APPLICANT: BIRCHWOOD RUN LTD

REPORT OF CATHY BEGLEY

Consent ID	Description	Table 3 Location	Table 5 Location
CRC012291	To divert, take and use up to 57L/s and up to 35,000m^3/week from the Wairepo Creek for the border dyke and spray irrigation of 56 hectares of crop and pasture.	Wairepo Creek and Tributaries	Upstream of Waitaki Dam, but not upstream of the outlets of glacial lakes.
Activity Status			
Rule 2, Table 3 WCWARP: the proposed divert and take is located within the overall allocation limit for the Wairepo Creek and the minimum flow has been determined as the 1 in 5 year, 7 day low flow required in the WCWARP. 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. **Overall status: Any activity that complies with Rules 2 and 6 is a discretionary activity under Rule 15**			

Consent ID	Description
CRC012290	To construct and maintain a gravel weir in the bed of Spring Creek and Wairepo Creek to divert water.
Activity Status	
TRP: There is no operative Regional Plan so S77C of the RMA applies, and the activity is considered to be a discretionary activity. The proposed activity was lodged before Variation 1 to the PNRRP was notified. As such it is considered inappropriate to use this document to determine the status of the application. **Overall status: Discretionary**	

1 PROPOSAL

1. John and Guy Kelland (Glenbrook Trust and Kelland Family Trust) applied for CRC012290 and CRC012291 on 23 April 2001. These applicants sought the ability to renew WTK691321 A – C which allowed for the diversion, taking and use up to 56L/s of water from the Wairepo Creek for the irrigation of up to 57 ha of land. On the 19th and 22nd of April 2004 these applications were transferred to Birchwood Run Ltd being a family company with Simon and Henry Williamson as directors of the company (hereon in referred to as "the applicant").
2. The area to be irrigated is shown on the plan contained in Appendix A.

1.1 Timeline and Summary of Amendments made to the Applications

Timeline	CRC012290	CRC012291
Date of Lodging	23 April 2001	23 April 2001

Notifiable Date	21 December 2004	21 December 2004
Public Notification	4 August 2007	4 August 2007

3. As outlined above the application to divert, take and use water from the Wairepo Creek (CRC012290) was lodged in April 2001. Between December 2001 and November 2008 the CRC made a number of requests for further information, which sought to ensure that all necessary resource consent applications had been made and to clarify a number of matters associated with the applications. The applicant has provided further information on the following matters:

    - Specific minimum flows for Wairepo Creek;
    - Annual volumes for the proposed take;
    - An assessment of the use of water on the water quality within the Mackenzie Basin;
    - An assessment of irrigation on landscape values within the Mackenzie Basin;
    - Providing derogation approval from Meridian Energy Ltd.

1.2 Water Source

4. The applicant seeks to divert and take water from the lower reaches of the Wairepo Creek. The Wairepo Creek is, from a hydrological perspective, very complex. This is due to the fact that in its upper reaches a consent is held by the Sutherlands (CRC011266) which allows the entire flow of the stream to be diverted, using a gravel weir, from its original course (Under SH 8) down towards the Willowburn and the Ahuriri River. It is understood that only during heavy rain does the Wairepo Creek "blow out" this gravel weir, thereby allowing it to follow its natural path and flow from its source, being the Wairepo Springs located at the toe of the Ohau Range to the Wairepo Arm of Lake Ruataniwha. This diversion has led to confusion, as there are now two Wairepo Creeks one flowing into the Ahuriri River the other flowing into the Wairepo Arm of Lake Ruataniwha. It is the latter that the applicant proposes to take water from.

2 BACKGROUND INFORMATION

2.1 Farm Details

5. The applicant operates, in total, a 5,700 ha high country run located on both the western and eastern side of the Twizel-Omarama Road (SH 8) to the south of Lake Ruataniwha. Following the purchase of the property in 2004, the applicant has undertaken extensive development of the property, which has included increasing the area being irrigated using water from the Benmore Irrigation Scheme. This development along with existing irrigation on the property has allowed the property to be split into two economic units. Simon Williamson (one brother) is farming approximately 3,700 ha area and Henry Williamson (the other brother) farming the other 2,000 ha in area. It is the latter unit that the applications subject to this hearing are located in.

