of Waitaki Dam, but not Upstream of the Outlets of the Glacial Lakes" of 275 million cubic metres per year.

Overall status: Any activity that complies with Rules 2 and 6 is a discretionary activity under Rule 15

Consent ID	Description
CRC991474	To disturb the bed and banks of Quailburn Stream to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure.

Activity Status

TRP: As this application was lodged prior to the notification of Chapter eight of the Proposed Natural Resources Regional Plan (PNRRP), it is the TRP which controls the activity status of this application pursuant to s88A of the RMA. The TRP has no provisions which authorise the discharge of water into water, therefore S77C(1)(a) of the RMA applies, and the activity is **discretionary**.

Consent ID	Description
CRC991475	To discharge unused water/surplus irrigation water into Quailburn Stream at a maximum rate not exceeding 170 litres per second, and a volume not exceeding 14,688 cubic metres per day.
Activity Status	
TRP: As this application was lodged prior to the notification of Chapters four and five of the Proposed Natural Resources Regional Plan (PNRRP), it is the TRP which controls the activity status of this application pursuant to s88A of the RMA. The TRP has no provisions which authorise the discharge of water into water, therefore s77C(1)(a) of the RMA applies, and the activity is **discretionary**.	

1 PROPOSAL

1. DW McAughtrie, Greenfield Rural Opportunities Ltd and Ellis-Lea Farms (2000) Ltd (hereon in referred to as "the applicant"), seek the renewal of existing use rights WTK691641, A, B and C, which authorised the diversion and taking of water within the system at a rate of 170L/s and not exceeding 103 megalitres (103, 000 cubic metres) per week.
2. Water is diverted into the Quailburn Government Race. A rock weir in the bed of the stream assists with ensuring that sufficient water is available to be diverted. The rock weir, at its maximum, is approximately 3m in length, 1.5m wide and 0.5m in height and comprises un-consolidated river gravels and boulders pushed up from the bed. It has very gentle upstream and downstream batter slopes of 4:1 H:V.
3. Maintenance of the rock weir is required. This includes using machinery (such as a digger) to alter the dimensions of the weir up to the maximum length, width and height, or its location and angle to ensure that sufficient water is diverted into the race system.
4. The rock weir is intended to fail by erosion and washout in flows of approximately $6m^3/s$, and needs to be reinstated. As with all river systems, a high flow event can alter the stream channel; therefore, reinstatement is carried out when flows are sufficiently low again to enable the rock weir to be built at the optimum location and dimensions for the stream at the time.
5. The rock weir is situated within the Qualiburn Stream bed approximately 2,400 metres upstream of Henburn Road. There are no other structures within the bed of Qualiburn Stream.
6. As the Qualiburn Government Race also supplies stockwater to the three properties, works are undertaken throughout the year, on an as needed basis.
7. The taking of water is controlled by a manually operated underflow gate in order to regulate flow entering the supply race downstream of that structure, and induces by-wash to ensure that any water diverted in excess of that consented, or required to be taken, is immediately discharged back into Qualiburn Stream.

1.1 Timeline and Summary of Amendments made to the Applications

Timeline	CRC991473, CRC991474 and CRC991475
Date of Lodging	23 December 1998
First Notifiable Date	29 October 2004
WCWARP Notifiable Date	15 December 2006
Public Notification	August 2007

8. The applications were lodged in December 1998. As the applications were lodged six months prior to the expiry of the above consents, the applicant is current operating under s124 continuation.

9. In December 2006, an annual volume of 3,000,000 cubic metres per year for irrigation purposes and 219, 000 cubic metres per year for stockwater purposes was proposed.

10. It was also indicated that further work was being undertaken by the applicant in relation to determining a minimum flow for Quailburn Stream.

11. In February 2009, the further work resulted in the applicant proposing to accept the minimum flow for Quailburn Stream as specified in Table 3 of the WCWARP.

12. In May 2009, the irrigation annual volume was reduced to 1,530,000 cubic metres per year to reflect a reduction in irrigable area from 500ha to 255ha, giving a total of 1,749,000 cubic metres per year for irrigation and stock water purposes.

13. In September 2009, based on soil types, the irrigation annual volume was further reduced to 1,304,050 cubic metres per year.

