

**HIGH COUNTRY ROSEHIP ORCHARDS LIMITED** applied for the following resource consent:

**CRC072233: Water Permit to take and use up to 208,656 cubic metres (m<sup>3</sup>) per week and a maximum volume not exceeding 3,000,000 m<sup>3</sup> per year of water, at a rate of 345 litres per second (l/s) from the Ohau B Canal at map reference NZMS 260 H38:790-526 (NZTopo50 BZ15 690-910), 3 km south-east of State Highway 8 (SH8), Twizel, to irrigate up to 500 hectares (ha) of land.**

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	PROPOSED <b>NEW</b> APPLICANT CONDITIONS	ECAN COMMENTS	MEL COMMENTS	HCROL COMMENTS	HCROL FINAL PROPOSED CONDITION
		<i>The new proposed conditions, developed subsequent to the presentation of section 42A reports, would, provided that all of the suggested changes are incorporated, satisfactorily address landscape and cumulative water quality issues. For other issues refer to S42A reports and responses to commissioner questions</i>			
<b>No.</b>	<b>Water Take Conditions</b>	Suggest that above Advice Note be deleted. It is not needed. The conditions more clearly specify the scope of the permit.			
1	Consent is granted for a term expiring on 30 April 2025.	Agree with date. Duration condition should be separate or located after lapse condition.			
2	Water shall be taken from the Ohau B Canal at map reference NZMS 260 H38:790-526 (NZTopo50 BZ15 690-910) for irrigation between 01 September and the following 30 April, at a rate not exceeding 345 litres per second, a daily volume (measured between 12:00am and 12:00pm) not exceeding 29,808 cubic metres, and an annual volume (measured between 01 July and the following 30 June) not exceeding 3,000,000 cubic metres.	Time period needs to change to "measured over the 24 hour period ending at midnight" otherwise there is potential for interpreting the period as 12 rather than 24 hours.			
3	Water shall be used only for the spray irrigation of 500 hectares within a total command area of 651 hectares on the area of land shown on the attached Plan A in Appendix A which forms part of this consent.	Map needs a better legend to spell out which is which; just add "Command areas = yellow shading".  <i>Comment:</i> It would be better to name the plan "Plan			

		<p>CRC072233A, so it is tied to this consent. Also, the condition does not specify that irrigation will only be for crops and pasture grazed by sheep and non-dairy cows, as applied for in the application.</p> <p><i>Recommended Condition:</i> Water taken in accordance with Condition 2 shall be used only for spray irrigation of 500 hectares of crops and pasture for grazing sheep and beef cattle, within a command area of 651 hectares, as shown on Plan CRC072233A.</p>			
4	<p>The taking of water in terms of this consent shall cease upon receipt of written advice from the owners and/or operators of the Waitaki Power Scheme that: (i) the flow of water into Ohau B Canal has ceased, or is to cease, as a result of the operational requirements of the Waitaki Power Scheme; or that (ii) maintenance is to be undertaken to ensure the structural integrity and safety of, or to avoid risk or compromise to the operation of the Waitaki Power Scheme infrastructure, and such maintenance is unable to be undertaken while abstraction authorised in terms of this consent is occurring, particularly when such maintenance results in a restricted flow of water into the Ohau B Canal.</p>	Agree			
	<p><b>Advice Note:</b> <i>The Waitaki Power Scheme means the works including hydraulic control structures, dams, canals, water diversions, penstocks, spill weirs, spill gates, bypass valves, sluice gates, power stations and generating plant, associated ancillary land and structures and resource consents and other rights held by operator/s of the Waitaki Power Scheme to utilise the waters and tributary inflows of Lakes Tekapo, George Scott, Pukaki, Ohau, Ruataniwha, Benmore, Aviemore, and Waitaki to generate electricity.</i></p>	Agree			
5	<p>The taking of water for irrigation shall cease whenever the level of Lake Pukaki or Lake Ohau reaches the minimum lake level specified in Table 4 of the Waitaki Catchment Water Allocation Regional Plan.</p>	<p>Need to add "as estimated by the Canterbury Regional Council" after "Lake Pukaki".</p> <p>Should specify the actual level rather than refer to a separate <i>Recommended Condition:</i></p>			

		<p>Whenever the level in Lake Pukaki is at or below 518.0 metres above mean sea level, as estimated by the Canterbury Regional Council; or the level in Lake Ohau is at or below 519.45 metres above mean sea level as estimated by the Canterbury Regional Council, the abstraction of water from the Ohau B Canal for irrigation purposes shall cease.</p>			
<b>Metering</b>					
6	<p>The consent holder shall, before the first exercise of this consent, install a water meter(s) that has an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a location(s) that will ensure the total take of water from the Ohau B Canal, is measured.</p>	<p>No telemetry system option proposed. For differences between the MIC/MEL metering conditions and that proposed (and preferred) by CRC, refer to the S42a addendum report of Susannah Vesey, paragraph 135-142. Refer also to the response of Ms Vesey to commissioner questions regarding telemetry. Full recommended wording, (as offered by the applicant at 12 July 2010), is as follows:  “The consent holder shall, before the first exercise of this consent: (a) (i) install a water meter(s) that has an international accreditation or equivalent New Zealand calibration endorsement, and has pulse output, suitable for use with an</p>			

