

Conditions for water permit CRC042661 (Grays Hills Station Ltd)				
Status of Consent: new				
Catchment: Haldon				
Expiry date sought - 30 th of April 2025.				
No.	Proposed Condition	ECan Comments	Meridian Comment	Applicant further comment
1	Water shall only be taken from galleries I38/0057 and I38/0058 located at or about map reference NZMS I38:050-617 and NZMS I38: 081-642 at the property referred to as Gray Hills Station	Agreed		
2	<p>(a) Water for irrigation shall only be used between 1 September and the following 30 April and only in accordance with the maximum rate, daily volume (being from 12.00am to 12.00am am the following day) and annual volume (measured between 1 September and the following 30 April) set out in Table A.</p> <p>(b) Water taken in accordance with allocated in Table A of Condition (x) shall be used only for the spray irrigation of 190 hectares for pasture and on the area of land shown on attached Plan CRC042661.</p> <p>(c) <u>There shall be a 5 metre setback from any permanently flowing waterways within the irrigation area marked on Plan CRC042661</u></p> <p>(d) 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 the 31st of October 2006.</p> <p>(e) 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 2(d) is registered on the computer registers for the land shown on Plan "CRC042661" and any other evidence of registration as the Canterbury Regional Council may require (if any).</p>	<p>Don't see need for table as no increase in volume.</p> <p>Suggest clarification on stock type under irrigation, as follows</p> <p>Water taken in accordance with allocated in Table A of Condition (3) shall be used only for the spray irrigation of pasture and crops for grazing sheep and beef of-steek to irrigate 190 hectares on the area of land shown on attached Plan CRC042661."</p> <p>No conditions proposed that specify minimum setback distances of irrigation areas from surface water bodies. These should be specified in a condition e.g., minimum of 20 metres.</p> <p>Reference to condition number not defined in (b).</p> <p>Suggest parts c and d included as separate conditions. - refer to Paragraph 152 (c) of the addendum s42A report of Susannah Vesey about concern in terms of expectations of Environment Canterbury enforcing this.</p>		<p>Stock type has been defined further.</p> <p>In accordance with MIC agreement/MEL derogation approval.</p>
3	<p>The consent holder shall take all practicable steps to:</p> <p>a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and</p>	Agreed		

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	<p>b) Avoid leakage from pipes and structures; and</p> <p>c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.</p>			
4	<p>Whenever the flow (expressed in litres per second) in Grays River, as estimated by the Canterbury Regional Council based on the mean flow for the previous day (midnight to midnight) at the recorder located at Days Bridge (map reference NZMS 260 I38:037-601):</p> <p>(a) is equal or greater than 1,850 litres per second the maximum rate at which water is taken, shall not exceed 100 litres per second.</p> <p>b) falls below the flow shown on the horizontal axis of the annexed graph, then the rates of abstraction permitted in terms of this permit shall not exceed those shown as corresponding on the vertical axis of the annexed graph.</p> <p>(b) falls below 1,500 litres per second, the taking of water in terms of this permit shall cease.</p> <p>OR provided that the Canterbury Regional Council, in consultation with a Water Users Committee representing, but not limited to, surface water and hydraulically connected groundwater users, who are subject to the above minimum flow, has determined upon a water sharing regime which limits the total daily abstraction from the resource as referred to in (a) and (b) above then the taking of water in accordance with that determination shall be deemed to be in compliance with condition <5> of this consent.</p>	<p>Recommend that the flow graph and this condition adjust rate between the full allocation block of 1500 l/s to 2000l/s. Refer to s42a report 2A for further details.</p>		<p>ECan and the applicant's new consultant did not agree with the condition proposed by Begley. Further discussions have occurred with AN Hope (other stream user) and this condition has been developed which is also considered to meet the requirements of ECan and the WCWARP. 1850 L/s has been determined based on 1500l/s plus applicants 100l/s and AN Hope 250l/s.</p> <p>Please refer to comment on the Hope consent</p>
5	<p>The consent holder shall, before the first exercise of this consent at the point of take:</p> <p>a.</p> <p>(i) 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 [specify] is measured; 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 (3) and (4(a))) data of water taken as specified in clause (b) (i), or which is telemetered, as specified in clause (b)(ii).</p> <p>b. The water meter and recording device(s) shall be set to wrap the data from the measuring device(s) such that</p>	<p>Refer Appendix 6, Introductory s42A report and the addendum s42A report of Susannah Vesey, paragraphs 135-142 and Appendix 3.</p> <p>I note there is no requirement for a straight pipe to be installed in this condition.</p> <p>I understand that the MEL/MIC agreement may have had a metering condition included, but I had understood that MEL were happy with this being amended as long as it still had the same intent.</p>		<p>In accordance with MIC agreement/MEL derogation approval.</p>

