

APPLICANT: GLENTANNER STATION LTD

REPORT OF HAIDEE MCCABE

Consent ID	Description	Table 4 Location	Table 5 Location
CRC071362	To take and use surface water at a maximum rate not exceeding 116 litres per second, and a volume not exceeding 70,157 cubic metres in any period of seven consecutive days, and 1,200,000 cubic metres per year from either Pukaki Canal at or about map reference NZMS 260:H38:805-641 or from Lake Pukaki at approximate map reference H38:8214-6511 (Glentanner) or H38:822-652 (PIC) for spray irrigation of up to 200 hectares of crops and pasture for grazing stock, at Glentanner Station, State Highway 8, Pukaki. A duration until 2025 is sought.	Lake Pukaki	Upstream of Waitaki Dam but not upstream of the outlets of the glacial lakes.
Activity Status			
<p><u>Rule 3, Table 4 WCWARP:</u> The abstraction from the Pukaki Canal and Lake Pukaki will cease when the minimum lake level of 518mtrs amsl is reached in Lake Pukaki.</p> <p><u>Rule 6, Table 5 WCWARP:</u> The proposed annual volume is within the allocation limit for "Upstream of Waitaki Dam, but not upstream of the outlets of the glacial lakes", but does not comply with "no more than 8 can be taken upstream of Lake Pukaki outlet" for the Lake Pukaki abstraction.</p> <p><u>Status for Pukaki Canal:</u> Any activity that complies with Rules 3 and 6 is a discretionary activity as per Rule 17</p> <p><u>Status for Lake Pukaki:</u> Any activity that complies with Rules 3 but does not comply with Rule 6 is a non-complying activity as per Rule 18</p> <p><u>Overall Status:</u> Non-complying</p>			

Consent ID	Description	Table 4 Location	Table 5 Location
CRC083609	To take and use surface water at a rate of 116 litres per second, with a volume not exceeding 70,157 cubic metres per week and with a volume not exceeding 1,200,000 cubic metres per season from the Tekapo Stilling basin at or about map reference H38:8820-7260 and H38:8842-7328 for the purposes of irrigation	Lake Tekapo	Upstream of Waitaki Dam but not upstream of the outlets of the glacial lakes.
Activity Status			
<p><u>Rule 3, Table 4 WCWARP:</u> The abstraction from the Tekapo Stilling Basin will cease when the following lake levels are reached for Lake Tekapo:</p> <ul style="list-style-type: none"> a) a minimum lake level of 701.8mtrs amsl during the months of April to September inclusive b) a minimum lake level of 704.1mtrs amsl during the months of October to March inclusive except as provided for in c) <p><u>Rule 6, Table 5 WCWARP:</u> The proposed annual volume is within the allocation limit for "Upstream of Waitaki Dam, but not upstream of the outlets of the glacial lakes"</p> <p><u>Overall status:</u> Any activity that complies with Rules 3 and 6 is a discretionary activity as per Rule 17</p>			
Consent ID	Description		
CRC092721	To construct, use and maintain an intake structure to facilitate the abstraction of water from Lake Pukaki between map reference H38:8235-6520 and H38:8214-6511		
Activity Status			
<p><u>TRP:</u> There is no operative regional plan so S77C of the RMA applies, and the activity is discretionary.</p> <p><u>NRRP:</u> The activity may not comply with condition 9 of Rule BLR2 (discharge of sediment). Rule BLR3 re possibly condition 2 (500mm diameter rocks), 3 (volume excavated) or 8 of (works in surface water), therefore the activity is discretionary under rule BLR8.</p> <p><u>Overall status:</u> Discretionary</p>			

1 PROPOSAL

1. Glentanner Station Ltd (herein referred to as 'the applicant') farms Catherine Fields, adjacent to State Highway 8 (but not visible) below Lake Pukaki, between Twizel and Tekapo where the proposed irrigation development is to be undertaken.
2. The applicant applied for CRC071362 on the 7 November 2006. This application seeks to take and use 116 litres per second of surface water from either Pukaki Canal (Option 1) at approximate map reference NZMS 260:H38:805-641 or Lake Pukaki (Option 2) at approximate map reference H38:8214-6511 (Glentanner) or H38:822-652 (Pukaki Irrigation Company Ltd - PIC) to irrigate 200ha as shown in Appendix A.
3. The applicant applied for CRC083609 (Option 3) on the 25 March 2008 to take and use surface water at a rate of 116 litres per second, from the Tekapo Stilling Basin, to irrigate the same 200ha as already proposed. The intake location is between map reference H38:8820-7260 and H38:8842-7324. The intake structure and design is part of the (PIC) scheme application to supply several properties. The pipeline will be gravity fed to the property.
4. The applicants proposed consents to take water, are consistent with Pukaki Irrigation Company Ltd (PIC) scheme land use consents. Consequently there are three sources of water from four locations that could supply water to the same 200Ha area proposed for irrigation at Catherine Fields.
5. Land use consent CRC092721 was applied for on the 22 December 2008 to construct, use and maintain an intake structure to facilitate the abstraction of water from Lake Pukaki. This is required to maintain a level of independence and security should the PIC schemes not proceed or is unfeasible to the applicant.
6. The intake is proposed to consist of a pipeline with a stainless steel intake screen located below the minimum lake level of 518mtrs. This will provide for an intake structure to supply Option 2 independently from Lake Pukaki for CRC071362.
7. The applicant is working with PIC whom have applied for the required land use consents (as detailed above) to construct intakes and facilitate scheme water for all three scheme options. However the applicant wishes to ensure that they have the necessary consents to be self-sufficient, hence why CRC092721 is required.