		<p>electronic recording device, which will measure the rate and the volume of water taken to within an accuracy of plus or minus five percent as part of the pump(s) outlet plumbing, or within the mainline distribution system, at a location(s) that will ensure the total take of water is measured, including: the total take of water from Tekapo Canal; and the total take of water from the Pukaki Irrigation Company Limited pipeline at the point at which water is supplied to Simons Pass Station; and</p> <p>(ii) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes and have the capacity to hold at least one season's (as specified in conditions 2 and 4) data of water taken as specified in clause (b)(i), or which is telemetered, as specified in clause (b)(iii).</p> <p>(b) The water meter and recording device(s) shall:</p> <p>(i) be set to wrap the data from the measuring device(s) such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and shall:</p> <p>(ii) store the entire season's data in each 12 month period from 01 July to 30 June in the</p>			
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		<p>following year, which shall be downloaded and stored in a commonly used format and provided to the Canterbury Regional Council upon request in a form and to a standard specified in writing by the Canterbury Regional Council; or</p> <p>(iii) 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. No data in the recording device(s) shall be deliberately changed or deleted.</p> <p>(c) The measuring device shall be installed at a site that retains a stable rating (i.e. a man-made channel, concrete, steel or fibreglass pipe). Installation shall be in accordance with ISO 1100/1-1981 or equivalent and be undertaken by a suitably qualified person.</p> <p>(d) The water meter and recording device(s) shall be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.</p> <p>(e) The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the</p>			
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		<p>manufacturer's instructions.</p> <p>(f) All practicable measures shall be taken to ensure that the water meter and recording device(s) are at all times fully functional and have an accuracy standard of <math>\pm 5\%</math></p>			
7	The water meter and recording device(s) shall be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.	Part of Condition 6 (as above)			
8	The water meter and recording device(s) shall be installed and maintained throughout the duration of the consent in accordance with the manufacturer's instructions.	Part of Condition 6 (as above)			
9	All practicable measures shall be taken to ensure that the water meter and recording device(s) are at all times fully functional and have an accuracy standard of $\pm 5\%$ .	Part of Condition 6 (as above)			
10	<p>The consent holder shall, within one month of any water meter and recording device(s) being installed, or within one month of any water meter and/or recording device(s) being replaced, and at five-yearly intervals thereafter, and at any time when requested by the Canterbury Regional Council, provide a certificate to the Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager) signed by the suitably qualified and/or experienced person certifying, and demonstrating by means of a clear diagram, that:</p> <p>(a) the water meter and recording device(s) has been installed in accordance with the manufacturers specifications; and</p> <p>(b) data from the recording device can be readily accessed and/or retrieved in accordance with condition 9.</p>	<p>Amend condition number references</p> <p>Also require additional condition as per MEO4 on pg 9 of S42a Report 1, Appendix 6, with wording as follows:</p> <p>"(a) The water meter installed in accordance with Condition &lt;6&gt; shall be an electromagnetic or ultrasonic meter; or</p> <p>(b) The consent holder shall before the first exercise of this consent 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</p>			

		system, to allow the Canterbury Regional Council to conduct independent measurements.” Reference to condition 9 should be condition 7.			
11	The Canterbury Regional Council (Attention: RMA Compliance and Enforcement Manager) shall be informed within five working days on the first exercise of this consent by the consent holder.	Agree			
<b>Fish Exclusion Device</b>					

12	<p>Prior to the exercise of this consent:</p> <ul style="list-style-type: none"> <li>(a) A fish exclusion device shall be installed, operated and maintained on the intake to ensure that fish are prevented from passing into the intake. The fish exclusion device shall be positioned to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the fish screening device;</li> <li>(b) The fish exclusion device shall be designed or supplied by a person with experience in freshwater ecology and fish screening techniques, who shall ensure that the performance criteria specified in clauses (a) and (b) of this condition are achieved, and that the device is designed in accordance with best practice, as outlined in the document Fish Screening: Good Practice Guidelines for Canterbury, NIWA Client Report 2007-092, October 2007.</li> <li>(c) Prior to the installation of the fish screen, a report, prepared by a person with experience in freshwater ecology and fish screening techniques, containing final design plans that demonstrate that the fish screen will meet the performance criteria specified in clauses (a) and (b) of this condition, and an operation and maintenance plan for the fish screen, shall be provided to Environment Canterbury, Attention: RMA Compliance and Enforcement Manager.</li> <li>(d) The fish exclusion device shall be maintained in good working order. Records shall be kept of all inspections and maintenance, and those records shall be provided to the CRC upon request.</li> </ul>	<p>Agree. It is accepted that the proposed fish screen cannot meet design criteria specified in the WP09 condition wording (S42a report 1, Appendix 6).</p> <p>Recommend splitting clause (a) into two clauses, (a) and (b), one per sentence, and re-labelling following clauses</p>			
<b>WATER USE CONDITIONS</b>					
13	<p>Water for irrigation shall only be used on or applied to land that is subject to a memorandum of encumbrance that complies with the requirements of the agreement entitled "Agreement in Relation to the Allocation of Water for Irrigation" between Meridian Energy Limited and the Mackenzie Irrigation Company Limited dated 31 October 2006.</p>	<p>Memorandum of encumbrance discussion has been held at the hearing on whether this condition serves a resource management purpose. While it appears not to, the applicants have proposed these conditions. If submitters have no objection to them and they do not appear to breach the Newbury tests then only concern would relate to any expectations that such conditions would create in terms of Environment Canterbury potentially having a responsibility to enforce conditions that have no</p>			