	<p>the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and shall:</p> <p>(i) store the entire season's data in each 12 month period from 1 July to 30 June in the 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>(ii) 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 likely to retain 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 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 5%.</p>			
6	<p>(a) The water meter installed in accordance with Condition <5> shall be an electromagnetic or ultrasonic meter; or</p> <p>(b) The consent holder shall, before 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 system, to allow the Canterbury Regional Council to conduct independent measurements.</p>	Agreed		
7	<p>Within one month of the installation of the measuring or recording device(s), specified in conditions <5> 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:</p> <p>(a) the measuring and recording device(s) is installed in accordance with the manufacturers specifications; and</p>	Agreed		

	(b) data from the recording device(s) can be readily accessed and/or retrieved in accordance with clauses (b) and (c) of condition <5>.			
8	At five 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 <5> and (b) the tamper-proof electronic recording device is operating as specified in condition <5>	Agreed		
		No landscape conditions have been provided by the applicant. Please refer to evidence of Chris Glasson for recommended mitigation measures (paragraph 149 of Report 5 and paragraph 37 of Chris Glasson's addendum s42A report).		
	<u>For the purposes of interpretation of the following conditions the Grays Hill Station shall be defined as the areas in certificates of title and Pastoral Lease numbers cb88417,CB150/52,CB164/45-7,CB30A/658,CB45D/54,CB512/36,CB523/255, which total 21,513</u>		<u>Note title numbers and areas have been done by computer search and will be verified by applicant</u>	
9	Nutrient Loading: The consent holder shall prepare once per year <u>and not less than one month prior to the commencement of the irrigation season</u> , an Overseer® nutrient budgeting model report, and shall prepare, at least once per year, a report of the annual farm nutrient loading for the Grays Hills Station using the model Overseer® (AgResearch model version number 5.4.3 or later	When exactly do these have to be done? Need to specify dates.		
10	A copy of the report prepared in accordance with condition xx shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, upon request.	Condition number? Condition xx = 9?		<u>Agreed – but preference to leave final conditions numbering to be determined on grant</u>
11	The consent holder shall not commence annually irrigation under this consent unless the annual (1 July to 30 June) nutrient loading (the nutrient discharge allowances (NDAs))as estimated in accordance with condition XX from Grays Hills Station shall not exceed 64,114 kg of nitrogen and 1,374 kg of phosphorus. The NDAs shall be complied following the first full year (1 July to 30 June) of irrigation development.	Essential to specify and define the property “Grays Hills Station” by reference to an area (X ha), legal description and/or a map, otherwise there is a risk that authorised nutrient load would be uncertain The first clause of the proposed condition only requires compliance for commencement to occur, i.e., subsequent compliance would not be required. This is not appropriate. The condition should require ongoing compliance with the NDA. Needs to be “The annual (01 July to 30 June) nutrient loading (NDA) estimated in		<u>The condition requires compliance and verification annually</u>