1.1 Timeline and Summary of Amendments made to the Applications

Timeline	CRC071362	CRC083609	CRC092721
Date of Lodging	07 November 2006	25 March 2008	22 December 2008
Notifiable Date	07 February 2007	07 May 2008	N/A
Public Notification	04 August 2007	18 October 2008	18 February 2009

8. CRC071362, in January 2007 confirmation was provided that the minimum lake level of 518 mtrs amsl for Lake Pukaki as per Table 4 would be complied with.
9. CRC071362, in December 2008 it was confirmed that the volume of water notified was for irrigation only. Stock water requirements were justified but it was indicated that Section 14 3) b of the RMA was being reliant on for this water.
10. CRC083609, during May 2008 confirmation was provided that the minimum lake levels for Lake Tekapo would apply.
11. CRC083609, in June 2009 confirmation was required that the intake location now needed to be located a further 50mtrs upstream to be consistent with PIC. It was proposed that CRC083609 and CRC071362 would not be used concurrently. The standard MIC conditions were accepted when the canal is maintained or inflows restricted except for stockwater. It was also clarified that stockwater was in addition to the irrigation volume.
12. In July 2009 the Ecan IO confirmed the following amendments proposed, as outlined below were accepted given they were considered to be within the scope of the original notification:

13. CRC083609: the upper extent of the notified range for location of the take from the Tekapo Stilling Basin to shift 50mtrs upstream, from H38:8845-7324 to H38:8842-7328.
14. CRC092721: the shifting of the western extent of the notified intake range for Lake Pukaki from H38: 817-6517 by 80mtrs to the south, to H38:8214-6511. Plus to change the intake design concept to accommodate the abstraction further from the shore to ensure the minimum lake level is reached and to meet Meridian Energy Ltd requirements.
15. CRC071362: to include two possible take locations from Lake Pukaki (in addition to the Pukaki canal take):
16. One consistent with the independent intake CRC092721 (H38: 8214-6511) which is approximately 160mtrs from the notified location
17. One consistent with PIC change in location of CRC062866 (at H38:822-652 which is approximately 100mtrs from the notified location
18. No other amendments have been made to these applications.

2 BACKGROUND INFORMATION

2.1 Farm Details

19. Glentanner Station Ltd (herein referred to as 'the applicant') farms Catherine Fields, adjacent to State Highway 8 (but not visible), between Twizel and Tekapo where the proposed irrigation development is to be undertaken.
20. Catherine Fields is a 435ha property that is run in conjunction with Glentanner Station, a 16,000ha high country property. Both of these properties are on one title.
21. Collectively both Glentanner and Catherine Fields run 10,000 SU with approximate proportions of 80% being sheep, 15% beef cattle and 5% deer.
22. At present Catherine Fields is primarily used as a finishing farm for Glentanner and running stud merino ewes plus all of the hoggets are wintered there. All of the Glentanner annual draft ewes are sent to Catherine Fields in October, lambed there and then the ewes are sold.
23. The applicants intention is to continue to use Catherine Fields as they presently do, however with irrigation there will be an addition of cattle, finishing of more sheep and an increase in capital sheep stock.

2.2 Water Source

24. There are three water sources related to these applications; Pukaki Canal (between Lake Pukaki and Ruataniwha), Lake Pukaki and the Tekapo Stilling Basin (canal between Lake Tekapo and Lake Pukaki).
25. The Pukaki Canal (CRC071362 – Option 1) is 12km long, carrying water from Lake Pukaki to Lake Ruataniwha and is mechanically operated by Meridian Energy and therefore the environmental values are minor. Salmon are known to inhabit the canal as well as the possibility of other fisheries species since fish are able to enter through the Pukaki control gate.
26. Lake Pukaki (CRC071362 – Option2) is the largest glacial lake with an area of approximately 169 km². Three major rivers contribute to its inflows; the Tasman, Jollie and Hooker Rivers plus smaller tributaries. Tekapo B power station discharges into Lake Pukaki and also contributes a large proportion of its inflows, which are controlled by Meridian Energy. The lake levels vary significantly and the normal operating range is between 532mtrs and 518mtrs above sea level depending on the time of year and Meridian Energy's management. The fisheries, flora and fauna values are highest where the rivers flow into Lake Pukaki, with numerous wildlife habitats. Fish species that have been recorded in Lake Pukaki are brown trout, common bully, Canterbury galaxias, koaro, long-finned eel and rainbow trout. The habitat value for brown and rainbow trout is low.
27. The Tekapo Canal (CRC083609 – Option 3) carries a substantial volume of water from Lake Tekapo to Lake Pukaki via the Tekapo B power station. The canal is some 26.5km in length and averages a depth of 5.3 meters. The Tekapo stilling basin is located just prior to the Tekapo B powerstation where the water then discharges into Lake Pukaki. Salmon inhabit the canal and are farmed a few kilometres

upstream of the proposed abstraction point. Other fisheries species present in the canal are rainbow and brown trout.

2.3 Mackenzie Irrigation Company Shares held

Name: Glentanner Station Ltd	Number
Property Shares	1
Irrigation Shares	200

28. Irrigation shares are required for the full irrigation area as this is a new consent.

2.4 Derogation Approval

29. Derogation approval was obtained from Meridian Energy Limited on the 11th September for CRC083609 and CRC071362 (for Lake Pukaki only, Option 2). Final derogation approval was received for all consent and intake options proposed, including the Pukaki Canal on the 29th September 2009 as attached in Appendix D.

3 COMMENTS ON SUBMISSIONS

30. A summary of the submissions for: CRC071362 notified in 2007, CRC083609 in 2008 and CRC092721 in February 2009.

Resource Consent	Submissions in support	Submission in opposition	Neutral
CRC071362	4	16	2
CRC083609	4	6	
CRC092721	1	1	

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

32. Details of the submissions received that are not common to all applications are as follows:

Consent Number	Submitter	Issues	Support/neutral/oppose
CRC071362	Mr Mark Urquhart, Grays Hills Station	Spray irrigation will be an efficient use of water with minimal effect.	Support
CRC083609	Mr Anthony Gloag, Buscot Station	Sustain the physical resource, whilst protecting the natural resource by reducing rabbit infestation proneness and mitigating soil degradation.	Support
CRC083609	Mr William Murray, Glenmore Station	Irrigation in the Mackenzie is vital for sustainable land management and diversify in today's farming environment.	Support

Consent Number	Submitter	Issues	Support/neutral/oppose
All 3 applications	Ruataniwha Farms Ltd	It (irrigation) will make the farm more viable, make more hay and silage and fatten surplus stock.	Support
CRC083609	Dan and Kerry Thomas, Killermont Station	Support new irrigation, agricultural growth and sustainability	Support
CRC071362 CRC083609 CRC092721	Meridian Energy Ltd	Need to comply with MIC tranching, water quality both cumulative and individual, MEL controlled low flows not accommodated, effects on MEL infrastructure, water metering, contrary to Part II RMA. Need to allow for full operating range of the Lake, need to control sediment and erosion and outline of protection works, effects on MEL infrastructure	Oppose
All 3 applications	Fish and Game NZ Central South Island	General submission on all Lake or canal takes relating to volumetric allocation limit in Table 5 being exceeded.	Oppose
CRC071362	NZ Transport Agency	Clarification required on SH8 road crossing and that a Deed of Grant will be required	Oppose