6. The renewal of these applications is a very important and integral part of the overall farm management which is mainly fine wool, lamb and steer finishing operation. The applicant currently runs approximatly 200 18 month old beef steers and 3,200 merino ewes. The 57 ha block is used primarly to provide sufficient feed for the 3,500 lambs which are weaned in late January early February. This takes the presure off other irrigated areas which are used to grow winter feed during this time, which most years is very hot and dry over the summer months when winter feed needs to be produced.

7. The lambs weaned on to the 57 ha block are rotated around this block with the aim being to get these lambs live weight as high as possible before winter. These lambs are then taken through the winter, which enables the applicant to get a wool clip off them in mid September before they are killed before Christmas.

8. This allows the applicant to provide lambs to the market when lamb numbers are low and prices are generally higher. Having all the irrigation also allows the applicant to retain all the lambs bred on farm rather than having to purchase store lambs with associated costs. Further it allows the applicant to retain the lambs over the winter months and get a wool clip off these lambs that they would not get if they did not have the irrigation.

2.2 Mackenzie Irrigation Company Shares held

Name: Birchwood Run Ltd	Number
Property Shares	1
Irrigation Shares	0

9. The above applications are considered to be a renewal of existing activities, and as such MIC shares are not required.

2.3 Derogation Approval

10. Derogation approval was obtained in standard format from Meridian Energy Limited on 4 August 2009.

3 COMMENTS ON SUBMISSIONS

11. These applications were notified in 2003, as part of the "ministerial call-in". They were notified again in 2007. A summary of the 2007 submissions are as follows

Resource Consent	Submissions in support	Submission in opposition	Neutral
CRC012290	2	18	2
CRC012291	2	18	2

12. Details of the submissions made in response to all applications that were publicly 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.

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

Submitter	Issues	Support/ neutral/ oppose
LINZ	The submitter has highlighted that some of the areas to be irrigated are subject to Crown Pastoral Lease. To enable the irrigation to occur the terms of the lease may need to be changed.	Neutral
Meridian Energy Ltd	The effects on water quality and flow metering requirements.	Oppose
Central South Island Fish and Game Council	The submitter is concerned that the granting of these permits would result in the over-allocation of the Wairepo Creek allocation under the WCWARP.	Oppose
Ohau Company Trust	The submitter is concerned that the granting of this permit would result in the overall allocation limit for the Wairepo Creek being exceeded thereby excluding other users from taking water from the system.	Oppose

14. With respect to the LINZ submission, the applicant notes that the area to be irrigated is freehold wholly owned by the applicant.

15. As outlined above, Meridian Energy Ltd have provided derogation approval due to the fact that the application is a renewal of an existing permit. Further the applicant is proposing that the take be metered in accordance with the WCWARP. With respect whether the take will impact upon water quality, this aspect is addressed in section 4.4 of this evidence.

16. With respect to F & G's submission, these applications are renewals of existing applications that have already been accounted for within the overall allocation regime for the Wairepo Creek. Thus the granting of this permit will not result in the allocation limit for the Wairepo Creek as set out within WCWARP being exceeded.

17. The Ohau Company Trust have withdrawn their submission on this application.

4 CRC012291 -– TO DIVERT, TAKE AND USE WATER - ASSESSMENT OF ENVIRONMENTAL EFFECTS

4.1 Effects on other water users

Effects on other water users	
Comments	CRC012290 is a renewal application. No increase in rate or weekly volume (as currently authorised) is being sought. The CRC reporting officer agrees that the effects on other users are minor.

18. There are no other surface water abstractors from either up or downstream of the proposed point of take. This is due to the fact that the land through which the Wairepo Creek flows from its source (the Wairepo Swamp) to the Wairepo Lagoon (also known as the Wairepo Arm of Lake Ruataniwha) is controlled by the applicant. Given this, the take from the Wairepo Creek will not impact upon any other water user or person who relies upon this stream for other purposes such as domestic and stock water.

19. Table 3 of the WCWARP provides an overall allocation limit for the Wairepo Creek of $0.2m^3/s$. This allocation limit aims to, amongst other things, ensure that where there are competing users for the resource, the effects on these users is "acceptable". I note that if all resource consents that are subject to this hearing to take water from the Wairepo Creek are granted, the total allocation for the stream may be exceeded. However, these applications seek to replace existing applications at the same rate as was previously authorized. I note that Policy 28 (c) provides for replacements of existing consents to be maintained within "*…any allocation limits and priority bands on the water body concerned."* Further, Rule 2 (1) (a) allows for replacement consents to be exempt from the allocation limits set out within Table 3 of the WCWARP.