		<p>accordance with condition X, shall not exceed...”</p> <p>The final clause appears to be an attempt to broaden the compliance requirement but is missing some words and is not clear.</p>		<p><u>Not opposed to this wording</u></p> <p><u>Do not understand. There is no attempt to broaden wording.</u></p>
12	<p>Overseer Modelling:</p> <p>Where Overseer, or Overseer modelling, is referred for the purposes of determining compliance with the NDA limits associated with activities on the property it shall undertaken by an independent person with an Intermediate or Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification.</p>	<p>Don't consider that the three day intermediate course is adequate. Should require the more intensive Advanced Certificate. Majority of fertiliser representatives have this qualification and an increasing number of agricultural consultants.</p>		
13	<p>Farm Environmental Management Plan</p> <ol style="list-style-type: none"> 1. The Farm Environmental Management Plan prepared for the Grays Hills Station and supplied to Environment Canterbury on an annual basis within two months of commencement of the current irrigation season 2. The consent holder shall implement, and update annually the Farm Environmental Management Plan (FEMP) for Grays Hills Station. The FEMP shall include <ol style="list-style-type: none"> (b) Verification of compliance with NDA's by farm nutrient modelling using the model Overseer® (AgResearch model version number 5.4.3 or later). (c) When undertaking the modelling outlined in clause (b), the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station. (d) Implementation of Mandatory Good Agricultural Practices (“MGAPS”) and requirements to manage in accordance with the Grays Hills Station Overseer® model inputs specified in the attached Appendix A <u>of the FEMP</u> – Grays Hills Station Overseer® parameter report. Appendix A forms part of this consent. (e) A property specific environmental risk assessment (including a description of the risks to water quality arising from the physical layout of the property and its operation which are not factored in as an Overseer parameter) prepared by a suitably qualified person which identifies any farm specific environmental risks along with measures to mitigate the farm specific environmental risks. (f) A requirement to review the risk assessment if there are any significant changes in land use practice 3. Detailed records shall be maintained of fertilizer application rates, types of crops (including winter feed/forage crops), cultivation methods, stock units by 	<p>Condition is missing some wording. It appears to be some form of statement rather than a requirement. A final FEMP should be submitted prior to making a decision.</p> <p>A FEMP including verification of NDA compliance is not the same as an actual requirement to comply with the NDA.</p> <p>As above.</p> <p>No Appendix A provided.</p> <p>Should be a person “with the qualifications</p>		<p><u>Final FEMPS have been sent to Ecan: Com: Phillips - Warnock</u></p> <p><u>Applicant thought that with difficulties in opening and</u></p>

	<p>type, breed and age, prediction of realistic crop yields that are used to determine crop requirements and all other inputs to the Overseer nutrient budgeting model.</p> <p>4. A report based on Overseer® modelling shall be provided within one month of completion of the Overseer modelling by the <u>person with the qualifications described</u> described in condition 13 and no later than two months prior to the start of the next irrigation season to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager. The consent holder shall supply to the Canterbury Regional Council all model inputs relied upon for the annual Overseer® modelling.</p> <p>5. Changes may be made to Grays Hills Station Overseer® model inputs, provided that written certification is provided that the change is modelled using Overseer®, and that the result of that modelling demonstrates that the NDAs are not exceeded.</p> <p>6. 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>described...".</p> <p>The full Overseer output and input reports should be provided not a report "based on Overseer modelling". These should include the "Current farm" calculated total N and total P leaching/runoff.</p> <p>Not clear who can undertake this certification. Condition X may not apply.</p> <p>Advisory note condition references appear to be incorrect.</p> <p>Not clear why this is needed. Conditions should allow for any change provided that the NDA is complied with and annual Overseer modelling is carried out.</p>		<p><u>reading Overseer that Ecan wanted a report from the person in 13. We're happy to provide whatever form Ecan wants</u></p> <p><u>Do not see issue – 13 applies to all references to Overseer</u></p> <p><u>Agreed and delete</u></p>
<p>14</p>	<p>Fertiliser</p> <p>1. Fertiliser shall be managed and applied in accordance with 'The Code of Practice for Nutrient Management (With Emphasis on Fertiliser Use) NZFMRA 07' or any subsequent updates.</p> <p>2. The consent holder shall keep a record of all fertiliser applications applied to the property, including fertiliser type, concentration, date and location of application, climatic conditions, mode of application and any report of the fertiliser contractor regarding the calibration of the spreader.</p> <p>3. For land based spreading of fertiliser an independent fertiliser spreading contractor shall be used to spread any fertiliser on the property except as provided for by clause (b) below.</p> <p>(a) Where an independent fertiliser spreading contractor is used the consent holder shall keep a record of the contractor used which can be supplied to the Canterbury Regional Council upon request.</p> <p>(b) Where the applicant's own fertiliser spreaders are used, the consent holder shall test and calibrate the fertiliser spreaders at least annually, and every 5 years the fertiliser spreader will be certified by a suitably qualified person in accordance with 'The Code of Practice for Nutrient Management (With</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> <p>Not clear what use could be made of "a record of the contractor".</p>		<p><u>Fertiliser clause to be read as a whole. It has specific controls but in addition this overarching Code control provides for best overall practices to be adopted – as they may be developed from time to time.</u></p> <p><u>The issue was to avoid requirement for calibration to occur for every separate spreading operation – where it is not within applicant's control to request calibration.</u></p> <p><u>Subclause 2 requirements for record keeping and calibration record the information. Ecan may wish this information to be supplied upon request</u></p>