33. Consultation with MEL has been ongoing and in June 2009 general agreement on the location and revised concept had been reached to address their concerns raised. MEL submission was finally withdrawn in relation to the potential adverse effects on MEL infrastructure, on the 21st September 2009, given agreement has been reached.
34. Given F&G support the WCWARP minimum flows (assume includes minimum lake levels which the applicant has proposed), this should be supported.
35. With regard to volumetric allocation being reached, the allocation with regard to the canal takes, falls into "Upstream of the Waitaki Dam but not upstream of the outlets of the glacial lakes" therefore the canals are within the 275Mm³ allocated.
36. Consultation had commenced with NZ Transport agency with representative Grant Paterson of Opus. A Deed of Grant will be determined with NZ Transport on granting of these consents and once the intake option to be pursued is finalised.

4 CRC071362 AND CRC083609 - TAKE AND USE CONSENTS - ASSESSMENT OF ENVIRONMENTAL EFFECTS

4.1 Effects on other water users

Effects on other water users	
Comments	<p>This is a new consent application with other users also seeking to take water from the proposed water sources.</p> <p>The CRC reporting officer for these applications agrees that effects on other water users are minor.</p>

CRC071362

37. Simons Hill and Simons Pass are also proposing to take from Lake Pukaki and the Pukaki Canal. These are part of the PIC scheme and may use the same infrastructure. Meridian Energy is the main water user of both the Pukaki Canal and Lake Pukaki for electricity generation.
38. Table 4 of the WCWARP sets a minimum lake level of 518 metres a.m.s.l, for both the canal and lake take which are proposed to be complied with.
39. Table 5 sets an allocation limit specifically for Lake Pukaki of 8M m3 upstream of the Lake Pukaki outlet, which this applicant exceeds given the Simons Hill and Simons Pass applications are higher up the priority queue and exceed the allocation individually. Therefore Glentanner abstraction from Lake Pukaki is non-complying.
40. MEL has provided Derogation Approval for the all supply options from Lake Pukaki and Pukaki Canal, therefore the effects on MEL are considered minor otherwise derogation approval would not have been received.

CRC083609

41. Simons Hill, Simons Pass and Classic Properties are also proposing to take from the Tekapo Stilling Basin at the same location as part of the PIC scheme. There are also existing abstractors and users of the canal upstream and are therefore not considered effected.
42. Table 4 of the WCWARP sets a minimum lake level of 701.8 metres a.m.s.l during the months of April to September inclusive and a minimum lake level of 704.1 metres a.m.s.l during the months October to March inclusive which are proposed to be complied with.
43. MEL has provided Derogation Approval for the Tekapo Stilling Basin, therefore the effects on MEL are considered minor otherwise derogation approval would not have been received.

Both Consents

44. The applicant is proposing to accept the standard suite of MIC conditions, which includes shutting off the take for canal maintenance or when flows into the canal are restricted.
45. The proposed takes sit within the area defined as defined as Upstream of Waitaki Dam, but not Upstream of the outlets of the Glacial Lakes in Table 5 of the WCWARP. This table sets a cumulative allocation of 275 million m3/year for this area.
46. Report 3 – Annual Allocations to Activities (Rule 6 Table 5) acknowledges that the granting of the applications subject to this hearing will not result in the cumulative allocation limit being exceeded.
47. These allocation limits, established by the WCWARP aims to ensure that where there are competing users for the resource, the effects on these users is 'acceptable'.
48. Mitigation is proposed restricting the rate of take, volume per week, derogation approval and minimum lake level. Given this, effects on other users are considered to be minor.

4.2 Effects on Ecosystem values

Effects on Ecosystem Values	
Comments	<p>The applicant has proposed minimum lake levels and fish screens in accordance with recommended guidelines.</p> <p>The CRC reporting officer for these applications agrees that effects on ecosystems are minor.</p>

CRC071362 and CRC083609

49. The minimum lake levels proposed by the WCWARP in Table 4 were developed to ensure that the aquatic values of the lake systems are protected. The applicant proposes to accept the minimum lake levels relevant to each consent as defined in Table 4 of WCWARP.
50. MEL already operate water level recorders on the lakes and this information can be used to ensure compliance with minimum lake levels. The take itself will also be appropriately metered.
51. Whilst CRC071362 from Lake Pukaki is considered non-complying as defined under the WCWARP for Table 5 given the 8M m3 Lake Pukaki cap, the ecosystem is not considered to be adversely effected. This take could occur upstream in the Tekapo Stilling Basin as a discretionary activity along with those ahead in the priority queue. The proposed volume is very small in the It is therefore not considered an environmental issue but a planning matter.
52. The intake structures have been designed by Riley Consulting Ltd in order to address MEL concerns with intakes near Meridian infrastructures. The final design will address fish screen requirements in accordance with recommended guidelines, however, the applicant would like to note that didymo has been detected in the Upper Waitaki canal system and the presence of this organism may challenge the performance of any intake and fish screen if it establishes itself.
53. Furthermore the high glacial sediment levels need to be considered during finalising the fish screens to accommodate this characteristic and ensure they can operate.
54. It should be noted that in terms of controlling Canada Geese, as recommended by the Canterbury Regional Council reporting officer for these applications is not an open invitation for any game hunters to access Catherine Fields. Hunter access would need to be strictly undertaken in consultation with the applicant should this be necessary. This matter has potential management and danger issues considered beyond the ability of ECan to supervise or control as part of this consent.
55. Given compliance with minimum lake levels and fish screens on intake to meet guidelines, effects on ecosystem values are minor.