20. These proposed takes sit within the area defined as Upstream of the 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 m^3/year for this area. Ms Bartlett in her *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 of 275 million cubic metres per year will not be exceeded.

21. Further, the applicant has gained derogation approval from Meridian Energy Ltd and as such the granting of the proposed takes will not impact upon its existing consents to take and use water within the catchment for power generation.

4.2 Effects on instream values

Minimum flow requirements	
Proposed Environmental Flow Regime	Wairepo Creek
Comments	A minimum flow of 30L/s measured upstream of the Wairepo Lagoon is proposed The CRC reporting officer agrees that the effects on aquatic ecosystems are minor provided appropriate fish screens are in place.

22. Table 3 of the WCWARP sets specific minimum lake levels for the Wairepo Creek to ensure that the instream values of the waterway are protected. The applicant is proposing to cease taking water whenever the flow in the Wairepo Creek is less than 30 L/s as set out within Table 3 of the WCWARP. Given this, the taking of water from Wairepo Creek is unlikely to impact upon the aquatic values of the lakes.

23. I note that Ms Penman in *Attachment 4* of *Report 2A – Environmental flow and level regimes – Overview report* recommends a minimum flow of 30L/s and a flow sharing regime for the Wairepo Steam whenever the flow in the river is between 230L/s and 30L/s. Ms Penman states that the reasons for the flow sharing is to "…*ensure that the minimum flow will be retained at the downstream end of the catchment as far as possible*…" (Page 21). In this particular situation the minimum flow monitoring point is located at the point where the Wairepo Stream enters the Wairepo Lagoon or downstream of the catchment as a whole as required by the WCWARP. Therefore the flow sharing recommended by Ms Penman is unnecessary to ensure that the minimum flow, at the downstream end of the catchment is maintained.

24. I note that Ms Penman has stated that stock numbers outlined for a latter application (now withdrawn) are significantly different from that identified for this application. As outlined in Section 1 of this report, since lodging CRC012291, some 8 years ago, the property has changed ownership from John and Guy Kelland (Glenbrook Trust and Kelland Family Trust) who lodged CRC012291 to Birchwood Run Ltd. Further as outlined in Section 2.2 of this report, the applicant is in the process of subdividing the property into two smaller units, one being approximately 3,700 ha in area the other being approximately 2,000 ha in area. The two properties are being run as separate farming units. This application relates to the latter block, being approximately 2,000 ha in area. These changes account for the changes in stock numbers set out within each application. It should also be noted that the consent that Ms Penman alludes to (CRC940428C.1) provides stockwater to the 3,700 ha property not the property subject to this application.

25. When water is taken either directly from a water body or an irrigation race, without an appropriate fish screen in place, there is the potential for the aquatic values of that waterway to be adversely affected. With respect to the existing diversion structure on Wairepo Creek there is no fish screen in place. In some circumstances, such races can provide significant aquatic habitat that can be impacted upon if fish screens are installed at the point of diversion

26. In this particular situation, there is no fish screen in place upon either the point at which water is diverted from the stream or where irrigation water is taken from the diversion race. I do note though that the division has been occurring for some time, since at least 1969 (some 40 years). The applicant is proposing a mitigation measure which would require them to "as far as is practicable" exclude fish from entering the irrigation race feeding the border dyke irrigation system. To this end, prior to the exercising of this consent, the applicant will have their intake inspected and a fish screen designed, installed and certified to ensure that their fish screen as far as is practicable excludes fish and is in general accordance with the report *Fish Screening: good practice guidelines for Canterbury, NIWA Client Report: CHC2007.092, October 2007*.

27. I note that Ms Penman states in her report that typically a diversion rate of between 10 and 15 L/s is required in order to ensure that water is conveyed the length of the race retaining a connection between the point at which the water is diverted and discharged back into the Wairepo Creek. As outlined above, the applicant is proposing to ensure that a fish screen is placed at the point where water enters the irrigation race thereby ensuring that any fish within the race are not "spread out" over the paddocks. However, Ms Penman then goes on to state that if a continuous flow and a connection

with the Wairepo Creek can be maintained, then the effects of not having a fish screen on the stockwater diversion are acceptable.