		Resource Management Act purpose.			
14	The consent holder shall, six months prior to this consent being exercised, provide to the Canterbury Regional Council a certificate from the Consent Holder's solicitor certifying that the memorandum of encumbrance provided for in Condition 13 is registered on the computer registers for the land shown on Plan A (Appendix A), and any other evidence of registration as the Canterbury Regional Council may require (if any).	Need Plan A from Meridian and will need to change Appendix references accordingly.			
15	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; (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.	Agree			
16	(a) The irrigation system used in association with taking water in terms of this permit shall not be used to distribute effluent, fertiliser, or any other added contaminant, unless one of the following is installed upstream of the point of addition of the effluent, fertiliser or other added contaminant: i. a reduced pressure zone device (RPZD), or ii. a pressure vacuum breaker (PVB), or iii. an air gap backflow prevention system. (b) Installation of a RPZD or a PVB shall be in accordance with section 9 (PVB) or section 12 (RPZD) of Australian/New Zealand Standard AS/NZS 2845.1 Water supply - Backflow prevention devices, Part 1: Materials, design and performance requirements, or an equivalent standard. (c) An air gap backflow prevention system shall have an unobstructed vertical air gap separation of at least twice the diameter of the inlet pipe, from the lowest point of the inlet pipe to the flood level rim of the receptacle into which it discharges. (d) Field testing and maintenance shall be carried out of an RPZD or a PVB at commissioning of the use of the system for application of effluent or fertiliser and annually afterwards, in accordance with AS 2845.3 Water supply— Backflow prevention devices, Part 3: Field testing and maintenance, or an equivalent standard. (e) An air gap backflow prevention system shall be tested at commissioning and annually afterwards. Maintenance shall be undertaken as necessary to ensure that backflow prevention is effective. (f) Installation, testing, and maintenance shall be undertaken by a suitably qualified person. A report on the annual testing shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement	Should add advice note: "Advice note  The discharge of effluent, fertiliser or any contaminant would require authorisation as a permitted activity or via a discharge permit. Contact the Canterbury Regional Council for advice on the relevant regional rules."			

	Manager, within two weeks of initial commissioning and within two weeks of each annual testing. Each report shall be accompanied with the name, qualifications and experience of the person who undertook the installation, testing or maintenance.				
<b>SPECIFIC ON-FARM MANAGEMENT CONDITIONS</b>					
<b><i>Nutrient Discharge Allowance &amp; Modelling</i></b>					
17	The consent holder shall prepare once per year, an Overseer <sup>®</sup> nutrient budgeting model report, and a report of the annual farm nutrient loading from the area of High Country Rosehip Orchards Limited (Appendix A), using the model Overseer <sup>®</sup> (Agresearch model version number 5.4.3 or later) undertaken by a person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University, or an equivalent qualification.	Agree			
18	A copy of the report prepared in accordance with condition 17 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, upon request.	Agree			
19	The consent holder may not commence irrigation under this consent unless the annual (01 July to 30 June) nutrient loading (NDA) is estimated in accordance with condition 17 to be less than 7,973 kg of nitrogen and 307 kg of phosphorus for the land shown on Plan A (Appendix A).	Needs to be "The annual (01 July to 30 June) nutrient loading (NDA) estimated in accordance with condition 17, shall be less than..." <b>Otherwise, a breach after commencement would be authorised.</b>			
20	The consent holder shall manage the property in accordance with the annual High Country Rosehip Orchards Limited Overseer <sup>®</sup> nutrient budgeting model reports as required in condition 17.	"...in accordance with... reports..." is not specific enough. Should be "... in accordance with the Overseer model inputs specified in attached Appendix ? that forms part of this consent."			