4.3 Effects of inefficient water use

CRC071362 and CRC083609

Reasonable and Efficient Use Seasonal Volumes and Land Use	
Land Use	Intensive Pasture (sheep/beef)
Area to be irrigated (hectares)	200
Method of application	Spray
Efficiency of application	80%
Daily application depth	5 mm
Design Return period	3-7 days
Return period application depth	15 – 35 mm

Soil profile available water	25-85mm (T Webb)
Effective Irrigation Season Rainfall	225 mm/yr
Seasonal volume as per Irricalc (m³/year)	1,282,910 m ³ /year (641mm/season)
Total volume required (m³/year)	1,200,000m ³ /year (600mm/season)
Volume to be included in Table 5 (WCWARP) allocation	1,200,000 m ³ /year
Comments	<p>The proposed annual volume has been determined using 600mm (as per MIC shareholding) for 200Ha and justified by Irricalc which is considered to be consistent with Policy 16 c of the WCWARP.</p> <p>The proposed stock water annual volume take and use, has been determined using Schedule WQN11 of the NRRP.</p> <p>The CRC reporting officer for these applications is not currently satisfied that effects an inefficient water use are minor, and concerns raised in the S42a report have been addressed below.</p>

56. The proposed application depth of 15-35mm per return period is less than 50% of the water holding capacities expected. This is considered to be an efficient use of water and the irrigation systems will be determined and managed to ensure compliance.
57. Policy 16 (c) of the WCWARP defines two alternative approaches for determining appropriate annual volumes for irrigation. These are as follows:
- i) soil-moisture measurements, local rainfall and evapotranspiration modeling for the 1-in-5 year dry season (the year for which seasonal demand is exceeded in 20 percent of years); or
 - ii) the difference between peak total seasonal demand as shown in Table A1, Environment Canterbury Report U05/15 and the effective summer rainfall exceeded 80 percent of the time from an approved rainfall site.
58. The first method described is a soil water balance approach, and the second is more commonly referred to as Schedule WQN9v2.
59. Irricalc is a soil water balance approach developed by Aqualinc Research Ltd, and who carried out the modeling for this application. This method is a daily accounting system of the water entering and exiting the soil within the root zone of a particular crop.
60. Furthermore, Irricalc models the effect of all of the factors mentioned in Policy 16(a), namely land use, soil water-holding capacity and spatial variability, spatial and temporal rainfall and potential evapotranspiration variability, as well as irrigation system operation and management.
61. The model inputs are attached to this report as Appendix F.
62. Policy 15 and 19 of the WCWARP encourages the piping or otherwise sealing of water distribution systems to minimise water losses and meet efficiency and effective use requirements.
63. CRC083609 is proposed to be completely piped given it is a gravity feed system to spray irrigation and a troughed system. CRC071362 if utilised with the PIC scheme for Option 1 and 2, will be a combination of piping and racing from a main headrace. However if taken independently by the applicant for Option 2 this will be entirely piped system. All systems are considered to be efficient given the race loses will be within 10% which is the general guideline.
64. 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 at the intake location. If consent is exercised with the PIC scheme, additional metering will be required specific to the applicant to ensure allowances are not exceeded in accordance with the annual allocation.
65. Given this, effects of inefficient water use are minor.

4.4 Effects of the use of water on water quality

Water Quality	
Comments	<p>The CRC reporting officer for these applications is not currently satisfied that effects of water quality on a local or basin wide level are minor.</p> <p>Cumulative effects on water quality have been addressed by Mackenzie Water Resources Limited (MWRL) and are summarized below.</p> <p>Local effects have also been addressed below</p>

66. The property, according to the MWRL Water Quality Study, is located within the Pukaki River groundwater catchment and Pukaki/Tekapo surface water catchments. For this property, the groundwater mitigation requirements are the most stringent and are accounted for in the overall property threshold from the MWRL Study.
67. The calculated nutrient mitigation requirement of the receiving environments determined in the MWRL Study has identified the N and P thresholds for the property. These are shown in the table below.
68. "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. This table shows that the applicant can meet the property thresholds which are the most restrictive.

	Nitrogen Threshold	Phosphorous Threshold
MWRL Water Quality Study Property Thresholds	4432	135
OVERSEER® Outputs	2882	127

69. The applicant is committed to implementing the "Mandatory Good Agricultural Practices" set out within the Farm Environmental Management Plan (FEMP) (see Appendix E). 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.
70. 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 FEMP to identify and implement appropriate mitigation measures set out in the draft attached (see Appendix E).
71. 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.
72. 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 application be granted.
73. For Catherine Fields, the desktop risk assessment identified the following potential risks:
- Soil condition after winter fodder crops
 - Soil Erosion
 - Timing of N Fertiliser applications
 - Water trough placement
74. The applicant has committed to implementing the FEMP including an on farm risk assessment, appropriate mitigation, monitoring and auditing before the first exercise of this consent. The FEMP has been proposed as condition of consent and the draft FEMP is attached to this evidence as Appendix E.
75. The applicant has already identified draft mitigation and as summarized below:

76. Irrigation buffer from ephemeral water course (main stem only that occasionally contains flowing water) will be considered.
77. Irrigation buffer from the Pukaki River bed of approximately 130mtrs
78. The Reporting Officer identifies buffer distances from watercourses, which has been identified as part of the draft FEMP and will be finalized as part of the FERA. Kettle holes are not within the irrigation area
79. The applicant has proposed that no more than 50% of the PAW will be applied (WP05) which should address concerns of overwatering light soils rather than specifying specific soil types and locations as recommended by the Reporting Officer.
80. Given that the N and P thresholds from the MWRL Study can be met, and the applicants 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 Landscape

Effects on Landscape	
Comments	<p>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.</p> <p>The CRC reporting officer for these applications considers that the cumulative effects of landscape may be more than minor, and concerns raised in the S42a report have been addressed below.</p>

CRC071362 and CRC083609

81. 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 further applications within the basin will be significantly less than minor. I adopt his recommendations to the committee. In terms of the specific placement of the irrigation structures associated with this application, I confirm the following:
82. The irrigation area proposed is already part of a substantially modified environment, whereby land has been progressively cultivated and re-grassed, top dressed, new fences, boulder removal, quarrying and pylons though the property.
83. The irrigation development is located over 400 metres from SH8 and over the hill crest of a 20 metre terrace and is not visible from SH8
84. The DOC land (between the irrigation area in the north and Lake Pukaki) contains the kettle holes. Kettle holes are not within the irrigation area.
85. Between the DOC land and irrigation area, a 62ha buffer of unmodified land is proposed by DOC and agreed by the applicant.
86. Furthermore the proposed pivot design is a further 250mtrs away from this buffer land.
87. Minor levelling of moraines may be required at specific locations for pivot tracks but the majority of this land is already modified.
88. A 130mtr buffer from the Pukaki River bed is proposed
89. The gravel outwash area below the terrace of lighter soils at the south end of the property (beside the Pukaki River), is not proposed to be irrigated.
90. The irrigation area above the terrace may be viewed at the southern property boundary from a distance on the Pukaki River Road (not when adjacent to the land because of the high terrace). This is a private road for Meridian therefore used infrequently and supposedly not by the general public.