14. No other changes have been made to the applications.

1.2 Derogation Approval

15. Derogation approval was obtained from Meridian Energy Limited on 17 June 2009.

2 BACKGROUND INFORMATION

2.1 Property Details

16. The applicant consists of three individuals (and three individual properties). Water is diverted from the Quailburn Stream into the Quailburn Government Race, which runs through all three properties, supplying stock water and irrigation water.

17. The race was established by the government and was part of the sale and purchase agreement upon the subdivision of Benmore Station in 1916/17 to returning soldiers. The race was in place by 1921. The race is an open race except for around the steeper slopes of the Greenfields property where it is piped.

18. The first property the race serves is Willowburn Station (the property of DW McAughtrie). Willowburn Station is a 2,200ha property located adjacent to SH8, between Twizel and Omarama. The property currently runs deer, beef cattle and sheep.

19. Willowburn Station do not utlise the water right for irrigation at present, but propose to irrigate up to 85ha of flat land between SH8 and Quailburn Road using centre pivot irrigation. Willowburn Station currently irrigates another 168ha using centre pivot irrigation with water supplied from the Benmore Irrigation Scheme and 35ha of k-line irrigation with water sourced from the Wairepo Race.

20. The second property is that of Greenfield Rural Opportunites Ltd, known as Riverside. Riverside is an 1,802ha property located on the western side of Willowburn Station, accessed from Quailburn Road. The property currently runs deer, beef cattle and sheep.

21. Greenfield's do not utlise the water right for irrigation at present, but propose to irrigate up to 85 ha of rolling land off Quailburn Road using spray and drip irrigation.

22. The third property is The Glens (the property of Ellis-Lea Farms (2000) Ltd). Ellis-Lea purchased the property from The Glens Ltd in 2008. Ellis-Lea converted the property to a 1,000 cow dairy unit in 2008.

23. The Glens have always used the right for irrigation and stockwater purposes, irrigating 400ha of flat and gently rolling land using centre pivot and k-line irrigation in conjunction with water supplied from the Benmore Irrigation Scheme. Up to 85ha of this is water supplied from the government race.

24. Irrigation for Willowburn Station and Riverside will allow crops to be finished off, and pasture to be taken off for supplementary feed.

25. For The Glens property, pasture is irrigated to maintain a constant cover over the milking platform.

26. The end point of the system is a small holding pond located on The Glens property. The pond is a popular fishing spot for the local children and is also used for duck shooting. The pond is approximately 140m wide in diameter, and water is stored entirely below ground (i.e. there is no embankment structure associated with the pond).

2.2 Water Source

27. The Quailburn Catchment is located approximately 15km North-west of Omarama and drains the Diadem and Ohau Range. It has a catchment area above the minimum flow site of 82km^2 which is located at the Henburn Rd. The altitude of the upper catchment ranges from 500m to 1900m above MSL.

28. Several tributaries, including the East Diadem and Serpentine Stream, feed into the Quailburn upstream of the gorge, then into the Ahuriri River. Flows at the minimum flow site are usually continuous, however below the site is often dry, with surface flows often not continuous to the Ahuriri River.

29. The Quailburn provides a limited fishery for spawning and rearing habitat of rainbow and brown trout.

3 SUBMISSIONS

30. These applications were notified in 2003, as part of the "ministerial call-in". A total of 314 submissions were received.

31. A summary of the 2007 submissions is as follows:

Resource Consent	Submissions in support	Submission in opposition	Neutral
CRC991473	2	19	2
CRC991474	2	18	2
CRC991475	2	18	2

32. Details of the submissions made in response to all applications that were publically notified at the same time in 2003 and 2007 are contained in CRC Report 1, Appendix 5. I have reviewed this report and adopt it as a true and accurate summary of the submissions received.

33. Details of the submissions received made individually on these applications are as follows:

Submitter	Issues	Support/ neutral/ oppose
Bellfield Land Co Ltd	That a suitable and fair flow-sharing regime can be settled amongst the users outside of the consent hearing process. This will ensure the submitter whom is downstream still has fair access to water during low flow conditions.	Oppose
Meridian Energy Ltd	Effects on water quality and flow metering requirements.	Oppose
Ohau Co Trust Ltd	The submitter wished the consent authority to specify a schedule that will enable other applicant's equitable use of water resources and to reassess minimum flow limits to accommodate the scheduled use of water.	Oppose
Central South Island Fish and Game Council	Over allocation of the Quailburn River	Oppose
The Department of Conservation	High proportion of flows being abstracted, potential effects on stream including habitat values.	Oppose

34. The applicant and Bellfield Land Co Ltd have reached agreement and will work together in the creation of an agreed flow sharing regime.