21	The NDAs shall be recalculated if there is a sale or transfer of any part, but not the whole, of the total farm area specified in Plan A, Appendix A. The recalculated NDAs shall replace the NDAs specified in condition 19. The recalculation of the NDAs shall be undertaken and certified by a person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification, and completed and provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, together with a copy of the full Parameter report, within one month of the sale or transfer. The new NDAs may be recalculated on any proportionment as long as the total of all the NDAs does not exceed the NDAs of the parent title as set out in condition 19.	This needs a further clarification to ensure that the recalculation is clearly to 'redistribute' the NDAs. Suggest add after "The recalculated NDAs..." "...shall be undertaken to accurately redistribute the NDA between the resultant properties and...".			
22	The consent holder shall maintain ongoing and complete records for High Country Rosehip Orchards in relation to the type of crop, cultivation methods, nutrient inputs to the nearest kilogram, stock movements and yields, prediction of realistic crop yields that are used to determine crop requirements, and all other inputs to the Overseer® nutrient budgeting model. Such records are to be used as inputs to the Overseer® method as described in condition 17, and shall be made available to the Canterbury Regional Council on request.	Need to replace "are to" in second sentence with "shall".			
23	<p>(a) Changes may be made to any part of the High Country Rosehip Orchards Overseer® model inputs, provided that the result of that modelling demonstrates that the NDAs, set out in condition 19, are not exceeded.</p> <p>(b) A copy of that certification plus a copy of the resultant Overseer® parameter report shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, prior to the implementation of that change.</p> <p>(c) Any changes to the High Country Rosehip Orchards Overseer® nutrient budgeting model inputs shall be recorded immediately and made available, together with the corresponding Overseer® parameter report, on request by the Canterbury Regional Council.</p> <p>(d) The Canterbury Regional Council may once each year during August require of the consent holder that a person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification provides a written certification, and the resultant Overseer® parameter report, to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, that they have modelled the change using Overseer®, and that the result of that modelling demonstrates that the NDAs are not exceeded.</p>	<p>Missing the following after "...model inputs..." "...provided that they are made by a person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification, and that person provides a written certification that they have modelled the change using Overseer® and..."</p> <p>Needed for clause (b) reference to certification.</p>			
<b>Farm Environmental Management Plan (FEMP)</b>					
24	The consent holder shall implement the on site FEMP for High Country Rosehip Orchards land which is attached as Appendix B and forms part of this consent.	No comment			

25	<p>(a) The consent holder may, without changing the objectives of the FEMP, annually review the FEMP and amend where necessary to reflect any significant land use changes.</p> <p>(b) Where the FEMP have been amended, the consent holder will provide the amended FEMP to the Canterbury Regional Council with a certificate signed by a suitably qualified person which certifies the amendments made do not change the objectives of the FEMP.</p>	<p>“significant land use changes” is not well defined but don’t consider that these two conditions are essential, therefore not critical.</p>			
26	<p>(a) The FEMP shall apply to High Country Rosehip Orchards and to any subsequent landholdings resulting from the subdivision of the area (including the partitioning of land from, or addition of land to that property holding) so long as that landholding relies on this consent.</p> <p>(b) Should any changes to the land holding(s) occur, the FEMP shall be reviewed and updated</p> <p>(c) The consent holder will provide the amended FEMP to the Canterbury Regional Council with a certificate signed by a suitably qualified person which certifies that the amendments made reflect the changes in landholding.</p>	<p>No comment</p>			
<b>Irrigation Infrastructure</b>					
27	<p>The consent holder shall design and install all new (not on the property at the time of commencement of this consent) irrigation infrastructure in accordance with the ‘Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007’ and the design and installation shall be certified in writing by a suitably qualified expert.</p>	<p>Code of practice is not written as an enforceable document, which means that this condition could not be enforced, doesn’t provide any assurance about effects and is therefore not necessary. Retention may give an impression that aspects of irrigation design can be controlled via conditions and enforced when they cannot. Therefore recommend deletion unless specific and enforceable components could be separated out and applied.</p>			
28	<p>A copy of that certification shall be provided to the Canterbury Regional Council on request.</p>	<p>See above.</p>			
29	<p>(a) All irrigation infrastructure shall be tested within 12 months of the first exercise of this consent and afterwards every five years in accordance with the ‘Irrigation Code of Practice and Irrigation Design Standards, Irrigation NZ, March 2007’ (code of practice) by a suitably qualified independent expert.</p> <p>(b) The expert shall prepare a report within two months of the testing, outlining their</p>	<p>See above.</p>			

	findings and shall identify any changes needed to comply with the code of practice. (c) Any changes needed to comply with this code of practice shall be implemented within five years from the date of the report. A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.				
30	The consent holder shall ensure that irrigation water is applied in accordance with the annual Overseer <sup>®</sup> modelling.	Agree.			
31	Irrigation shall only occur within the area identified as the Irrigation Command Area on Plan A (Appendix A) attached to this consent.	Agree. Note - will need to check correct plan/appendix reference. Needs to add "and forming part of".			
<b>Soils &amp; Farm Management</b>					
32	The consent holder shall use, where practicable, direct drilling as the principal method for establishing pastures.	Agree.			
33	The consent holder shall grass and irrigate all ploughed areas as soon as practicable following ground disturbance.	Agree.			
34	The consent holder shall ensure that stock do not have any access to any open irrigation channel.	Agree.			
35	The consent holder shall ensure that existing property boundary fences are maintained in stock proof condition.	This doesn't provide an adequate assurance that stock would be excluded from access to river beds. Location and state of existing fences is not known. Should be a clearer stock exclusion condition combined with an appropriate distance from river bed. <b>Such controls are essential if nutrient management measures are to be meaningful.</b>			
36	The consent holder shall ensure that any stored effluent is stored in a storage facility with an impermeable lining.	Agree.			
37	The consent holder shall ensure that any effluent storage facility has at least three days storage capacity.	Agree.			
38	The consent holder shall ensure that all silage is made and stored on a concrete pad which drains to an effluent collection facility.	Agree.			
39	The consent holder shall ensure that all liquor from the silage storage area is	Agree.			