4.6 Effects on People, Communities and Amenity Values

Effects on People, Communities and Amenity Values	
Comments	The CRC reporting officer for these applications considers that the effects on archaeological sites may be more than minor, and concerns raised in the S42a report have been addressed below.

91. The applicant has proposed to abide by the minimum lake levels as per Table 4 of the WCWARP for the water bodies from which they have applied to take and use water. A minimum lake level is considered to adequately protect people, community and amenity values within the rivers specific to each applicant.
92. These minimum lake levels are set to protect in-stream values and effects on other users. It has an “environmental” focus.
93. 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.
94. The WCWARP sets an annual allocation “cap” for agricultural and horticultural activities within defined areas (Table 5) which is addressed in Section 5.1 whereby it is identified that CRC071362 from Lake Pukaki (Option 2) is inconsistent with the 8M m3 limit for Lake Pukaki. The applicant has proposed an annual allocation limit for their own resource consents for the use of water.
95. Derogation approval has been provided by MEL for all consents and intake options. Given the abstraction from the Tekapo Stilling Basin is considered a discretionary activity by the WCWARP which means the abstraction can occur further upstream, people, communities and amenity values are therefore not considered to be affected by the non-complying status of the activity.
96. Water quality is addressed in Section 5.4 in terms of cumulative and individually with a FEMP and landscape has been considered with Section 5.5
97. The 1888 rabbit fence will need to be disturbed in a few specific areas to allow for the operation of the irrigation system. This rabbit fence is considered to come under the jurisdiction of the NZ Historic Places Trust under the Historic Places Act, whereby should consent be required on granting of this water permit, this will be sought in due course from the relevant authority – NZ Historic Places Trust (similar to any consent required from LINZ or District Council).
98. Therefore, given the applicant's commitment to ensuring efficient use of water on their properties, to the minimum flow and flow-sharing regime protect in-stream values and other users, it is considered that effects on people, communities and amenity will be minor.

4.7 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

99. Te Runanga O Ngai Tahu submitted on all applications in the catchment (except CRC083609), seeking that all applications be declined.
100. 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.
101. The application is entirely within the allocation limits defined by the WCWARP regarding the allocation of 275Mm3 but not for the 8Mm3 for Lake Pukaki in relation to CRC071362, Option 2. All applications

however comply with the minimum flow requirements. Te Runanga O Ngai Tahu had considerable input into the creation of the WCWARP.

102. An email was sent to Paul Horgan of Ngai Tahu on the 4th August 2009 outlining the consent applications and consent amendments. It was acknowledged that Ngai Tahu general submission related to CRC071362 from Lake Pukakai and the Pukaki Canal however Mr Horgan indicated later that day that there did not appear to be any issues with Glentanner's applications. A general update was provided again on the 26th August 2009.
103. However, it is acknowledged that Te Runanga O Ngai Tahu have a significant relationship with the Waitaki Catchment, and as such, appropriate minimum lake level 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 CRC092721 - LANDUSE CONSENT - ASSESSMENT OF THE ENVIRONMENTAL EFFECTS

5.1 Effects on flood and erosion

104. The lake levels are largely artificially controlled by Meridian Energy through either the Pukaki Canal or Pukaki spillway which is within the vicinity of proposed intake location. A condition has been proposed whereby the actual intake screen and pump will be located below the minimum operating level of 518mtrs asl and the proposed shed will be located above the maximum operating level of 532.5mtrs asl. Therefore a large part of this intake will always be inundated by water to ensure it can operate. The pump shed needs to be protected from flood lake levels hence the location above the maximum operating level.
105. The proposed intake structure should not create any erosion or increase bank instability given the pipe line will be buried when above the minimum operating level of up to 1mtr. Below the minimum operating level the pipe will not be buried but erosion protection works will be installed at the intake screen and pump location. This will be done in consultation with MEL during the final design stages
106. Consultation has been occurring with MEL to ensure the location and design concept would not compromise the MEL spillway and ability to manage flood events, with concerns addressed and the submission recently withdrawn
107. Given this, effects on flooding erosion are considered to be minor.

5.2 Effects on Man-Made Structures

108. The closest man made structure is the Lake Pukaki spillway which is approximately 160mtrs from the intake, in this already highly modified environment. Consultation during the design process has been carried out with MEL to ensure the spillway is not compromised by the activity proposed.(see Appendix G for the intake location and Append H for design)
109. MEL has withdrawn their submission regarding potential adverse effects on infrastructure, given consultation has resolved MEL concerns
110. Consultation has commenced with a representative of the NZ Transport Agency over the road crossing and will be finalised on granting of this consent by way of a Deed of Grant. However given the location and distance of the road crossing from the intake, this is considered well outside the scope of this land use consent
111. Effects on man-made structures are therefore considered minor.

5.3 Effects on Instream Values and Water Quality

112. Lake Pukaki is a glacial lake with an already high sedimentation level. Once the intake structure is constructed and an initial settling period is complete from the newly disturbed area, additional sedimentation in the area should be minimal.
113. Works around the intake area will be undertaken during the initial construction and on an as needed basis for such activities as maintenance at the beginning of the irrigation season or when lake levels are low and allow this to occur.
114. It is acknowledged that the works can cause a temporary discolouration of the water and particularly from the perspective of the aquatic ecosystems that may be present in the lake; such sedimentation can have an impact at sensitive times such as spawning, which can therefore be avoided.
115. Sedimentation can also affect downstream users taking water for domestic or stock water purposes
116. Specific sensitive times to avoid works have not been raised in the F&G or DOC submissions or during consultation when further details of the application was provided
117. However given the huge dilution effect of Lake Pukaki and the already high sediment level and cloudy coloring this is expected to be localised to the works area and disperse within a close proximity.
118. The intake will ideally be constructed and maintained during low lake levels therefore reducing the amount of work within the lake water. In this instance that may not always be practicable waiting for very low lake levels.