4.3 Effects of inefficient water use

Reasonable and Efficient Use Seasonal Volumes and Land Use	
Land Use	Intensive mixed (Cropping, Sheep and Beef)
Area to be irrigated (hectares)	56
Method of application	Currently Border Dyke but possible conversion to Spray.
Efficiency of application	80%
Daily application depth	8.7 mm
Return period	7 days
Return period application depth	61.5 mm
Soil profile available water	34% (19.38 ha) – heavy soils 50% (28.5 ha) – medium soils 16 % (9.21 ha) – light soils
Effective Irrigation Season Rainfall	220 mm/ha/yr
Assessment criteria (based on)	**Policies 10-14 (WCWARP)**
Seasonal volume required (m^3/year)	336,000 m^3/year
Seasonal volume - Schedule WQN9v2 (m^3/year)	293,060 m^3/year
Volume to be included in Table 5 (WCWARP) allocation	336,000 m^3/year
Comments	The proposed annual volume is based upon applying 600 mm/ha/year or 6,000m^3/year. Schedule WQN9v2 is 293,060 m^3/year which is less than the proposed annual volume.

28. Traditionally two methods have been used to determine whether the use of water for irrigation is efficient. The first method is ensuring that the peak application rate is no more than half the water holding capacity of the soil. The second method is through the implementation of an annual volume using one of the two methods set out in Policy 16 (c) of the WCWARP.

29. The applicant will be applying no more than 61.5 mm per 7 days which is no more than half of the average water holding capacity of the soil, and as such is considered to be an efficient use of water.

30. This application proposes an annual volume of 336,000m^3/year which is based upon the applicant applying no more than 600 mm/ha/year. I note that Ms Penman has stated that using the methodology set out in Policy 16 (c) (ii) an annual volume of 287,450 m^3/year would be acceptable. Unfortunately, I am unable to agree with this annual volume. I note that Ms Penman agrees that the effective rainfall for the area is 220 mm/year. Using the same soil profiles set out in the table above (which are the same as those Ms Penman has used) and the same effective rainfall as Ms Penman, I have determined that an annual volume of 293,060m^3/year would be appropriate. This is more than Ms

Penman is proposing. However, Ms Penman then goes on to state that the area subject to this application was a part of the "Glenbrook trials" which may not have taken into account all the matters outlined in Policy 16 (c) (i) but did look specifically at the area to be irrigated, how much water should be applied to the area taking into account the water holding capacity of the soils. As Ms Penman outlines, the results of these trials, which occurred over a 6 year period, indicated that *"… the maximum number of waterings required for maximum efficiency was seven waterings per year. Using the applicant's proposed annual volume of 336,000m^3/year and a proposed volume of 45,000m^3 per watering … results in a total of 7.4 number of waterings per year."* Given this, Ms Penman is of the opinion that the proposed annual volume is an efficient use of water. I agree with Ms Penman.

31. 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.

4.4 Effects of the use of water on water quality

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

32. Aviemore and Lake Waitaki Catchments. This study goes on to calculate N and P thresholds for the property.

33. 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.

34. 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 into the table below. This table shows that the applicant can meet the property thresholds which are the most restrictive.

	Nitrogen Threshold (Kg/Farm)	**Phosphorus Threshold (Kg/Farm)**
MWRL Water Quality Study Property Thresholds	24,031	795
OVERSEER® outputs	6,988	260

35. The applicant is committed to implementing the "Mandatory Good Agricultural Practices" set out within the Farm Environmental Management Plan (FEMP) (see Appendix D). Implementing these practices ensures 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.

36. Whilst the applicant is able to comply with the thresholds outlined within the MWRL Water Quality Study, this study also 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).

37. 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.

38. 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.

39. For Birchwood Run Ltd, the desktop risk assessment identified the following potential risks:

    39.1 The large number of surface water bodies that flow through the property;

    39.2 Extensive tracking;

    39.3 Use of full cultivation;

40. 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 a condition of consent and the draft FEMP is attached (see Appendix D).

41. 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 landscape values

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

42. Submissions have been received which state that the Mackenzie Basin as a whole is considered to be an "outstanding natural landscape". These values could be impacted upon through the irrigation of land. The area to be irrigated is located approximately 1.4 km to the east of Twizel Omarama Road (SH 8). Between the area to be irrigated by this consent and SH 8 is an area of land currently irrigated by the applicant using water from the Benmore Irrigation Scheme.