	recycled to land or tankered from the site.				
<b>Fertiliser Use and Application</b>					
40	<p>(a) The consent holder shall manage and apply fertiliser in accordance with 'The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07'.</p> <p>(b) All fertiliser (organic and inorganic) applicators and spreaders shall be tested and calibrated within 12 months of the first exercise of this consent and afterwards every five years by a suitably qualified independent expert.</p> <p>(c) The expert shall prepare a report within two months of the testing, outlining their findings and shall identify any changes needed to comply with the 'The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07' (code of practice).</p> <p>(d) Any changes needed to comply with 'The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07' shall be implemented within five years from the date of the report. A copy of the report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, within three months of the report being completed.</p>	<p>This code of practice is generally not written as an enforceable document, which means that this condition could not be enforced, doesn't provide any assurance about effects and is therefore not necessary. Retention may give an impression that many aspects of fertiliser use can be controlled via a consent condition and enforced when they cannot. Therefore recommend deletion unless specific and enforceable components could be separated out and applied.</p>			
41	Nitrogen fertiliser shall not be applied to land between 31 May and 01 September in any year except for the use of nitrification inhibitors.	Agree.			
42	The consent holder shall ensure that all fertiliser brought onto the property which is not immediately applied to the land shall be covered, and all practicable measures taken to prevent the fertiliser entering waterways.				
43	If liquid fertilisers, excluding liquid effluent, are stored on-site for more than three working days, the fertiliser shall be stored in a bunded tank, at least 110% of the volume of the tank to avoid any discharge to surface or groundwater and such that it is also protected from vehicle movements.	Agree.			
44	The fertiliser filling area shall not occur within 50m from a watercourse, spring or bore.	Agree.			
45	The consent holder shall ensure that the soil Olsen P levels are maintained at or below 30.	Agree.			
46	Individual N fertiliser applications shall not be applied at levels greater than 50 kg N/ha.	Agree.			
47	The consent holder shall maintain a record of all fertiliser applications applied to the property, including fertiliser type, concentration, date and location of application, and name of fertiliser application contractor.	Agree.			
		No river water quality monitoring or river water quality triggers			

		proposed. Should be monitoring and triggers for both Ohau and Twizel rivers. Possibly could be limited to Ohau River if piezo contours accurate at scale. <b>River water quality monitoring and trigger conditions are essential.</b>			
<b>MONITORING OF HALDON (NORTHERN) ARM OF LAKE BENMORE &amp; LOWER LAKE BENMORE</b>					
48	<p>The water quality of the Haldon (Northern) Arm of Lake Benmore and Lower Lake Benmore shall be monitored as follows:</p> <p>(a) Locations: Haldon (Northern) Arm, Map reference: NZMS 260 H39:8823-3531 (NZTopo50 CA16:7828-7366) (as shown on the attached map (Appendix C) Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371 (NZTopo50 CA16:7808-6205) (as shown on the attached map (Appendix C)</p> <p>(b) Depths: depth integrated 0-10m, 25m, 50m</p> <p>(c) Water quality variables: (a) total nitrogen; (d) ammonia; (e) nitrate; (f) nitrite; (g) total Kjeldahl nitrogen; (h) total phosphorus; (i) dissolved reactive phosphorus; (j) Secchi disc depth; (k) periphyton biomass as chlorophyll <i>a</i> per square metre.</p> <p>(d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:</p> <p>(i) <math>TLc = 2.22 + 2.54 \log(\text{chlorophyll } a)</math></p> <p>(ii) <math>TLp = 0.218 + 2.92 \log(\text{total phosphorus})</math></p> <p>(iii) <math>TLn = -3.61 + 3.01 \log(\text{total nitrogen})</math></p> <p>(iv) <math>TLI = \frac{\sum(TLc + TLp + TLn)}{3}</math></p> <p>(e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.</p> <p>(f) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring lake water quality. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.</p>	Correct spelling is "Kjeldahl"			

	<p>(g) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person that demonstrates that they understand the appropriate methods to use for lake water quality sampling, including depth integrated sampling, and preservation of samples. That person shall certify in writing that each batch of samples has been sampled and preserved in accordance with generally accepted scientific methods. A copy of those certifications and the person's qualifications shall be provided to the Canterbury Regional Council on request.</p> <p>(h) The laboratory undertaking analyses shall be accredited for those analyses by International Accreditation New Zealand (IANZ) or an equivalent accreditation organisation that has Mutual Recognition Agreement with IANZ.</p> <p>(i) The results of all sampling including calculated average summer TLI shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager by 30 May each year. This shall include copies of reports from the laboratory that undertook the analyses.</p>	<p>"that" should be "who".</p>			
	<p><i>Advice Note: It is anticipated that all consent holders subject to this condition would coordinate and cooperate together to ensure that the lake water quality monitoring is undertaken and the costs of that monitoring is shared between those consent holders. The Canterbury Regional Council will provide resources to facilitate that coordination and the costs of that facilitation will be recoverable from the relevant resource consent holders as a cost of supervising and administering the resource consents. Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders.</i></p>	<p>Advice note needs clarifying: "...matter for all relevant consent holders, jointly and severally."</p>			
<p><b>TRIGGER RESPONSE CONDITION: EXCEEDANCE OF EARLY WARNING TRIGGER – HALDON (NORTHERN) ARM</b></p>					
<p>49</p>	<p>(a) If the monitoring undertaken in accordance with condition 48 shows that the average TLI for the 1 - 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), the consent holder shall prepare a report into the cause of the breach of the early warning trigger. The report shall be prepared by an expert review panel consisting of two qualified and experienced independent experts. One of the scientists is to be nominated by the Canterbury Regional Council, and the other appointed by the consent holder.</p> <p>(b) The report shall:</p>	<p>Reporting officer recommendation was for an early warning trigger of 2.5 on the basis that existing data indicates current TLI could be 2.4. <b>An early warning TLI of 2.75 for the Haldon Arm would provide for a significant WQ deterioration.</b> Refer to Second Addendum S42A of Dr Freeman.</p> <p>"experts" should be "scientists"</p>			

