

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

an application by **Classic Properties Limited**  
filed under **CRC070406** for a water permit to  
take and use surface water from Tekapo Canal  
or Tekapo Stilling Basin for spray irrigation of up  
to 234 hectares of crops and pasture at  
Maryburn Station, Tekapo-Twizel Road (West of  
State Highway 8).

---

**FINAL REPORT AND DECISION OF HEARING COMMISSIONERS PAUL ROGERS,**

**DR JAMES COOKE AND EDWARD ELLISON**

PART B - SITE SPECIFIC DECISION

---

## 1 INTRODUCTION

---

- 1.1 This is the final decision on application CRC070406 by **Classic Properties Limited** (the applicant). This decision follows and should be read in combination with our Interim Decision on this applications dated 23 March 2012.

## 2 INTERIM DECISION

---

- 2.1 In our Interim Decision, we concluded that we required further information from the applicant to enable the decision to be finalised and consent issued with conditions. In particular, we directed that the applicant provide the following additional information:
- (a) A recalculated Nutrient Discharge Allowance and revised Farm Environmental Management Plan for Maryburn Station, excluding irrigation on the area proposed under CRC063106.; and
  - (b) A plan providing the location on the applicant's property of the remaining 35 ha of border dyke irrigation is to be undertaken pursuant to CRC011554, with the applicant to confirm that the part use does not give rise to any resource management issues.
- 2.2 In relation to the first issue, before we could impose any environment monitoring conditions for this consent, we needed to address the issue of nutrient discharge allowance (NDA). The FEMP for Classic Properties contained an NDA and OVERSEER output estimates based on all consents being granted, that is, CRC070406 (this application) and CRC063106 which we have declined. We therefore requested a new nominated NDA and OVERSEER output based on the effects of CRC070406 alone (as well as Classic Properties existing consents not affected by these applications). In other words we required an NDA with the modelled effects of CRC063106 excluded, but the effects of existing dryland farming on that area included. We suggested that it should be the OVERSEER output for Classic Properties based on irrigation of CRC070406 plus 10%, but requested input from the applicant to provide us with this information.
- 2.3 In relation to the second issue, based on the information provided there was uncertainty as to the precise location of the remaining 35 ha of border dyke irrigation on the applicant's property. We therefore sought further information from the applicant on this issue.

## 3 APPLICANT'S RESPONSE

---

- 3.1 In response to our Interim Decision, the applicant provided a letter from Mr Ewan Chapman, along with a revised Farm Environmental Management Plan for Maryburn Station, including a recalculated NDA

### Revised FEMP

- 3.2 In accordance with our direction, the revised FEMP excluded the proposed area of irrigation under consent CRC063106, which has been declined. In addition to the matters discussed below, other changes to the FEMP included:
- (a) All plans / maps updated;
  - (b) Additional photographs inserted to provide a better picture of the application site
  - (c) Small amendments made to the Farm Environmental Risk Assessment to reflect change to farming practices on Maryburn Station.

### Recalculated NDA

- 3.3 Table 2 of the FEMP set out the recalculated NDA based on Overseer modelling as follows:

	N Threshold (kg/farm)	P Threshold (kg/farm)
OVERSEER outputs April 2012	21,026	180
OVERSEER + 10%	23,129	198

- 3.4 Mr Chapman said that the revised NDA figures were calculated to:
- (a) Exclude the 416 hectares of spray irrigation on the east of State Highway 8 under CRC063106;
  - (b) Include the 35 hectares of existing (and continued) border dyke irrigation that the old FEMP failed to include; and
  - (c) Account for reduced stock numbers, which have been reduced to reflect the loss of 416 ha of additional pasture under resource consent CRC063106.

#### **Border dyke irrigation**

- 3.5 In addition to the above, a new plan (Figure 3) was inserted into the FEMP to detail the location of the 35 hectares of remaining border dyke irrigation. Mr Chapman provided the following reasons as to why the retention of the border dyke operation would not give rise to any resource management issues:
- (a) If this application is granted the applicant will surrender consent CRC981958, which provides for 30 ha of border dyke to the west of SH8. This will mean the return of 230 L/s to the Mary Burn.
  - (b) A total of 105 ha of the existing 140 ha of border dyke irrigation permitted under resource consent CRC011554 will be converted to spray, which will reduce the nutrient load and is a far more efficient use of water.
  - (c) The applicant will continue to use efficient irrigation management practices and appropriate irrigation scheduling which in turn, should result in no run off of excess irrigation water. However, if there is excess irrigation water the water would be caught by paddocks below the 35 ha of continued border dyke and will not discharge into any water ways.