43. Mr Andrew Craig will provide further evidence as to whether the irrigation of this area will impact upon the landscape values of the area and as such I do not propose to repeat his assessment here. Mr Craig has concluded that the general effects on the Mackenzie landscape of these applications will be significantly less than minor. Given this, the effects of the proposed takes on landscape values is 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

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

45. 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.

4.7 Effects on People, Communities and Amenity Values

Effects on People, Communities and Amenity	
Comments	The CRC reporting officer for these applications considers there may be effects on people and communities that may be more than minor.

46. The applicant has proposed an appropriate minimum flow condition for the water body from which they have applied to take and use water. A minimum flow is considered to adequately protect people, community and amenity values within the rivers specific to each applicant.

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

48. 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 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.

49. 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.

50. 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.

5 CRC012990 - TO INSTALL AND MAINTAIN AN EXISTING DIVERSION STRUCTURE - ASSESSMENT OF ENVIRONMENTAL EFFECTS

5.1 Effects of the works on flood-carrying capacity and flooding patterns of the river

51. This application seeks the ability to maintain an existing diversion structure within the bed of the Wairepo Creek. The existing structure is shown in the photos attached (see Appendix B) and consists of a concrete weir across the stream, with the walls of the structure consisting of sandbags and corrugated iron. This structure facilitates the diversion of water from Wairepo Creek into the stock/irrigation race.

52. The inappropriate placement of such structures can change the way in which streams react during a flood event. The most significant effect is that the structure could result in neighbouring or adjoining land owners being flooded more frequently than they currently experience. Further such structures could reduce the flood water carrying capacity of the waterway resulting in flood waters ponding or even overtopping the banks of the waterway upstream of the structure. I note that the structure has been in place for some time, without impact upon the way in which the stream reacts during a flood event. Given that this application simply seeks to have the ability to maintain the structure, it is my opinion that allowing the structure to remain in place will not change the way the stream reacts during a flood event.

5.2 Effects of the works on water quality

53. When works are undertaken within flowing water, the works may cause a temporary discoloration of the water. This discoloration is as a result of the water within the waterway containing higher than “normal” suspended sediments. Higher than normal suspended sediments can have a number of negative impacts upon the aquatic ecosystem of the waterway, such as “cementing” spawning gravels downstream of where the works are occurring, and also can have a negative physical impact upon fish (in that high levels of suspended solids can irreparably damage fish gills).

54. The most common approach used 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 construction of the bund to occur “in the dry” or outside the flowing water.

55. Another way of mitigating the effects of undertaking works within the waterway, is to limit the amount of time works occur within the waterway. Further, measures, such as ensuring that the works occur outside spawning season (if the waterway is known as a spawning river) can ensure that the works do not have a significant impact upon the water quality and thereby the aquatic ecosystem. The measure proposed by the applicant to address this aspect is outlined in Appendix C.