<p>i. determine whether the exceedence(s) are as a result of natural influences, one off events, or land use practices; and</p> <p>ii. an assessment as to whether there is likely to be a continuation of the monitored results;</p> <p>iii. be completed by 30 July following the sampling; and</p> <p>iv. be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.</p> <p>(c) No further action is to be undertaken by the consent holder, and no nutrient load reductions and investigations shall be required, if the report prepared in accordance with clauses (a) and (b) determines that after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, the cause of the breach of the early warning trigger was highly unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent, or it is unlikely that there is a trend towards exceedence of the environmental standard trigger pertaining to the Haldon (Northern) Arm of Lake Benmore monitoring site (Appendix C).</p> <p>(d) If the monitoring undertaken in accordance with condition 49 shows that the average TLI for the 1 - 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site over the period December to April is greater than 2.75 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then the property nutrient load, as specified in condition 19, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedence) under this resource consent divided by the total farm area being 500 irrigated hectares on a total farm area of 1,132 hectares for High Country Rosehip Orchards Limited land.</p> <p>(e) If the report prepared in accordance with clauses (a) and (b) determines that the early warning trigger has been exceeded because of farm land use practices, then the consent holder shall prepare a Remedial Action Plan.</p> <p>(f) The Remedial Action Plan shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedence in the early warning trigger pertaining to the Haldon (Northern) Arm of Lake</p>	<p>“is to” should be “shall”</p> <p>Change “determines” to “concludes” and add “i.e, both experts agree,”</p> <p>Add “(NDA)” after “load”.. Would be potentially useful to include a “Unless both experts agree...” clause here to avoid any possible contradiction between clauses. <b>Needs to be a compounding requirement for continuing breach e.g., “The NDA reduction shall compound on any currently reduced NDA.”</b> Change clause (e) as follows: “...if both authors of the report prepared in accordance with clauses (a) and (b) conclude that...”</p>			
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	<p>Benmore site is returned to and maintained below the average TLI of 2.75 for the 1 - 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site over the period December to April.</p> <p>(g) The Remedial Action Plan shall be prepared by a suitably qualified and experienced person using approved methods, such as Overseer®, to show that the actions to be undertaken will achieve the necessary nutrient reductions;</p> <ul style="list-style-type: none"> <li>i. If the Remedial Action Plan outlined in clause (e) is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment the Remedial Action Plan shall be deemed to comply with this condition</li> <li>ii. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be immediately implemented.</li> <li>iii. The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.</li> </ul> <p>(h) If a required reduction in nutrient load is in effect under clause (d) and monitoring for that period shows that the average TLI for the 1 – 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site over the period December to April is less than 2.75, then for the subsequent season no property nutrient load reduction shall be required under this condition, and the full NDA for the property, as specified in condition 19 shall be restored.</p>	<p>Standardise to “exceedence”? Exceedence “of”. Need to add “as soon as practicable” after “... is returned...”. Change “show” to “demonstrate”. Add “as soon as practicable” after “...reductions...”</p>			
<b>TRIGGER RESPONSE CONDITION: EXCEEDANCE OF ENVIRONMENTAL STANDARD TRIGGER – HALDON (NORTHERN) ARM</b>					
50	<p>(a) If the monitoring undertaken in accordance with condition 48 shows that the average TLI for the 1 - 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site, over the period December to April is greater than 3.0 (environmental standard trigger), the consent holder shall prepare a report into the cause of the breach of the early warning trigger. The report shall be prepared by an expert review panel consisting of two qualified and experienced independent experts. One of the scientists is to be nominated by the Canterbury Regional Council, and the other appointed by the consent holder.</p> <p>(b) The report shall:</p>	<p>Same relevant changes as suggested for Condition 49.</p>			