35. Ohau Company Trust Ltd submitted against CRC991473, but has since withdrawn any objection to these applications (9/7/2009).

36. In respect of the Meridian Energy Ltd submission, the applicant will install a flow meter, and has provided mitigation to ensure that effects on water quality are minor, as discussed later in this report.

37. In respect of the Fish and Game and the Department of Conservation submissions, the total allocation now being sought from the Quailburn River is within the allocation limit specified in Table 3 of the WCWARP.

4 CRC991473 – DIVERT, TAKE AND USE CONSENT - ASSESSMENT OF ENVIRONMENTAL EFFECTS

4.1 Effects on other water users

Effects on other water users	
Comments	This is the renewal of an existing water right. No increase in rate or weekly volume (as currently authorised) is being sought, and it is within the allocation set for the Quailburn and Tributaries in Table 3 of the WCWARP of 310L/s. The CRC reporting officer for these applications agrees that effects on other water users are minor

38. There are two other abstractors in the Quailburn Catchment. Bellfield Land Co Ltd, who is also seeking the renewal of an existing water right. Ohau Company Trust Ltd is also seeking water from the catchment and is a new abstractor.

39. Table 3 of the WCWARP specifies an allocation limit of 310L/s for the Quailburn and tributaries. This is the total rate of take of both the applicant and the renewal of the Bellfield Land Co Ltd take.

40. As both applicants seek renewal of existing water rights, with no history of interference effects between the users, it is considered that effects will continue to be acceptable. However, as both applicants seek renewal of existing water rights, with no history of interference effects between the users, and have agreed to establish a flow sharing regime above the minimum flow in accordance with the general evidence of Mr Boraman, this is not considered any further

41. Ohau Company Trust Ltd are seeking to take water when flows are above 1,000L/s (B Permit), and therefore, can only take water at times when there is sufficient water for all to be abstracting.

42. Mitigation is proposed restricting the rate of take and volume per week. Given this, effects on other users are considered to be minor.

4.2 Effects on ecosystems

Minimum flow requirements	
Proposed Environmental Flow Regime	Quailburn Minimum Flow
Comments	The applicant accepts the minimum flow for the Quailburn and tributaries as specified in Table 3 of the WCWARP of 100 L/s at Henburn Road. The applicant proposes to install a fish screen in accordance with recommended guidelines. The CRC reporting officer for these applications agrees that effects on ecosystems are minor.

43. The minimum flows, along with the allocation regime aim to ensure aquatic values are protected. The applicant proposes to accept the minimum flow for the Quailburn Stream as defined in Table 3 of WCWARP.

44. The Quailburn Government Race itself and the end pond is a valued fishery, therefore, there are positive effects from the existing activity.

45. Given this, Fish and Game and the Department of Conservation were requested to undertake a site visit, which took place on 4 August 2009. The purpose of the site visit was to determine whether a fish screen should be installed on the intake.

46. However, both parties considered that a fish screen should be installed. The applicant has agreed to do this and will ensure that it is designed and installed in accordance with the NIWA client report.

47. Given this, effects on in-stream values are considered to be minor.

4.3 Effects of inefficient water use

Reasonable and Efficient Use Seasonal Volumes and Land Use	
Land Use	Mixed (cropping, and pasture for fattening deer, sheep and beef cattle, and The Glens is a dairy farm)
Area to be irrigated (hectares)	255
Method of application	Spray
Daily application depth	5mm
Return period	4 days
Return period application depth	20mm
Soil profile available water	Ranges from 30mm to 180mm. 25% of the irrigation area is light soils (PAW < 75mm) and 75% of the irrigation area is heavy soils (PAW > 110mm).
Effective Irrigation Season Rainfall	195mm
Irrigation Seasonal volume required (m^3/year)	1,304,050 m^3/year
Stock Water Seasonal volume required (m^3/year)	Diverted: 315,360 m^3/year Taken: 219,000 m^3/year
Comments	The proposed irrigation annual volume has been determined using Schedule WQN9v2 of the NRRP, incorporating the parameters above. The proposed stock water annual volume take and use has been determined using Schedule WQN11 of the NRRP . The CRC reporting officer for these applications is not currently satisfied that effects of an inefficient take are minor, and concerns raised in the s42a report have been addressed below.