5.3 Effects on bank erosion and stability

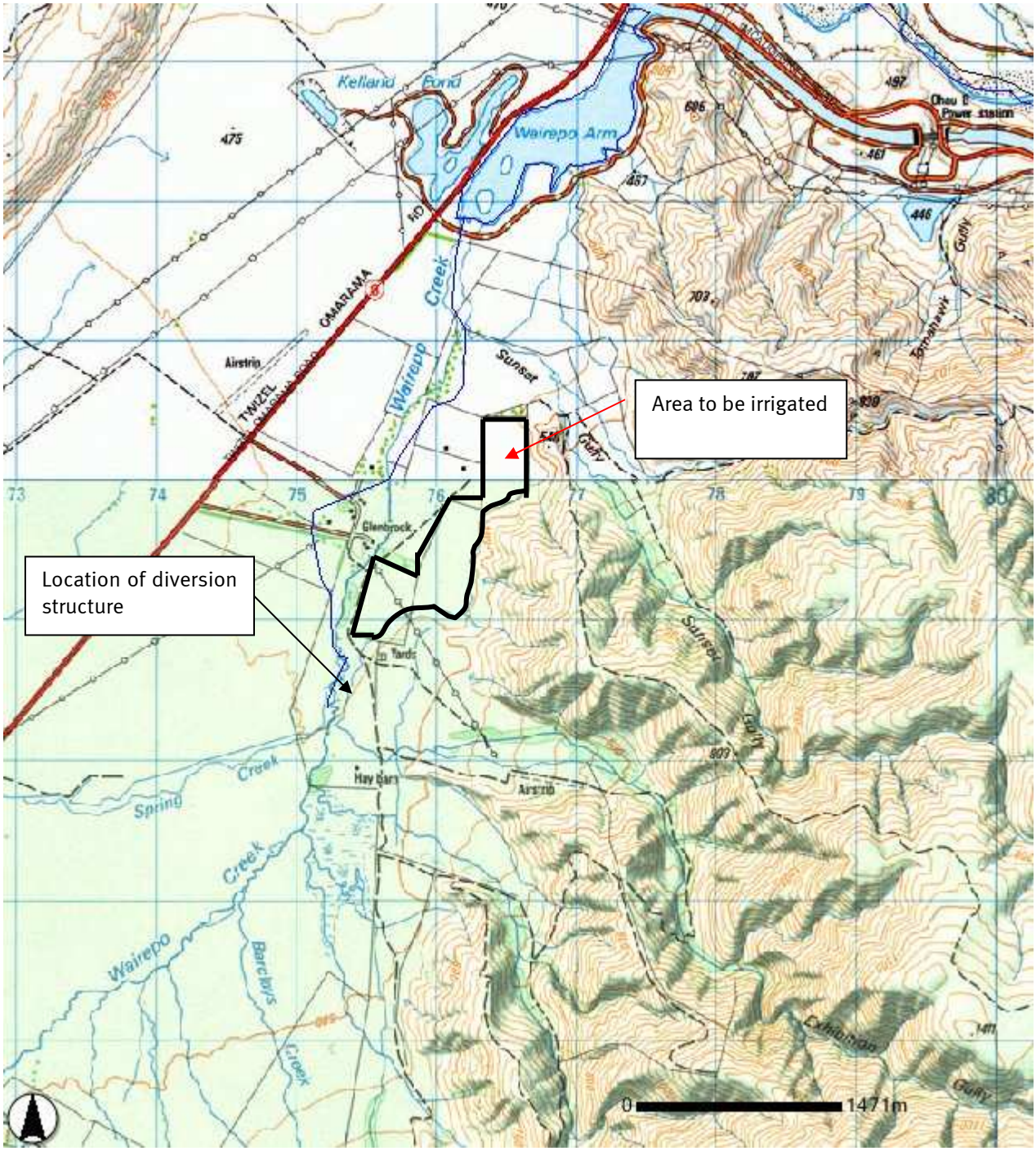
56. When works occur in the bed of rivers, the incorrect placement of such structures can lead to bank erosion and decrease bank stability. This is due to the fact that structures can direct water towards a bank thereby increasing the erosion of that bank thereby meaning that the bank is less stable.

57. I note that the structure has been in place for some time without resulting in significant erosion of the bed and/or banks of Wairepo Creek. Further, the applicant proposes to monitor the structure, and should the bed or banks of the stream at this point start to erode, action will be undertaken to remedy the problem. This aspect has been identified as an environmental farm risk and will be addressed as part of the environmental farm management plan which will ensure that the applicant actively monitors the point of discharge for an increase in erosion. Should any erosion be detected measures will be undertaken to remedy the problem.

5.4 Effects on other artificial structures

58. When works occur in the beds of rivers within close proximity to an existing artificial structure, the proposed structure can have a negative impact upon the existing structure. I am unaware of any artificial structures, which are not either owned or maintained by the applicant within a 1.4 km radius of the existing structure.