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 # for the purposes of this consent "Significant changes" constitutes a major change in the stock ratios between sheep, cattle, and deer or a major change in the farming systems for the property. . For example going from extensive sheep and beef farming to dairy farming or cropping. It does not include changes in stock numbers as would be expected to deal with inter seasonal variations arising from climatic conditions or changes in stocking rates due to market demand.¶

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	<p>Emphasis on Fertiliser Use) NZFMRA 07' or any subsequent updates and the results of testing shall be provided to the Canterbury Regional Council upon request.</p> <p>4. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September in any year except for the use of nitrification inhibitors</p> <p>5. All fertiliser brought onto the property which is not immediately applied to the land is stored in a covered area that incorporates all practicable measures to prevent the fertiliser entering waterways.</p> <p>6. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.</p> <p>7. If liquid fertilisers, excluding liquid effluent, are stored on-site for more than three working days, the consent holder shall ensure that the fertiliser is 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.</p> <p>Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.</p>			
<p>15</p>	<p>Irrigation Infrastructure</p> <p>1. The consent holder shall ensure that all new (not on the property at the time of commencement of this consent) irrigation infrastructure is designed and certified by a suitably qualified independent expert holding National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design.</p> <p>(a) Copies of certified design documents shall be provided to the Canterbury Regional Council upon request.</p> <p>(b) 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>(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 code of practice.</p> <p>(d) 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</p>	<p>Issued by who? NZWETA? What certified design? Certified by who?</p> <p>This 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> <p>Why not the person referred to above?</p>		<p><u>NZQA</u></p> <p><u>This clause provides a cross check on water efficiency requirements in that the certification parameters of the design could not be signed off unless the irrigation "as built" structures meet the efficiency parameters – Applicants consider it appropriate that a check within first 12 months should be a condition</u></p>

	<p>report being completed.</p> <p>2. If existing irrigation infrastructure is being used, the consent holder shall obtain an evaluation report prepared by a suitably qualified person, on the following terms:</p> <p>(a) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.</p> <p>(b) This report shall be obtained within three months of the first exercise of the consent.</p> <p>(c) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.</p> <p>A copy of the report shall be forwarded to the Canterbury Regional Council within 3 months of the report being completed.</p>			
16	<p>Fertigation:</p> <p>1. If the irrigation system used in association with taking water in terms of this permit is to be used to distribute effluent, fertiliser or any other added contaminant, then one of the following shall be installed upstream of the point of addition of the effluent, fertiliser or other added contaminant:</p> <p>i. a reduced pressure zone device (RPZD), or</p> <p>ii. a pressure vacuum breaker (PVB), or</p> <p>iii. an air gap backflow prevention system.</p> <p>2. 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.</p> <p>3. 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.</p> <p>4. 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.</p> <p>5. An air gap backflow prevention system shall be tested at commissioning and annually afterwards. Maintenance</p>	Agree		