119. The original intake design proposed a construction timeframe for within the lake bed of approximately 3 days which was unrealistic and the actual distance to the minimum operating level was not understood. Consequently a more realistic timeframe for works is one month with actual lake bed work anticipated to be in the order of 2-3 weeks as subsequently discussed with the Reporting Officer when the intake concept was altered and since reviewing the S42a report.
120. The intake design proposed is mainly buried under the lake bed except the intake screen which should not impede fish passage. A fish screen is proposed to avoid fish from entering the intake. (see Appendix H for the intake design)
121. During the initial construction phase (ideally at low lake levels) there will be disturbance at the lake bed, whereby instream values may be affected by the increased sediment levels. Conditions have been proposed whereby:
 - a) Works will be completed in a manner as not to increase erosion to the lake bed.
 - b) Vehicles and machinery will as far as practical and if able to be avoided not enter the water.
 - c) Any sediment created during the works will be minimized as far as practicable.
122. Given the proposed mitigation measures as per the consent conditions, effects on instream values and water quality considered to be minor as agreed by the Reporting Officer

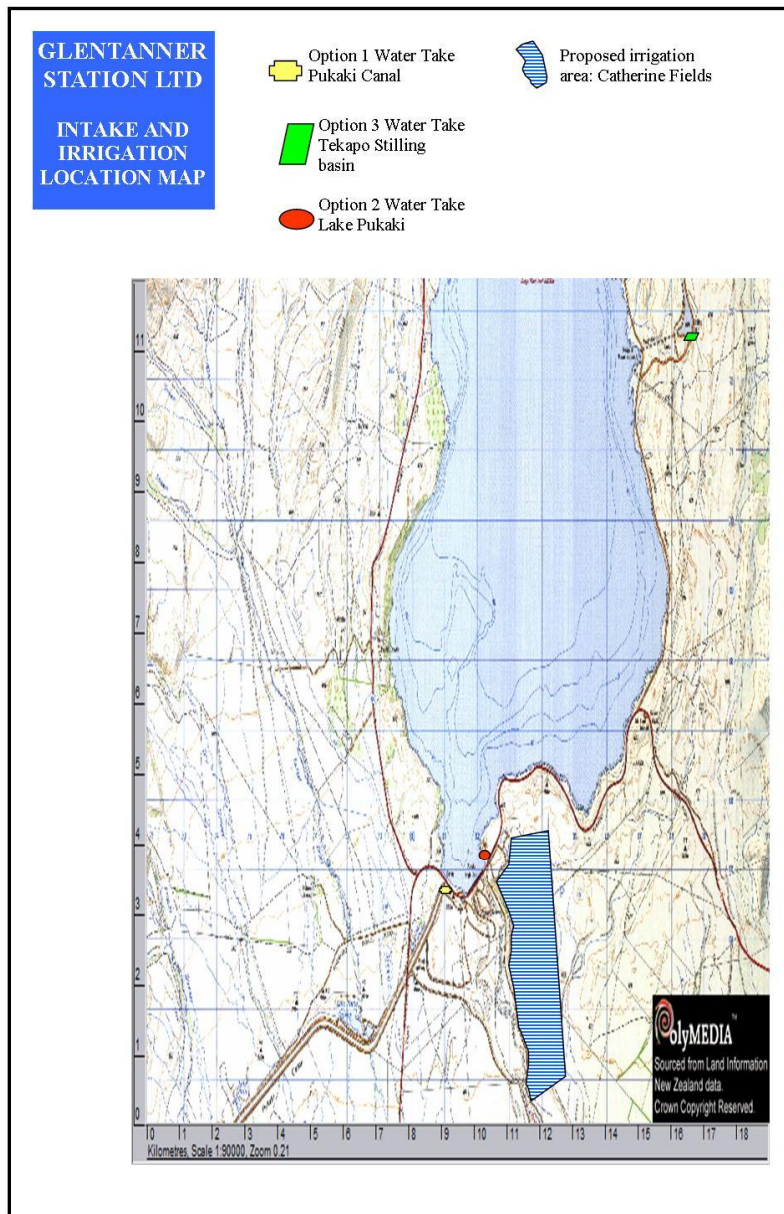
5.4 Effects on Amenity Values, People and Communities

123. The area of the proposed works is located alongside state highway and in a tourist viewing area of Aoraki Mt Cook. However the environment is already highly modified and once constructed given it is buried, will barely be visible other than a small electrical shed. It will not hinder any views of Aoraki Mt Cook.
124. The pipe is buried above the minimum lake level and the intake screen and pump is located below the minimum lake level. This should ensure the visual effect on the highly modified landscape in this area, is minimal along with the proposal to re-level the area on completion of works.
125. The initial installation works and maintenance proposed, is for a restricted duration.
126. In relation to Tangata Whenua values, accidental recovery protocol has already been proposed by the applicant
127. Given the above, it is considered that the effects on amenity, people of communities will be minor.

6 CONCLUSIONS

128. The potential effects associated with the consents for take and use of water, and the related ancillary land use activities have been assessed, taking the concerns of submitters into account, and are considered to be minor.

APPENDIX A: COMMAND AREA OF PROPOSED IRRIGATION DEVELOPMENT AT CATHERINE FIELDS



APPENDIX B:

Photo A: Proposed intake location at Lake Pukaki



Photo B: Showing existing dryland development at Catherine Fields



Photo C: Catherine Fields showing existing land cover



129.