48. The proposed irrigation annual has been amended and is now consistent with that proposed in the s42a report.

49. The proposed application depth of 20mm per return period is less than 50% of the water holding capacities of the soils.

50. In accordance with Policy 16 (c) of the WCWARP, ensuring that no more than 50% of the water holding capacities of the soils is applied, and the implementation of an annual volume, the use of water for irrigation is considered to be efficient.

51. Water is diverted for stock water continuously all year round at approximately 10 L/s; however, only what is needed for stock is taken from the race system. This totals 315,360 cubic metres per year. Water that is diverted but not taken is discharged into the pond on The Glens.

52. The proposed stock water volume is based on the average stock numbers carried across the entire three properties, which total 4,402ha, not just the area serviced by these applications as stated in paragraph 53 of the s42a report, therefore, the stocking rates and volume sought are reasonable.

53. Policy 19 of the WCWARP encourages the piping and/or sealing of distribution systems. The race was constructed in 1921 and as such, it is now well sealed, and race losses have been assumed to be zero.

54. Policy 21 of the WCWARP requires all water takes to be metered. To ensure that this application is consistent with this policy, the applicant proposes to meter their take.

55. Given this, the effects of inefficient water use are considered to be minor.

4.4 Effects of the use of water on water quality

Effects on Water Quality	
Comments	The CRC reporting officer for these applications is not currently satisfied that effects of water quality are minor. Cumulative effects on water quality have been addressed by Mackenzie Water Resources Limited (MWRL) and are summarized below. Local effects have also been addressed below

56. The calculated nutrient mitigation requirement of the receiving environments determined in the MWRL Study has identified an N and P threshold for each property.

57. "OVERSEER® has been RUN by a QUALIFIED person to model the N and P outputs from the proposed farming system. The results of the model have been incorporated in to the table below. The following table shows that the applicant can meet the property thresholds proposed by the MWRL study.

The Glens (Ellis-Lea)

	Nitrogen Threshold (kg/farm)	Phosphorous Threshold (kg/farm)
MWRL Water Quality Study Property Thresholds	11,858	82
OVERSEER® outputs	11,175	47

Willowburn Station (McAughtrie)

	Nitrogen Threshold (kg/farm)	Phosphorous Threshold (kg/farm)
MWRL Water Quality Study Property Thresholds	6,584	156
OVERSEER® outputs	6,452	77

Riverside Station (Greenfields)

	Nitrogen Threshold (kg/farm)	Phosphorous Threshold (kg/farm)
MWRL Water Quality Study Property Thresholds	5,930	137
OVERSEER® outputs	5,841	97

58. The applicant is committed to implementing the "Mandatory Good Agricultural Practices" set out within the FEMP (see Appendix D). Implementing these practices ensure that the OVERSEER® results are validated. This along with ensuring that the property thresholds of the WQS (set out in the table above) are not exceeded will ensure that the cumulative effects of the use of water for irrigation on water quality are no more than minor.

59. Whilst the applicant is within their property thresholds, the MWRL Study identified that the applicant still has to consider specific on farm effects and the impacts these activities could have on the local receiving environment. This requires a specifically developed Farm Environmental Management Plan (FEMP) to identify and implement appropriate mitigation measures set out in the draft attached (see Appendix D).

60. At a workshop held in Twizel in August 2009, the applicants met with Ms Melissa Robson of GHD Limited. A "desk top" on farm risk assessment was undertaken. This is considered to be the "starting point" of the FEMP.

61. The workshop identified potential on farm risks specific to each farm along with possible mitigation measures. The on farm risks identified during the desktop risk assessment need to be verified by an appropriately qualified person who has carried out a site visit. It is anticipated that this will occur should the applications be granted. For these properties, the following potential risks were identified:

- Evidence of erosion
- Runoff from winter feed crops
- Laybacks from waterways from fertiliser application
- Track runoff - check
- Willowburn Stream and Swamp
- Fencing off water ways

62. The applicant has committed to carrying out a full on farm risk assessment, proposing mitigation, monitoring and auditing will occur within 12 months of the commencement of the consents (as these applications seek renewal of existing activities), and this has been proposed as conditions of consent. All risks will be addressed in a Farm Environmental Management Plan (FEMP).