	<p>shall be undertaken as necessary to ensure that backflow prevention is effective.</p> <p>6. Installation, testing and maintenance shall be undertaken by a certified irrigation evaluator. A report on the annual testing shall be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement 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.</p> <p><i>Advice note</i></p> <p><i>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.</i></p>			
17	<p>Subdivision</p> <p>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 Appendix [should be Appendix A]*. The recalculated NDAs shall replace the NDAs specified in condition 12. The recalculation of the NDAs shall be undertaken and certified using Overseer, 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.</p>	<p>No Appendix A provided.</p> <p>Condition 12 does not specify the NDA.</p> <p>Suggest add after "The recalculated NDAs..." "...shall be undertaken to accurately redistribute the NDA between the resultant properties and...". Also need to add: "The new NDAs may be recalculated on any <u>apportionment</u>, as long as the total of all the NDAs does not exceed the NDAs of the parent title as set out in condition X.</p>		<p><u>Agreed to altered wording</u></p>
18	<p>Soil Management</p> <p>(a) The consent holder shall use, where practicable, direct drilling as the principal method for establishing pastures; and</p> <p>(b) On the irrigation area the consent holder shall, where practicable, sow and irrigate all cultivated areas as soon as possible following ground disturbance.</p>	<p>Agree</p>		
19	<p>SUB-CATCHMENT SURFACEWATER MONITORING AND MITIGATION</p> <p>The water quality of the Grays River shall be monitored <u>within 6 months of first exercise of consent</u> as follows:</p> <p>(a) Location:</p> <p>Map reference: I38:100-657 co-ordinates immediately upstream of all irrigation takes on Grays River</p> <p>Map reference: I38: 033-602 co-ordinates downstream of the discharge</p> <p>Note: Unless otherwise agreed the coordinates for Grays River monitoring shall be as specified – but</p>	<p>Needs to clearly state when this should start.</p> <p>A map should be provided to show locations. Ideally map reference s should also include current NZTopo map references.</p> <p>Don't consider that a secondary approval is appropriate, but an alternative approach would be to state "at or about" to give some flexibility. Locations should be specific to the irrigation areas.</p>		<p><u>Map is in the FEMP and has been supplied</u></p>

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	<p>provided the three characteristics of the monitoring points are adhered to (being upstream of all intakes; downstream of all intakes; and the Swamp receiving environment) then within those parameters the consent holder may vary the actual coordinates with the prior agreement of Ecan so as to more appropriately monitor the localised river effects arising from the exercise of this take consent</p> <p>(b) Water quality variables to include: (a) Dissolved inorganic nitrogen (b) dissolved reactive phosphorus; (c) dissolved oxygen (d) conductivity (e)turbidity (f)Water Temperature (g) periphyton biomass as chlorophyll a per square metre;(h) ecoli</p> <p>(c) This monitoring may be carried out on an individual basis, or may be prepared in collaboration with other consent holders, or on a collective basis by a suitable independent body appointed by all relevant consent holders in the sub catchment.</p> <p>(d) Frequency of monitoring: Quarterly during the months of November, February, May and August in each year.</p> <p>(e) Methods: The methods of sampling and analysis shall be those that are generally accepted by the scientific community as appropriate for monitoring river water quality and periphyton biomass. The methods of sampling shall be documented and made available to the Canterbury Regional Council on request.</p> <p>(f) The water quality monitoring shall be undertaken by a suitably qualified and/or experienced person who demonstrates that they understand the appropriate methods to use for surface water quality sampling, including 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>(g) 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>The results of all sampling 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>Monitoring should be undertaken monthly between 1 December and 30 April with a minimum of three weeks between sampling. Monitoring during November and August is unlikely to be the appropriate time to identify possible adverse effects on water quality. Averaging results over a 12 month period would mask summer adverse effects.</p>	<p><u>This condition is not intended to mask effects – but is designed to record and monitor long term trends in surface water quality.</u></p> <p><u>The monitoring is not designed to record and monitor a particular spike generated following a long drought or significant rainfall but is to safeguard against any long term reduction in acceptable water quality.</u></p>
20	<p>The pre – irrigation monitoring shall be carried out in the full year prior to commencement of irrigation using the</p>	<p>What pre-irrigation monitoring?</p>	<p><u>... sets out the methodology and what is to be monitored .</u></p>