APPENDIX C: PROPOSED CONDITIONS

130. CRC Proposed conditions used with track changes
131. Please note that conditions relating to water quality and FEMP are still to be added

CRC083609 – To take and use surface water

1. *WP01*
Water shall only be taken from Tekapo Stilling Basin, at surface water abstraction point H38/0227, ~~at or about map reference~~ between NZMS 260: H38:8842-7328 and NZMS 260: H38:8820-7260, at a maximum rate of 116 litres per second, with an annual volume not exceeding ~~4,060,000~~ 1,200,000 cubic metres between 1st July and the following 30th June. Map references do not correspond to amendment made to location. **Insert tranching regime from Derogation Approval**
2. *WP04*
Water shall be used only for spray irrigation of 200 hectares of crops and pasture for grazing sheep, beef cattle, deer or non-milking dairy cows, as described in the application, on the area of land shown in attached plan CRC083609, which forms part of this consent. **Do not wish to limit stock type. FEMP will ensure N and P discharges are not exceeded.**
- ~~3. Irrigation shall not occur within the following areas:~~
 - ~~i. on soils with an average water holding capacity of 25mm or less;~~
 - ~~ii. within 130 metres of the bed of the Pukaki River;~~
 - ~~iii. within 50 metres of the bed of any watercourse;~~
 - ~~iv. within moraine areas containing ephemeral wetlands or tarns;~~
 - ~~v. within any area unsuitable for use of centre pivot irrigators due to natural topography.~~**The final FEMP can now deal with this more appropriately and is also covered by WP05 below.**
4. ~~There shall be no leveling of glacial moraine landforms to enable use of centre pivot irrigation. Only minor leveling of glacial moraine landforms shall occur to enable pivot tracks~~
5. ~~There shall be no disturbance of, or damage to, the historic Rabbit Fence constructed in 1888 resulting from the use of water for centre pivot irrigation.~~
Outside Ecan jurisdiction.
6. This consent shall not be exercised concurrently with consent CRC071362.
7. ~~WP08~~ *09 Fish Screen*
8. *WP05 Avoid wastage of water*
9. *WP06 Backflow prevention*
10. Whenever the level of Lake Tekapo is at or below 701.8 metres above mean sea level in the months April to September inclusive, and at or below 704.1 metres above mean sea level in the months October to March inclusive, abstraction shall cease.
11. *Metering condition – MIC Conditions 12-15 – from Tekapo Stilling Basin*
- ~~12. ME04 Certification – Datalogger required as per MIC/MEL conditions~~
13. *ME05 Certification*
14. ~~Metering condition – MIC Conditions 12-15 – from the irrigation supply canal at the boundary of Simons Pass Station, such that all flow to Simons Pass Station passes the metering device~~ **Not considered necessary. Take is metered at the location of the take, being Tekapo Canal.**
- ~~15. ME04 Certification Not considered necessary as above~~
- ~~16. ME05 Certification Not considered necessary as above~~
17. *AD03 Review*
18. *AD04 Lapse*

CRC071362 – To take and use surface water

19. *WP01*
Water shall only be taken from either the Lake Pukaki, at surface water abstraction point H38/0249, at or about map reference NZMS 260 H38:8214-6511 **or NZMS H38: 822-652 and the Pukaki Canal at or about map reference NZMS 260: H38:805-641**, at a maximum rate of 116 litres per second, with an annual volume not exceeding ~~4,060,000~~ 1,200,000 cubic metres between 1st July and the following 30th June.
Insert tranching regime from Derogation Approval
20. *WP04*
Water shall be used only for spray irrigation of 200 hectares of crops and pasture for grazing sheep, beef cattle, deer or non-milking dairy cows, as described in the application, on the area of land shown in

attached plan CRC083609, which forms part of this consent. Do not wish to limit stock type. FEMP will ensure N and P discharges are not exceeded.

- ~~21. Irrigation shall not occur within the following areas:~~
- ~~vi. on soils with an average water holding capacity of 25mm or less;~~
 - ~~vii. within 130 metres of the bed of the Pukaki River;~~
 - ~~viii. within 50 metres of the bed of any watercourse;~~
 - ~~ix. within moraine areas containing ephemeral wetlands or tarns;~~
 - ~~x. within any area unsuitable for use of centre pivot irrigators due to natural topography.~~
- This final FEMP can now deal with this more appropriately and is also covered by WP05 below.
22. There shall be no leveling of glacial moraine landforms to enable use of centre pivot irrigation. Only minor leveling of glacial moraine landforms shall occur to enable pivot tracks
23. There shall be no disturbance of, or damage to, the historic Rabbit Fence constructed in 1888 resulting from the use of water for centre pivot irrigation.
Outside Ecan jurisdiction.
24. This consent shall not be exercised concurrently with consent CRC071362.
25. ~~WP0809 Fish Screen~~
26. ~~WP05 Avoid wastage of water~~
27. ~~WP06 Backflow prevention~~
28. Whenever the level of Lake Pukaki is at or below 518 metres above mean sea level, abstraction shall cease.
29. ~~Metering condition – MIC Conditions 12-15 – from Tekapo Stilling Basin Lake Pukaki~~
30. ~~ME04 Certification Datalogger required as per MIC/MEL conditions~~
31. ~~ME05 Certification~~
32. ~~Metering condition – MIC Conditions 12-15 – from the irrigation supply canal at the boundary of Simons Pass Station, such that all flow to Simons Pass Station passes the metering device~~ Not considered necessary. Take is metered at the location of the take, being Pukaki Canal or Lake Pukaki and certainly not for the applicants individual application.
33. ~~ME04 Certification~~ Not considered necessary as above
34. ~~ME05 Certification~~ Not considered necessary as above
35. ~~AD03 Review~~
36. ~~AD04 Lapse~~

CRC092721

Scope

LU01

1. a) Works in the bed and banks of Lake Pukaki shall be limited to construction, maintenance and operation of an irrigation intake structure, consisting of a submersible pump and up to [200]mm diameter pipeline, sufficient to carry a maximum flow of 116 litres per second;
- b) The irrigation intake structure described in 1(a) pipeline shall be buried within the bed of the lake, above the minimum lake level of 518 metres above mean sea level, to a depth of 600mm below natural bed level.
2. LU03 Excavation shall not exceed a depth of 1 metre below the level of the natural lake bed prior to excavation.

Location

LU2

3. Works shall only be carried out within the bed and banks of Lake Pukaki between map reference NZMS 260 H38:8235-6520 and H38:8214-6511, which will enable the proposed intake structure to extend below the minimum lake level of 518 metres above mean sea level.

Prior to works

4. LU08 Consent given to all on site

5. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager shall be notified not less than 48 hours prior to the commencement of works.