63. Given that the N and P thresholds from the MWRL Study can be met, and the applicant's commitment to addressing on farm risks with the implementation of the FEMP, the effects of the use of water on water quality for both the local receiving environment and cumulative effects are considered to be minor.

4.5 Effects on people, communities and recreational value, including landscape

Effects on People, Community and Recreational Values, including Landscape	
Comments	Landscape effects have been addressed by UWAG's Landscape Architect, Mr Andrew Craig, who considers that this proposal will have a minor effect on landscape values. An appropriate minimum flow is proposed and the applications are within allocation limits set by the WCWARP, therefore effects on people, communities and recreational values are minor. The CRC reporting officer for these applications is satisfied effects are minor subject to conditions.

4.5.1 Landscape

64. This application seeks the renewal of existing water rights.

65. The three properties to which the applications relate are part of a substantially modified rural environment, whereby cultivation and fencing occur regularly.

66. Willowburn and Ellis-Lea has the most "visible" of the irrigation areas, being that adjacent to SH8, and irrigation has been occurring on the property of Ellis-Lea continually since the race began.

67. The applicant has a defined area to be irrigated, restricted to the "flat country". Irrigation does not occur on the area of land classified as "outstanding landscape" by Waitaki District Council.

68. Mr Andrew Craig is a landscape architect who is providing general and specific recommendations on behalf of UWAG clients to this hearing. His conclusions reflect that the general effects on the MacKenzie landscape of these applications within the basin will be significantly less than minor. I adopt his recommendations to the committee.

4.5.2 People, communities and recreational values

69. The applicant has proposed an appropriate minimum flow condition in accordance with the WCWARP for the water body from which they have applied to take and use water. A minimum flow is designed to adequately protect people, community and amenity values within the waterway.

70. The activities all occur in a rural setting, where the dominant land use is pastoral farming. Given that the proposed activities all occur on private farmland; as such the use of water is unlikely to adversely affect amenity values.

71. The WCWARP sets an annual allocation "cap" for agricultural and horticultural activities within defined areas (Table 5). The applicant has proposed an annual allocation limit for their own resource consents for the use of water, as well as implementing Farm Environmental Management Plans, which require existing irrigation systems to be audited and improved where possible, and new systems to be designed and installed by accredited personnel, and implementing initiatives to ensure that water is used wisely.

72. The primary objective of an annual allocation is to ensure that the water is used efficiently and effectively for the land use, soil type and climatic conditions. The applicant has proposed an annual volume that is considered to reflect reasonable and actual use and this is within the allocation limit defined by Table 5.

73. It is also noted that each take is within the allocation limits set in Table 3 of the WCWARP. The allocation limit in Table 3 is set to protect in-stream values and effects on other users. It has an "environmental" focus.

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

4.5.3 Conclusion

75. Given this, the effects on people, communities and recreational values, including landscape are considered to be minor.

4.6 Effects on Tangata Whenua Values

Effects on Tangata Whenua	
Comments	The CRC reporting officer for these applications considers the effects on Tangata Whenua are uncertain and may therefore be more than minor

76. Te Runanga O Ngai Tahu submitted on all applications in the catchment, seeking that all applications be declined.

77. The primary reasons for this were that the applications were considered to be inconsistent with the policies and objectives of the WCWARP, and also at odds with the cultural objectives of the RMA.

78. The application is entirely within the allocation limits defined by the WCWARP and complies with the minimum flow requirements. Te Runanga O Ngai Tahu had considerable input into the creation of the WCWARP.

79. However, it is acknowledged that Te Runanga O Ngai Tahu have a significant relationship with the Waitaki Catchment, and as such, appropriate minimum flow conditions, and management of water quality effects is proposed by the applicant to ensure that the potential effects on the environment, including tangata whenua values are minor.