	methodology set out above to determine the environmental trigger levels for condition 21 which shall either be the trigger levels set out below or the pre-irrigation DIN/DRP levels whichever is the higher.	Where is this specified? Are some proposed conditions missing or is this left over from an earlier conceptual approach?		<u>Want to avoid repetition of all of the parameters above</u>
21	<p>TRIGGER RESPONSE CONDITION: EXCEEDANCE OF SURFACE WATER EARLY WARNING TRIGGER – GRAYS RIVER</p> <p>(a) If the monitoring undertaken in accordance with condition 20 shows that the average sample result for any of the two Grays River monitoring sites located at I38:100-657 and I38: 033-602 (as shown on the attached map (Appendix E), over the annual period (November to August test results as above) is greater than 0.14 mg/l of DIN; or 0.006 mg/l DRP; or 90 mg chl <i>a</i>/ m² (early warning trigger) but does not exceed 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl <i>a</i>/ m² (environmental standard trigger),(OR the pre-irrigation monitoring shows that the DIN/DRP levels are higher than the ANZECC guidelines then those pre-irrigation actual annual average sample results shall be substituted for the trigger levels) the consent holder shall prepare a report into the cause of the breach of the early warning trigger (or any exceedence of the pre-irrigation sample results, as the case may be). The report shall be prepared by an expert review panel consisting of two qualified and experienced independent scientists. One of the scientists shall be nominated by the Canterbury Regional Council, and the other shall be appointed by the consent holder.</p> <p>(b) The report shall:</p> <ol style="list-style-type: none"> include the experts' conclusion on whether the exceedence(s) were as a result of natural influences, one off events, or in whole or part by nutrient loss associated with the irrigation authorised by this consent; and include an assessment as to whether there is likely to be a continuation of the monitored results; be completed by 30 July following the sampling; and be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling. <p>(c) If the authors of the report prepared in accordance with clauses (a) and (b) conclude, 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, that the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by</p>	<p>See above comments re the need for summer rather than annual average.</p> <p>What pre-irrigation monitoring? Would be inappropriate to use observed nutrient concentrations from one 12 month unknown sampling programme..</p> <p>Should clarify "If both authors of the report..."</p>		<p><u>Defined</u></p> <p><u>It specifies the plural – if only one concludes then the applicant is not meeting condition</u></p>