APPENDIX A – RELEVANT PLANS



APPENDIX B – PHOTOS

Diversion Structure located within the bed of Wairepo Stream

Looking downstream on the Wairepo from the point of diversion

APPENDIX C - PROPOSED CONDITIONS

CRC012291 – TO DIVERT TAKE AND USE WATER

No.	Condition Code[1]	Details
Divert & Take		
1	WP01	*Name of water body*: Wairepo Creek *Map reference:* NZMS 260 H39:7534-4837 *Instantaneous rate:* 57 litres per second *Volume:* 4,924 cubic metres per day and 336,000cubic metres between 1st July and the following 30th June
Use		
2	WP04	*Type of irrigation:* Border-dyke irrigation *Number of hectares:* 56 hectares *Use:* crops and pasture for grazing stock excluding milking dairy cows *Plan No: "*CRC012291" (Attachment 1)
3	WP05	The consent holder shall take all practicable steps to: (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and (b) Avoid leakage from pipes and structures; and (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.
4		The application seeks to use water for border dyke irrigation. Given this requiring a backflow preventer is inappropriate as the while system is open race.
Minimum flow		
5	WP07	*Name of water body:* Wairepo Creek *Map reference:* NZMS 260 H39:710-463 *Minimum flow:* 30 litres per second The minimum flow point is located at the downstream end of the catchment. Given this a flow sharing regime above the minimum flow is not required.
Fish Screen		
6	WP09	A fish screen shall be installed, operated and maintained on the intake to ensure that fish are prevented, as far as is practicable, from passing into the intake. The fish screen shall be positioned to ensure that there is unimpeded fish passage to and from the waterway and to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the screen face; and The fish screen shall be designed and installed in general accordance with *Fish Screening: good practice guidelines for Canterbury, NIWZ Client Report: CHC 2007. 092, October 2007* The fish screen specified in Condition [XXX] (a) shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Condition [XXX] (a)-(c) of this consent is achieved. Prior to the installation of the fish screen, a report containing final design plans and illustrating how the fish screen will meet the required design criteria shall be provided to the Canterbury Regional Canterbury. Prior to the exercise of this consent a certificate shall be provided to the Canterbury Regional Canterbury by the designer or supplier of the fish screen to certify that the fish screen has been

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

		installed in accordance with the details provided to the Canterbury Regional Council in accordance with Condition [XXX} (d) of this consent; The fish screen shall be maintained in good working order. Records shall be kept of all inspections and maintenance, and those records shall be provided to Environment Canterbury upon request
Efficiency of diversion channel		
7	Non Standard	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		
8	ME03	(a) The consent holder shall, prior to exercising this consent, install a water meter measuring device in a location that will enable the determination of the continuous rate of flow and volume of water being diverted to within an accuracy of 10 percent. (b) The measuring device shall, as far as is practicable, be installed at a site likely to retain a stable relationship between flow and water level. The measuring device shall be installed in accordance with the manufacturer's instructions. (c) install a tamper-proof electronic recording device such as a data logger(s) that shall time stamp a pulse from the flow meter at least once every 15 minutes, and have the capacity to hold at least one season's data of water taken as specified in clauses (d)(i) and (d)(ii), or which is telemetered, as specified in clause (d)(iii). (d) The recording device(s) shall: (i) be set to wrap the data from the measuring device such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and (ii) store the entire season's data in each 12 month period from 1 July to 30 June in the following year, which the consent holder shall then download and store and provide to the Canterbury Regional Council in a format and standard specified in the Canterbury Regional Council's form for Water Metering Data Collection; and be readily accessible to be downloaded by the Canterbury Regional Council or by a person authorized by the Canterbury Regional Council: RMA Compliance and Enforcement Manager; or (iii) shall be connected to a telemetry system which collects and stores all of the data continuously with an independent network provider who will make that data available in a commonly used format at all times to the Canterbury Regional Council and the consent holder. (e) The measuring and recording devices described in clauses (a) and (c) shall be available for inspection at all times by the Canterbury Regional Council, including access to the data recorded in accordance with clause (d). All data from the recording device described in clause (c), and the corresponding relationship between the water level and flow (b), shall be provided to the Canterbury Regional Council annually in the month of June, and shall be accessible and available for downloading at all times by the Canterbury Regional Council.
9	ME04	(a) The water meter installed in accordance with Condition [ME02 or ME03] shall be an electromagnetic or ultrasonic meter; or (b) The consent holder shall, before [insert same date as water metering condition], install or make available an easily accessible straight pipe(s) at a location where the total water take is passing through, with no fittings or obstructions that may create turbulent flow conditions, of a length at least 15 times the diameter of the pipe, as part of the pump outlet plumbing or within the mainline distribution system, to allow the Canterbury Regional Council to conduct independent measurements.
10	ME05	Within one month of the installation of the measuring or recording device(s), specified in conditions [either ME02(a)(i) and ME02(a)(ii) **or** ME03(a)-(c)], or any subsequent replacement measuring or recording device(s), or at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that: (a) the measuring and recording device(s) is installed in accordance with the manufacturers specifications; and (b) data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition [ME02(b) **or** ME03(d)].
11	ME06	At [specify] yearly intervals or at any time when requested by the Canterbury Regional Council, the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying that: (a) the water meter(s) is measuring the rate of water taken as specified in condition [ME02(a)(i) **or** ME03(b)]; or (b) the tamper-proof electronic recording device is operating as specified in condition [ME02(a) (ii) and ME02(b) (i) and (ii), and is telemetered, as specified in ME02(b) (iii)] **or** [ME03(a) (ii) and ME03(b) (i) and (ii), or is telemetered, as specified in ME02(b) (iii)].