## **4 OUR CONSIDERATION**

---

- 4.1 In relation to the remaining area of border dyke, we appreciate the clarification provided in relation to the location of this area. As noted in our Interim Decision, we accept that this is authorised under a separate consent (CRC011554) and has not been offered for surrender by the applicant. We have therefore considered its effects as part of the existing and future environment when considering the current proposal.
- 4.2 We accept the revised FEMP updated by Irricon in April 2012 and we accept the modelled nutrient loads + 10% given in the Table above as the NDA for the property. These figures have been inserted in the conditions for consent (Condition 31).
- 4.3 On this basis and for the reasons set out in our Interim Decision, we conclude that the outcome which best achieves the purpose of the Act is to grant consent to the applications, subject to the conditions discussed above.

## **5 DECISION**

---

- 5.1 Pursuant to the powers delegated to us by the Canterbury Regional Council and pursuant to sections 104 and 104B of the Resource Management Act 1991, we **GRANT** application CRC070406 by Classic Properties Limited for the following activity:
- to take and use surface water from Tekapo Canal or Tekapo Stilling Basin for spray irrigation of up to 234 hectares of crops and pasture at Maryburn Station, Tekapo-Twizel Road (West of State Highway 8).
- 5.2 Pursuant to section 108 RMA, the grant of consent is subject to the conditions specified at **Appendix A**, which conditions form part of this decision and consent

5.3 The duration of this consent shall be until the 30<sup>th</sup> April 2025.

DECISION DATED AT CHRISTCHURCH THIS 7TH DAY OF MAY 2012

Signed by<sup>1</sup>:

Paul Rogers



Dr James Cooke



Edward Ellison



---

<sup>1</sup> This decision has been signed as a majority decision of the three named Commissioners due to the unavailability of Commissioner Mike Bowden for health reasons.

## APPENDIX A

### Conditions of Consent (CRC07406)

#### Surrender of existing consent

1. Prior to the exercise of this consent, the consent holder shall complete all necessary steps to surrender resource consent CRC981958.

#### Diversion and take of water

2. Water shall only be taken from either:
  - (a) Tekapo Stilling Basin, at or about map reference NZMS 260 H38: 8842-7328; or
  - (b) Tekapo-Pūkaki Canal at SWAP i38/0078 at or about map reference NZMS 260 I38: 9615-7774.
3. Water for irrigation shall only be taken between 01 September and the following 30 April at a rate not exceeding 165 litres per second, with a volume not exceeding 25,920 cubic metres per day (being from 12am to 12am the following day) and 1,190,000 cubic metres per year (measured between 1 September and the following 30 April).
4. Whenever the level of Lake Tekapo, as estimated by the Canterbury Regional Council" is at or below 701.8 metres above mean sea level in the months April to September inclusive and at or below 704.1 metres above mean sea level in the months October to March inclusive, abstraction shall cease.
5. 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:
  - (a) the flow of water into Lake Tekapo, or the Tekapo-Pūkaki Canal has ceased, or is to cease, as a result of the operational requirements of the Waitaki Power Scheme; or that
  - (b) 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 Tekapo-Pūkaki Canal.

#### Use of water

6. Water shall only be used for the spray irrigation of 234 hectares of crops and pasture for grazing, but excluding dairy cows, within the area of land labelled as "Proposed location of the 3 pivots" shown on the attached **Plan CRC070406**, which forms part of this consent.
7. No pivot irrigators shall be used or located on the irrigation area shown on Plan CRC070406 within 250m of the boundary of State Highway 8.
8. There shall be a minimum 5 metre setback, where there is no irrigation, from any permanently flowing waterways within the irrigation area marked on Plan CRC070406
9. There shall be a minimum 20 metre setback, where there is no irrigation, from the Mary Burn.
10. Stock grazing the irrigation area shown on the Plan CRC070406 shall not be permitted to access any permanently flowing waterway.
11. 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.

12. 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 1 is registered on the computer registers for the land shown on **Plan CRC070406** and any other evidence of registration as the Canterbury Regional Council may require (if any).
13. The consent holder shall take all practicable steps to:
  - (a) Ensure that the volume of water used for irrigation does not exceed that required for the soil to reach field capacity; and
  - (b) Avoid leakage from pipes and structures; and
  - (c) Avoid the use of water onto non-productive land such as impermeable surfaces and river or stream riparian strips.