5 CRC991474 – LAND USE CONSENT - ASSESSMENT OF ENVIRONMENTAL EFFECTS

5.1 Effects on flood carrying capacity and erosion

80. A structure such as a weir, because of its ability to "back up" water behind it, can, in a flood event, cause land upstream of the weir to become more inundated than would otherwise occur, as storage behind the weir is exceeded.

81. The rock weir is designed to fail in an event of approximately $6m^3/s$.

82. The rock weir consists of unconsolidated river gravels and its dimensions (0.5m high and impounds not more than 10m by 10m) mean it is stable in a low flow environment and not intrusive on the stream. Therefore, the potential for bank erosion to occur is very small, but if it was to occur, would be localised at the upstream side of the weir.

83. It is also noted that Quailburn Stream itself is a rocky, stable stream and not subject to adverse bank erosion.

84. Given this, effects on flood carrying capacity and erosion will continue to be unaffected by the activity, and effects are considered to be minor.

5.2 Effects on artificial structures

85. There are no artificial structures within 1km of the weir site.

86. Given this, effects on artificial structures will continue to be minor.

5.3 Effects on water quality and ecosystems

87. Works on the rock weir are undertaken on an as needed basis, but it is noted that the last time they were required was 10 years ago.

88. It is acknowledged that the in-stream works can cause a temporary sedimentation of the water and particularly from the perspective of aquatic ecosystems that may be present in the stream. Sedimentation can also affect downstream users taking water for domestic or stock water purposes.

89. The applicant advises that while works are being undertaken, a plume of sediment can be seen for a distance of approximately 150 metres, and lasts for only a few hours after the works are completed.

90. The most common approach is to avoid undertaking works within flowing water. Thereby avoiding the possibility of increasing levels of suspended sediment contained within the waterway. In this particular instance, it is simply not practicable for the works associated with the rock weir to occur "in the dry" or not in flowing water.

91. Bellfield Land Co Ltd takes water downstream for stock water purposes. Their intake is 400 metres downstream of the rock weir site, and beyond any effect of sedimentation described by the applicant.

92. The limited height of the rock weir ensures that water is always able to flow over the weir, and its gentle upstream and downstream batter slopes enable fish passage to occur over the weir.

93. Given the proposed measures, effects on water quality and ecosystems are able to be effectively mitigated and should continue to be minor.

6 CRC991475 – DISCHARGE CONSENT - ASSESSMENT OF ENVIRONMENTAL EFFECTS

6.1 Effects on flood carrying capacity and erosion

94. When water is discharged into a waterway, the flow, and potentially the velocity, of the receiving waterbody is increased, thereby decreasing the carrying capacity and resulting in localised scour at the discharge site.

95. Qualiburn Stream is a rocky, stable stream, and is quite shallow, making it less subject to erosion. It is also noted that the discharge has been occurring since the early 1950's without any adverse erosion resulting to Qualiburn Stream, and the discharge will continue to operate in the same way as it has historically.

96. Given this, flood carrying capacity and erosion effects from the discharge of water are unlikely to occur.

6.2 Effects on water quality and ecosystems

97. The water that is discharged into Qualiburn Stream is excess water that has been diverted. It is un-used (i.e. it has not been used for irrigation prior to the discharge occurring) and therefore, it is of the same quality as that being diverted, and therefore, the quality of water in Qualiburn Stream is unaltered.

98. Given this, effects on water quality and ecosystems are minor.

6.3 Effects on other water users and amenity values

99. When water is discharged there is the potential to cause adverse effects on other users of stream due to the contamination of the water, or cause an unsightly plume that may have a visual effect.

100. Given that the quality of the water being discharged into Qualiburn Stream is unaltered from that being diverted, there is no effect on other users or amenity values.