<p>i. determine whether the exceedence(s) are as a result of natural influences, one off events, or land use practices;</p> <p>ii. an assessment as to whether there is likely to be a continuation of the monitored results;</p> <p>iii. be completed by 30 July following the sampling; and</p> <p>iv. be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.</p> <p>(c) No further action is to be undertaken by the consent holder, and no nutrient load reductions and investigations shall be required, if the report prepared in accordance with clauses (a) and (b) determines that after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, the cause of the breach of the environmental standard trigger was highly unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.</p> <p>(d) If the monitoring undertaken in accordance with condition 49 shows that the average TLI for the 1 - 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then the property nutrient load, as specified in condition 19, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedance) under this resource consent divided by the total farm area (being 500 irrigated hectares on a total farm area of 1,132 hectares for High Country Rosehip Orchards Limited land.</p> <p>(e) If a reduction in nutrient loading is required under any part of this condition and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site over the period December to April continues to be greater than 3.0 then there shall be a further property nutrient load reduction of 15% x IPF for the subsequent irrigation season and rising to 20% for any further irrigation season.</p> <p>(f) If the report prepared in accordance with clauses (a) and (b) determines that the environmental standard trigger has been exceeded because of farm land</p>	<p>Given the 20% level of uncertainty involved in Overseer modelling and the distance of the irrigation areas from the receiving water, a reduction of 10% is unlikely to result in an appropriately rapid response to such a significant breach. <b>Consider that a 20% reduction is needed.</b></p> <p>“area under irrigation” needs to be preceded by “overall” to avoid any possible misinterpretation. <b>Needs an additional clause to ensure that it is clear that NDA reductions compound: e.g., “The NDA reduction shall compound on any currently reduced NDA.”</b></p>			
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	<p>use practices, then the consent holder shall prepare a Remedial Action Plan.</p> <p>(g) The Remedial Action Plan shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the environmental standard trigger pertaining to the Haldon (Northern) Arm of Lake Benmore monitoring site is returned to and maintained below the average TLI of 2.75 for the 1 - 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site, or the Lower Lake Benmore monitoring site, over the period December to April.</p> <p>(h) The Remedial Action Plan shall be prepared by a suitably qualified and experienced person using approved methods, such as Overseer<sup>®</sup>, to show that the actions to be undertaken will achieve the necessary nutrient reductions;</p> <ul style="list-style-type: none"> <li>i. If the Remedial Action Plan outlined in clause (e) is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment the Remedial Action Plan shall be deemed to comply with this condition</li> <li>ii. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be immediately implemented.</li> <li>iii. The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.</li> </ul> <p>(i) If a required reduction in nutrient load is in effect under clause (d) and monitoring for that period shows that the average TLI for the 1 – 10 m depth integrated samples for the Haldon (Northern) Arm monitoring site over the period December to April is less than 3.0, then for the subsequent season no property nutrient load reduction shall be required under this condition, and the full NDA for the property, as specified in condition 19 shall be restored.</p>	<p>“and the full NDA...” wording should be deleted to avoid any potential conflict with any reduction required under early warning reduction.</p>			
<b>TRIGGER RESPONSE CONDITION: EXCEEDANCE OF EARLY WARNING TRIGGER – LOWER LAKE BENMORE</b>					
51	<p>(a) If the monitoring undertaken in accordance with condition 48 shows that the average TLI for the 1 - 10 m depth integrated samples for the Lower Lake Benmore monitoring site, over the period December to April is greater than 2.8 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), and neither the Ahuriri Arm nor the Haldon Arm early warning triggers have been breached, the consent holder shall prepare a report into the cause of the breach of the early warning trigger. The report shall be prepared by an expert review panel consisting of two qualified and experienced independent experts. One of the scientists is to be nominated by the Canterbury Regional Council, and the other appointed by the consent holder.</p>	<p>Same relevant changes as suggested for conditions 49/50.</p>			

<p>(b) The report shall:</p> <ul style="list-style-type: none"> <li>v. determine whether the exceedence(s) are as a result of natural influences, one off events, or land use practices; and</li> <li>vi. an assessment as to whether there is likely to be a continuation of the monitored results;</li> <li>vii. be completed by 30 July following the sampling; and</li> <li>viii. be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.</li> </ul> <p>(c) No further action is to be undertaken by the consent holder, and no nutrient load reductions and investigations shall be required, if the report prepared in accordance with clauses (a) and (b) determines that after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, the cause of the breach of the early warning trigger was highly unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent, or it is unlikely that there is a trend towards exceedence of the environmental standard trigger pertaining to the Lower Lake Benmore monitoring site (Appendix C).</p> <p>(d) If the monitoring undertaken in accordance with condition 49 shows that the average TLI for the 1 - 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April is greater than 2.8 (early warning trigger) but does not exceed 3.0 (environmental standard trigger), then the property nutrient load, as specified in condition 19, shall be reduced by 5% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedence) under this resource consent divided by the total farm area (being 500 irrigated hectares on a total farm area of 1,132 hectares for High Country Rosehip Orchards Limited land.</p> <p>(e) If the report prepared in accordance with clauses (a) and (b) determines that the early warning trigger has been exceeded because of farm land use practices, then the consent holder shall prepare a Remedial Action Plan.</p> <p>(f) The Remedial Action Plan shall set out the methods and timeframes for</p>				
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	<p>altering and/or adapting farm land use practices to ensure that the exceedance in the early warning trigger pertaining to the Lower Lake Benmore monitoring site is returned to and maintained below the average TLI of 2.8 for the 1 - 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April.</p> <p>(g) The Remedial Action Plan shall be prepared by a suitably qualified and experienced person using approved methods, such as Overseer<sup>®</sup>, to show that the actions to be undertaken will achieve the necessary nutrient reductions;</p> <ul style="list-style-type: none"> <li>i. If the Remedial Action Plan outlined in clause (e) is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for the Haldon (Northern) Arm sub catchment the Remedial Action Plan shall be deemed to comply with this condition</li> <li>ii. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be immediately implemented.</li> <li>iii. The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.</li> </ul> <p>(h) If a required reduction in nutrient load is in effect under clause (d) and monitoring for that period shows that the average TLI for the 1 – 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April is less than 2.8, then for the subsequent season no property nutrient load reduction shall be required under this condition, and the full NDA for the property, as specified in condition 19 shall be restored.</p>				
<b>TRIGGER RESPONSE CONDITION: EXCEEDANCE OF ENVIRONMENTAL STANDARD TRIGGER – LOWER LAKE BENMORE</b>					
52	<p>(a) If the monitoring undertaken in accordance with condition 48 shows that the average TLI for the 1 - 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), and neither the Ahuriri Arm nor the Haldon Arm environmental standard triggers have been breached, the consent holder shall prepare a report into the cause of the breach of the environmental standard trigger. The report shall be prepared by an expert review panel consisting of two qualified and experienced independent experts. One of the scientists is to be nominated by the Canterbury Regional Council, and the other appointed by the consent holder.</p>	Same relevant changes as suggested for conditions 49/50.			