<p>nutrient loss associated with the irrigation authorised by this consent, or if the report concludes that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the Grays River monitoring sites, then no further action needs to be undertaken by the consent holder, and no nutrient load reductions and investigations shall be required, if.</p> <p>(d) If the monitoring undertaken in accordance with condition 20 shows that the average sample result for any of the two Grays River monitoring sites, located at I38:100-657 and I38: 033-602 (as shown on the attached map (Appendix E), over the period December to April is greater than 0.14 mg/l of DIN; or 0.006 mg/l DRP; or 90 mg chl <i>a</i>/ m² (early warning trigger) but does not exceed 0.18 mg/l of DIN; or 0.007 mg/l DRP; or 120 mg chl <i>a</i>/ m² (environmental standard trigger), then the property nutrient load (NDA), 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 total authorised irrigation area developed for irrigation at the time of the exceedance under this resource consent divided by the total farm area (being <u>190</u> hectares on a total farm area of 21,900 ha)</p> <p>(e) Unless the experts conclude that the exceedance was caused by an event or activity other than nutrient loss associated with the irrigation authorised by this consent or if the experts conclude that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the Grays River monitoring sites, 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 exceedance in the early warning trigger pertaining to the Grays River monitoring site, is returned <u>as soon as practicable</u> to and maintained below the average sample results of 0.14 mg/l of DIN; or 0.006 mg/l of DRP; or 90 mg chl <i>a</i>/ m² (early warning trigger) for the Grays River 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 <u>Overseer or an equivalent method to demonstrate</u> that the actions to be undertaken will achieve the necessary nutrient reductions <u>as soon as practicable</u>;</p> <p>i. If the Remedial Action Plan outlined in clauses (e) and (f) is prepared in collaboration with other</p>	<p>No Appendix E provided.</p> <p>Needs to be a compounding requirement for continuing breach e.g., "The NDA reduction shall compound on any currently reduced NDA."</p> <p>Should be ..."both conclude..."</p> <p>Need to add "as soon as practicable" after "... is returned..."</p> <p>Correct period - December to April, but doesn't match earlier proposed period.</p> <p>"approved" should be deleted and the sentence changed to "...using Overseer or an equivalent method..." Change "show" to "demonstrate". Add "as soon as practicable" after "...reductions..."</p> <p>Needs a condition number.</p>		<p>Comment as above</p> <p>Agreed see tracked changes</p> <p>Should record full year period</p> <p>See tracked changes</p>
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	<p>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</p> <p>ii. Any actions required by the Remedial Action Plan shall be incorporated into the consent holders FEMP. The amended FEMP shall be immediately implemented.</p> <p>iii. The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.</p> <p>If a required reduction in nutrient load is in effect under clause (d) and monitoring for that period shows that the average sample results for the Grays River monitoring site over the period December to April is less than 0.14 mg/l of DIN; or 0.006 mg/l of DRP; or 90 mg chl a/ m2 (early warning trigger), then for the subsequent season no property NDA reduction shall be required under this condition.</p>			
		<p>No environmental standard trigger condition.</p>		
<p>22</p>	<p>Monitoring of Haldon (Northern)Arm of Lake Benmore and Lower Lake Benmore</p> <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 F)</p> <p>Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371 (NZTopo50 CA16:7808-6205) (as shown on the attached map (Appendix F)</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) chlorophyll a.</p> <p>(d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations: (i) $TLc = 2.22 + 2.54 \log(\text{chlorophyll } a)$ (ii) $TLp = 0.218 + 2.92 \log(\text{total phosphorus})$ (iii) $TLn = -3.61 + 3.01 \log(\text{total nitrogen})$ (iv) $TLI = \frac{\sum(TLc + TLp + TLn)}{3}$</p> <p>(a) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three</p>	<p>Needs to clearly state when this should start.</p> <p>No Appendix F provided.</p> <p>Correct spelling is "Kjeldahl"</p> <p>Condition numbering error, (a) should be (e)...</p>	<p><u>From commencement of consent</u></p> <p><u>From commencement of consent</u></p> <p><u>agreed</u></p>	

	<p>weeks between sampling.</p> <p>(b) 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> <p>(c) 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>(d) 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>(e) 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>			
23	<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.</i></p> <p><i>Any non-compliance with water quality monitoring requirements would be a matter for all relevant consent holders.</i></p>	<p>This should be an advice note to the previous condition and not have a condition number. Advice note needs clarifying: "...matter for all relevant consent holders, jointly and severally."</p>		<p>Refer to earlier comments on joint and several liability</p>
24	<p>TRIGGER RESPONSE CONDITIONS</p> <p>(a) If the monitoring undertaken in accordance with condition (xx) shows that the average TLI for the 1 - 10 m depth integrated samples for the Haldon (Northern) Arm site over the period December to April is greater than 2.75 (early warning trigger) but</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. An early warning TLI of 2.75 for the</p>		