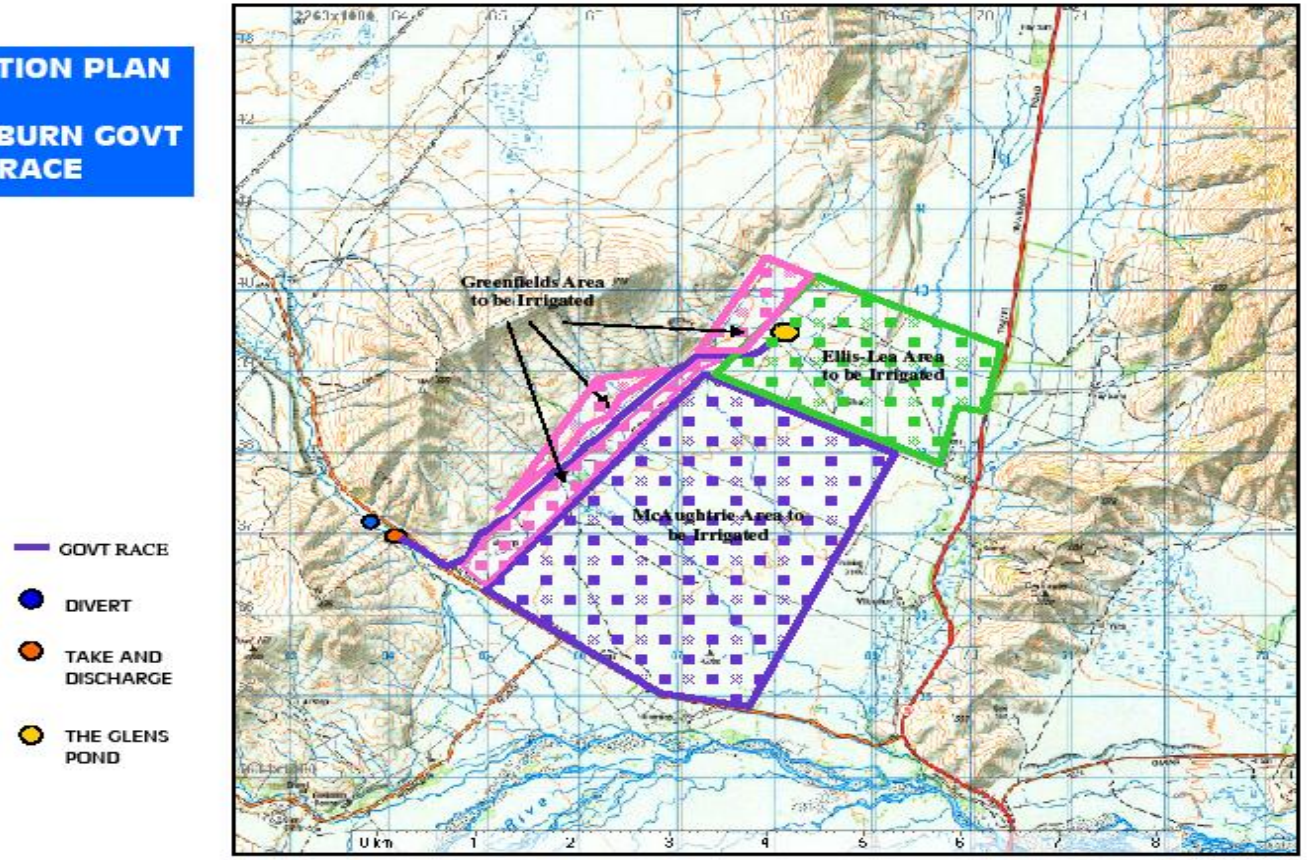
6.4 CONCLUSIONS

102. The potential effects associated with the diversion, take and use of water and the related ancillary activities have been assessed and are considered to be minor.

APPENDIX A – LOCATION PLAN SHOWING AREA TO BE IRRIGATED

LOCATION PLAN

QUAILBURN GOVT RACE



APPENDIX B – PROPOSED CONDITIONS

Have used CRC proposed resource consent conditions and tracked changes.

Please note that conditions relating to water quality thresholds and FEMP's are to be added.

Recommended draft conditions for water permit CRC991473		
No.	**Condition Code[1]**	**Details**
Divert		
1	WP01	*Name of waterbody*: Quail Burn *Map reference:* NZMS 260 H39:638-371 *Instantaneous rate:* 170 litres per second *Volume:* 14,688 cubic metres per day
Take		
2	WP01	*Name of waterbody*: Irrigation Race *Map reference:* NZMS 260 H39:638-371 and H39:378-392 *Instantaneous rate:* 170 litres per second *Volume:* 14,688 cubic metres per day and ~~1,304,050 (plus stockwater)~~ **1,523,500** cubic metres between 1st July and the following 30th June.
Use		
3	WP04	*Type of irrigation:* Spray irrigation & stock water *Number of hectares:* 255 hectares *Use:* crops and pasture for grazing stock ~~excluding milking dairy cows~~ **("The Glens" is a dairy farm)** *Plan No:* "CRC991473" (Attachment 1)
4	WP05	Efficiency of use
5	WP06	Backflow preventer
Mitigation		
6	WP07	*Name of waterbody:* Quail Burn *Map reference:* NZMS 260 H39:6553-3542 *Minimum flow:* 100 litres per second ~~*Flow graph:* See Report 2A~~ **Refer Dave Boraman for proposed flow sharing conditions**
7	WP09	Fish Screen