12	ME07	*Waterway:* Wairepo Creek
	WP08	This condition require the ceasing of taking to allow for groundwater level to be monitored. This application is to take surface water, and as such, such a condition is considered in appropriate.
Administrative Conditions		
14	AD01	
15	AD02	*Number of working days:* 5 *Month 1*: March *Month 2:* July *Water body:* Wairepo Creek *Cross reference to Condition:* 5
16	AD04	Lapse date

CRC012290 – TO DISTURB THE BED AND BANKS OF WAIREPO CREEK

No.	Consent Code[2]	Details
Scope		
1		(a) Maintenance of intake structures within [ ] of Wairepo Creek including excavation of gravel and sediments, (b) To maintain adequate flow of water to irrigation intake,
Location		
2		The works carried out in accordance with condition (x) shall be located at Wairepo Creek within the area outlined as "Location of intake "on Plan CRCXXXXXX at or about map reference(s) NZMS 260 XX : XXXX: XXXX.
Limits of Excavation		
3	Non-standard	(a) Any gravel, sand and other natural material excavated as part of the works authorised by this consent during the disturbance of the bed of Glen Bouie Creek and Backyards Stream, 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		
4		All practicable measures shall be undertaken to ensure that works do not deflect floodwaters into the berm, including, but not limited to [.....].
5		Works shall not cause erosion of the banks and bed of the Wairepo Creek.
6		Erosion controls shall be installed on all earthworks to prevent sediment from flowing into any surface water body
7		Works shall not be undertaken in any manner likely to cause erosion of or instability to, the banks or bed of Wairepo Creek; or reduce the flood-carrying capacity of the waterway.
Prior to Construction		
8		Prior to commencing excavation, a copy of this resource consent shall be given to all persons undertaking activities authorised by this consent.

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

9		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		
10		All practicable measures shall be undertaken to ensure that works do not deflect floodwaters into the berm, including, but not limited to [.....].
11		The consent holder shall adopt the best practicable options to: (a) Minimise soil disturbance and prevent soil erosion; (b) Prevent sediment from flowing into any surface water; and (c) Avoid placing cut or cleared vegetation, debris, or excavated material in a position such that it may enter surface water. Including, but not limited to [detailed measures].
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		All practicable measures shall be undertaken to minimise vehicles and machinery entering Wairepo Creek.
14		Re-fuelling or storage of machinery or vehicles used for carrying out the work shall not occur in or near Wairepo Creek.
15		Machinery shall be free of plants and plant seeds prior to use in the riverbed.
16		All practicable measures shall be undertaken to minimise adverse effects on property, amenity values, wildlife, vegetation, and ecological values.
17		The works shall not prevent the passage of fish, or cause the stranding of fish in pools or channels.
Upon Completion		
18		On completion of works, the area shall be restored to its original condition as far as practicable.

APPENDIX D – FARM MANAGEMENT PLAN

Appendix E – Derogation Approval

meridian

4 August 2009

Gillian Ensor
Environment Canterbury
PO Box 345
Christchurch

Dear Gillian

Application by Birchwood Run Limited

1 We write to you to outline the basis of Meridian Energy Limited (*Meridian*) providing its derogation approval to the applications numbered CRC012291 by Birchwood Run 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 CRC012291 by Birchwood Run Limited and provides derogation approval on the following basis:

2.1 Birchwood Run Limited shall only be entitled to divert water from Spring Creek into an irrigation race (at map reference H39: 753-483) at a maximum rate of 57 litres per second and a volume not exceeding 35,000 cubic metres per week and an annual volume of 336,000 cubic metres per year;

2.2 Birchwood Run Limited shall only be entitled to take and use water from the irrigation race (between map references H39: 753-483 and H38: 761-507) at a maximum rate of 57 litres per second for the irrigation of up to 56ha identified in the application;

2.3 The maximum daily volume shall not exceed 35,000 cubic metres per week and the annual volume shall not exceed 336,000 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 outlet of the glacial lakes under Rule 6, Table 5 of the Waitaki Catchment Water Allocation Regional Plan.

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 Birchwood Run Limited application on the grounds that it will reduce the quantity of water available under Meridian's existing consents.

6 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