<p>(b) The report shall:</p> <ul style="list-style-type: none"> <li>v. determine whether the exceedence(s) are as a result of natural influences, one off events, or land use practices;</li> <li>vi. an assessment as to whether there is likely to be a continuation of the monitored results;</li> <li>vii. be completed by 30 July following the sampling; and</li> <li>viii. be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.</li> </ul> <p>(c) No further action is to be undertaken by the consent holder, and no nutrient load reductions and investigations shall be required, if the report prepared in accordance with clauses (a) and (b) determines that after considering all the relevant available information, including on-site monitoring, sub-catchment monitoring, and catchment resource consent compliance and audit reports made available by the Canterbury Regional Council, the cause of the breach of the environmental standard trigger was highly unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.</p> <p>(d) If the monitoring undertaken in accordance with condition 49 shows that the average TLI for the 1 - 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then the property nutrient load, as specified in condition 19, shall be reduced by 10% x Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area under irrigation (at the time of the exceedence) under this resource consent divided by the total farm area (being 500 irrigated hectares on a total farm area of 1,132 hectares for High Country Rosehip Orchards Limited land.</p> <p>(e) If a reduction in nutrient loading is required under any part of this condition and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April continues to be greater than 3.0 then there shall be a further property nutrient load reduction of 15% x IPF for the subsequent irrigation season and rising to 20% for any further irrigation season.</p>				
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	<p>(f) If the report prepared in accordance with clauses (a) and (b) determines that the environmental standard trigger has been exceeded because of farm land use practices, then the consent holder shall prepare a Remedial Action Plan.</p> <p>(g) The Remedial Action Plan shall set out the methods and timeframes for altering and/or adapting farm land use practices to ensure that the exceedance in the environmental standard trigger pertaining to the Lower Lake Benmore monitoring site is returned to and maintained below the average TLI of 2.8 for the 1 - 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April.</p> <p>(h) The Remedial Action Plan shall be prepared by a suitably qualified and experienced person using approved methods, such as Overseer<sup>®</sup>, to show that the actions to be undertaken will achieve the necessary nutrient reductions;</p> <ul style="list-style-type: none"> <li>iv. If the Remedial Action Plan outlined in clause (e) is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for the Haldon (Northern) Arm sub catchment the Remedial Action Plan shall be deemed to comply with this condition</li> <li>v. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be immediately implemented.</li> <li>vi. The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.</li> </ul> <p>(i) If a required reduction in nutrient load is in effect under clause (d) and monitoring for that period shows that the average TLI for the 1 – 10 m depth integrated samples for the Lower Lake Benmore monitoring site over the period December to April is less than 3.0, then for the subsequent season no property nutrient load reduction shall be required under this condition, and the full NDA for the property, as specified in condition 19 shall be restored.</p>				
53	The lapsing date for the purposes of section 125 shall be 10 years from the date of the commencement of this consent.				
<b>Advice Notes</b>					
	<p>The CRC may, once per year, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purpose of:</p> <ul style="list-style-type: none"> <li>(b) Dealing with any adverse effect on the environment which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage; or</li> <li>(c) Requiring the adoption of the best practicable option to</li> </ul>	Review condition must not be an advice note. Needs to be a full condition. CRC needs to be written in full. "each year" needs to be added after the word "November".			

	remove or reduce any adverse effect on the environment.				
		<p><i>Comment:</i> As referenced in the s42A report (Report 19A by Yvette Rodrigo), there are Transpower lines that cross the irrigation area. The condition below is recommended to protect these lines from the use of water for irrigation.</p> <p><i>Recommended Condition:</i> The consent holder, in relation to any Transpower structures or Transpower transmission lines:</p> <p>a. Prevent the spray of water onto conductors by adjusting nozzles, turning jets off when the irrigator boom passes by the towers and keeping the irrigator boom away from conductors.</p> <p>Ensure the placement of structures, buildings, planting of trees or encroaching vegetation comply with the set back distances described in the New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001).</p>			

**APPENDIX A**

**PLAN A: IRRIGATION COMMAND AREA**

**APPENDIX B**

**FEMP for High Country Rosehip Orchards Limited**

**APPENDIX C**

**PLAN of Haldon (Northern) Arm & Lower Lake Benmore surfacewater WQ Monitoring Sites**