[1] See Report 1, Appendix 6 for condition code and wording.

8		The consent holder shall ensure water races used to convey water diverted in terms of this permit are well maintained to minimise losses.
Measuring & Metering		
9	ME03	Open channel
10	ME04	
11	ME05	
12	ME06	
13	ME07	*Waterway:* Quail Burn
14	WP08	*Waterway:* Quail Burn *Map reference:* NZMS 260 H39:6553-3542 **To be used with ME03-05**
Administrative Conditions		
15	AD01	
16	AD02	*Number of working days:* 5 *Month 1*: March *Month 2:* July *Waterbody:* Quail Burn *Cross reference to Condition:* 6
17	AD04	Lapse date

Recommended draft conditions for CRC991474		
No.	**Consent Code[2]**	**Details**
Scope		
1	LU01	(a) Maintenance or replacement of intake structure within bed of Quail Burn, including excavation of gravel and sediments, (b) Maintenance only necessary to maintain adequate flow of water to irrigation intake.
Location		
2	LU02	*Cross reference to Condition:* 1 *Name of watercourse:* Quail Burn *Map reference:* NZMS 260 H39:638-371 *Plan:* "CRC991474" (Attachment 1)
Limits of Excavation		

[2] See Report 1, Appendix 6 for condition code and wording.

4	Non-standard	Any gravel, sand and other natural material excavated as part of the works authorised by this consent during the disturbance of the bed of Quail Burn, must be deposited on, or near to, the excavation site, and shall be reshaped and formed to a state consistent with the surrounding natural riverbed.
Erosion Protection		
5	LU10	
6	LU11	*Waterbody:* Quail Burn
7	LU12	
8	LU13	*Waterbody:* Quail Burn
Prior to Construction		
9	LU08	
10	Non standard	The Canterbury Regional Council Compliance Monitoring Officer shall be notified of the intention to carry out works and their intended type and scope at least 48 hours prior to the commencement of work.
During Construction		
11	LU14	
12	LU18	
13	LU21	
14	LU23 modified	All practicable measures shall be undertaken to minimise vehicles and machinery entering Quail Burn.
15	LU22	
16	LU26	
17	LU24	
18	LU25	
Accidental Discovery Protocol		
19	LU09	
Upon Completion		
20	LU28	
21	Non standard	On completion of works, the area shall be restored to its original condition as far as practicable.
Administrative Conditions		
22	AD03	

23	AD04	

Recommended draft conditions for discharge permit CRC991475		
No.	**Consent Code[3]**	**Details**
Scope		
1	DP01	*Waterbody from:* Irrigation Race *Waterbody to:* Quail Burn *Map reference:* NZMS 260 H39:638-371 *Discharge rate:* 170 litres per second *Plan:* "CRC991475" *Other:* The water shall ~~by bywash water and shall contain no contaminants.~~**that which is diverted under CRC991473, but not taken into the Quailburn Government Race.**
Operation and Maintenance		
2	DP02	*Waterbody:* Quail Burn
3	LU13 modified	The discharge shall not occur in a manner likely to cause erosion of, or instability to, the banks or bed of the Quail Burn; or reduce the flood-carrying capacity of the waterway
4	DP03	
5	~~DP04~~	**Not needed**
Administrative Conditions		
6	AD03	Review
7	AD04	Lapse date

[3] See Report 1, Appendix 6 for condition code and wording.

APPENDIX C – PHOTO GALLERY

Diversion – rock weir

Intake

By-wash (discharge) at intake

End point – the pond on "The Glens"

APPENDIX D – DRAFT FARM ENVIRONMENTAL MANAGEMENT PLAN (FEMP)