Works/Construction

6. (i) Works to install the intake structure described in Condition 1 shall take no longer than ~~3 days~~ **one month** to complete
(ii) Works to maintain the intake structure described in Condition 1 shall take no longer than ~~4 days~~ **one month** to complete
7. Works shall not be carried out on weekends or public holidays.
8. There shall be no stockpiling of materials at the works site.
9. *LU21 Storage of fuel...the bed and banks of Lake Pukaki.*
10. Cement shall be stored securely or removed from site overnight.
11. Machinery shall be free of plants and plant seeds prior to arrival at the works site, and prior to use within the lake bed.
12. To prevent the spread of Didymo or any other aquatic pest, the consent holder shall ensure that activities authorised by this consent are undertaken in accordance with the Biosecurity New Zealand's hygiene procedures. Note: You can access the most current version of these procedures from the Biosecurity New Zealand website <http://www.biosecurity.govt.nz> or Environment Canterbury Customer Services
13. *LU23 Minimise adverse effects on various values*
14. *LU011 No erosion of bed and banks - Lake Pukaki.*
15. All practicable measures shall be undertaken to minimise the discharge of sediment to Lake Pukaki, arising from the works, including, but not limited to:
 - a) **All practical measures shall be taken to minimise the disturbance of the lake bed**
 - b) **Machinery will as far a practical and avoidable will not enter water**
 - c) **Works shall be completed in a manner so as to not create increased erosion in the lake bed**
 - d) **If possible, installation of the intake and maintenance will occur during low lake levels.**
16. Works in water shall be kept to the minimum practicable to undertake the works.

Accidental Discovery Protocol

17. *LU09 Arowhenua Runanga and Waihao Runanga*

Upon Completion

18. *LU27 Remove spoil and waste material*
19. Upon completion of works, the site shall be restored to its original condition, as far as is practicable.

Administration

20. *AD05 Review*
AD06 Lapse

APPENDIX D – DEROGATION APPROVAL



meridian

11 September 2009

Gillian Ensor
Environment Canterbury
PO Box 345
Christchurch

Dear Gillian

Application by Glentanner Station Ltd

- 1 We write to you to outline the basis of Meridian Energy Limited (*Meridian*) providing its derogation approval of the applications numbered CRC071362 and CRC083609 by Glentanner Station Limited. We refer to the letter to ECan from Chapman Tripp dated the 26th of June 2008 setting out Meridian's position on derogation approvals generally.
- 2 Meridian has read and considered the applications CRC071362 and CRC083609 by Glentanner Station Limited and provides derogation approval on the following basis:
 - 2.1 Glentanner Station Ltd shall only be entitled to take and use from the Tekapo Stilling Basin (between NZMS 260 H38:3820-7260 and H38:8842-7328) or Lake Pukaki (NZMS 260 H38:822-652) (but not both) at a maximum rate of 116 litres per second for the spray irrigation of 200 hectares identified in the application;
 - 2.2 The maximum daily volume from either take location shall not exceed 10,022 cubic metres per day and the maximum annual volume shall not exceed 1,200,000 cubic metres per annum and this shall be allocated as an agricultural and horticultural activity upstream of the Waitaki Dam but not upstream of the glacial lakes if the Tekapo Stilling Basin location is chosen and upstream of Lake Pukaki outlet if the Lake Pukaki location is chosen under Rule 6, Table 5 of the Waitaki Catchment Water Allocation Regional Plan;
 - 2.3 The taking of water from the Tekapo Stilling Basin outlined in Clause 2.1 and 2.2 shall cease whenever the owner and/or operator of the Waitaki Power Scheme ceases to take, divert and/or discharge water into the Tekapo – Pukaki Canal, unless the owner and/or operator of the Waitaki Power Schem gives written agreement to the continuation of take;
 - 2.4 The taking of water from the Tekapo Stilling Basin outlined in Clause 2.1 and 2.2 shall cease whenever the level of Lake Tekapo reaches the minimum lake levels specified in Table 4 of the Waitaki Catchment Water Allocation Regional Plan;
 - 2.5 The taking of water from Lake Pukaki outlined in Clause 2.1 and 2.2 shall cease whenever the level of Lake Pukaki reaches the minimum lake levels specified in Table 4 of the Waitaki Catchment Water Allocation Regional Plan;

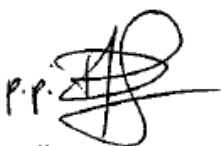
2.6 the annual volume provided for in Clause 2.2 shall be time tranced in accordance with the following table:

Table A – Maximum Rates & Volumes for either CRC071362 or CRC083609

Year	Maximum rate of abstraction (litres/second)	Maximum Daily Volume (cubic metres/day)	Maximum Annual Volume (cubic meters/year)
1 September 2009 to 30 April 2010	0 l/s	0 m ³ /day	0 m ³ /annum
1 September 2010 to 30 April 2011	116 l/s	10,022 m ³ /day	1,200,000 m ³ /annum
1 September 2011 to 30 April 2012	116 l/s	10,022 m ³ /day	1,200,000 m ³ /annum
1 September 2012 to 30 April 2013	116 l/s	10,022 m ³ /day	1,200,000 m ³ /annum
1 September 2013 to 30 April 2014 and every year thereafter	116 l/s	10,022 m ³ /day	1,200,000 m ³ /annum

- 3 Any amendment or modification to the above will require further written derogation approval from Meridian. On the same basis any subsequent variation, transfer or replacement application that is relevant to the volume or location of the take may also require further approval.
- 4 This letter is not an affected party approval to the consent application under section 94 of the Resource Management Act. Meridian may choose to submit in support or oppose the application on grounds which do not relate to the derogation of its rights, or not to submit at all.
- 5 This letter does however record (subject to the above) that Meridian will not oppose the granting of the Glentanner Station Ltd application on the ground that it will reduce the quantity of water available under Meridian's existing consents.
- 6 For the avoidance of doubt, Meridian is providing derogation approval on the basis that water is taken from only one of the locations identified in Clause 2.1. In this respect, the maximum annual volume that can be taken under this derogation approval, regardless of the take location, is 1,200,000 cubic metres per annum.
- 7 Please advise if any basis for Meridian's approval outlined in paragraph 2 will not be met by the resource consent.

Yours sincerely



Mike Roan

Markets and Production Director

Glentanner Station Ltd for CRC071362, CRC083609, CRC092721

APPENDIX E – DRAFT FARM ENVIRONMENTAL MANAGEMENT PLAN

132.

APPENDIX F: IRRICAL

APPENDIX G: INTAKE LOCATION

APPENDIX H: INTAKE DESIGN