	<p>does not exceed 3.0 (environmental standard trigger), then the property nutrient loads, as specified in condition (xx), shall be reduced temporarily by 5% x the Irrigation Proportion Factor (IPF) for the irrigation season subsequent to the monitoring period. The IPF shall be the proportion of the area developed for irrigation under this resource consent divided by the total farm area being 190 hectares on a total farm area of 21,900 ha</p> <p>(b) If the monitoring undertaken in accordance with condition (28) shows that the average TLI for the 1 - 10 m depth integrated samples over the period December to April is greater than 2.75 but does not exceed 3.0, then a report into the cause of the breach of the early warning trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.</p> <p>(c) 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 monitoring site over the period December to April continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further property nutrient load reduction of 5% x IPF for the subsequent irrigation season.</p> <p>(d) The above nutrient load reductions and investigation (condition 29 (a)-(c)) shall not be required if a two person expert panel with one expert nominated by the Canterbury Regional Council both conclude after considering all the relevant available information including catchment resource consent compliance, FEMP compliance monitoring pertaining to this consent and audit reports made available by the Canterbury Regional Council, that the cause of the breach of the early warning trigger was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.</p> <p>(e) If a required reduction in nutrient load is in effect under this condition and monitoring for that period shows that the average TLI for the 1 – 10 m depth integrated samples for the monitoring site over the period December to April is less than 2.75, then for the subsequent season the full NDA for the property,</p>	<p>Haldon Arm would provide for a significant WQ deterioration. Refer to Second Addendum S42A of Dr Freeman.</p> <p>There is no condition 28. Needs to refer to both monitoring sites.</p> <p>Condition number reference incorrect.</p> <p>Condition number reference incorrect. Condition number reference incorrect. Needs to refer to both monitoring sites. Reference to condition 17 is incorrect. Condition number reference incorrect.</p> <p>Condition number reference incorrect.</p>		
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<p>as specified in condition (17) shall be restored.</p> <p>(f) If the monitoring undertaken in accordance with condition (28) 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 (17), 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 authorised for irrigation under this resource consent divided by the total farm area, as specified in Appendix C.</p> <p>(g) If the monitoring undertaken in accordance with condition (28) shows that the average TLI for the 1 - 10 m depth integrated samples over the period December to April is greater than 3.0 for either the Haldon (Northern) Arm or the Lower Benmore monitoring sites, then a report into the cause of the breach of the environmental standard trigger shall be prepared by a person with an appropriate post-graduate science qualification, by 30 July following the sampling. A copy of this report shall be provided to the Canterbury Regional Council Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.</p> <p>(h) 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>(a) The above nutrient load reductions and investigation (condition 30 (a)-(c)) shall not be required if a two person expert panel with one expert nominated by the Canterbury Regional Council both agree that the cause of the breach of the environmental standard was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent. If a required reduction in nutrient load is in effect under this condition and monitoring for that period shows that the average TLI for the 1 – 10 m depth integrated samples for the Haldon (Northern) Arm</p>	<p>Condition number reference incorrect.</p>		
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	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.			
25	The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, shall be informed immediately on first exercise of this consent by the consent holder.	Agreed		
26	The Canterbury Regional Council may, once per year, on any of the last 5 working days of March or July serve notice of its intention to review the conditions of this resource consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the resource consent and which it is appropriate to deal with at a later stage, including (a) any cumulative adverse effect on a waterway arising from abstractions; and amending the flow in the Station Stream and tributaries at which abstraction is required to be reduced or discontinued as set out in condition 5.	Agreed		
27	The lapsing date for the purposes of section 125 shall be [between 5 years and 5 years three months, date set for each quarter].	From when?		

Table A – Maximum Rates & Volumes

Year	Maximum rate of abstraction (litres / second)	Maximum Daily Volume (cubic metres / day)	Maximum Annual Volume (cubic metres / year)
1 September 2009 to 30 April 2010	100 l/s	8,640m ³ /day	1,140,000 m ³ /annum
1 September 2010 to 30 April 2011	100 l/s	8,640m ³ /day	1,140,000 m ³ /annum
1 September 2011 to 30 April 2012	100 l/s	8,640m ³ /day	1,140,000 m ³ /annum
1 September 2012 to 30 April 2013	100 l/s	8,640m ³ /day	1,140,000 m ³ /annum
1 September 2013 to 30 April 2014 and every year thereafter	100 l/s	8,640m ³ /day	1,140,000 m ³ /annum

Plan "CRC042661"