#### **Water metering – Take of water**

14. The consent holder shall, before the first exercise of this consent:
  - (a) 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 is measured , including:
    - i. the total take of water from the Tekapo-Pūkaki Canal or the Tekapo Stilling Basin; and
    - ii. in the event that water is abstracted from the Tekapo Stilling Basin, the total take of water from the Pūkaki Irrigation Company Limited pipeline at the point at which water is supplied to Maryburn Station; and
  - (b) install a tamper-proof electronic recording device such as a data logger that shall record (or log) the flow totals every 15 minutes.
15. If the water meter specified in Condition 14 is not an electromagnetic or ultrasonic meter, the consent holder shall, prior to 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 system, to allow the Canterbury Regional Council to conduct independent measurements.
16. The measuring and recording device(s) specified in Condition 14 shall:
  - (a) 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);
  - (b) 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;
  - (c) unless certified by a suitably qualified person that telemetry is not feasible, 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.
  - (d) be installed by a suitably qualified person in accordance with ISO 1100/1-1981 (or equivalent) and the manufacturer's instructions;
  - (a) be maintained throughout the duration of the consent in accordance with the manufacturer's instructions; and

- (b) be accessible to the Canterbury Regional Council at all times for inspection and/or data retrieval.
17. No data in the recording device(s) shall be deliberately changed or deleted.
18. All practicable measures shall be taken to ensure that the water meter and recording device(s) specified in Condition 14 are at all times fully functional and meet the accuracy standard stated in that condition.
19. Within one month of the installation of the measuring or recording device(s) specified in Condition 14 (or any subsequent replacement devices), the consent holder shall provide a certificate to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, signed by a suitably qualified person certifying, and demonstrating by means of a clear diagram, that:
- (a) the measuring and recording device(s) is installed in accordance with the manufacturer's specifications; and
  - (b) data from the recording device(s) can be readily accessed and/or retrieved in accordance with these conditions.
20. 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 these conditions; and
  - (b) the tamper-proof electronic recording device is operating as specified in these conditions.

#### **Fish Screen**

21. Water shall only be taken when a fish screen with a maximum mesh width and height size of 3 millimetres or slot width and height of 2 millimetres is operated and maintained across the intake to ensure that fish and fish fry are prevented from passing through the intake screen.
22. The fish screen shall be positioned to ensure that there is unimpeded fish passage to and from the waterway and to avoid the entrapment of fish at the point of abstraction, and to minimise the risk of fish being damaged by contact with the screen face.
23. The fish screen shall be designed and installed to ensure that:
- (a) the majority of the screen surface is oriented parallel to the direction of water flow; and
  - (b) where practicable, the screen is positioned in the water column a minimum of 300 millimetres above the bed of the waterway and a minimum of one screen radius from the surface of the water; and
  - (c) the approach velocity perpendicular to the face of the screen shall not exceed 0.06 metres per second if no self-cleaning mechanism exists or 0.12 metres per second if a self-cleaning mechanism is operational; and
  - (d) the sweep velocity parallel to the face of the screen shall exceed the design approach velocity.
24. The fish screen shall be designed or supplied by a suitably qualified person who shall ensure that the design criteria specified in Conditions 21 to 23 inclusive of this consent is achieved. Prior to the installation of the fish screen, a report containing final design plans and illustrating how the fish screen will meet the required design criteria and an operation and maintenance plan for the fish screen shall be provided to Environment Canterbury, Attention: RMA Compliance and Enforcement Manager.
25. A certificate shall be provided to Environment Canterbury by the designer or supplier of the fish screen to certify that the fish screen has been installed in accordance with the details provided to Environment Canterbury in accordance with Conditions 21 to 23 inclusive of this consent.

26. The fish screen shall be maintained in good working order. Records shall be kept of all inspections and maintenance, and those records shall be provided to Environment Canterbury upon request.

### Nutrient Loading

27. For the purposes of interpretation of the following conditions, the Maryburn Station shall be defined as the areas in certificates of title and Pastoral Lease numbers CB529/45, CB47C/284 and CB757/34 which total approximately 9,100.62 hectares.
28. The consent holder shall prepare once per year, an Overseer<sup>®</sup> nutrient budgeting model report, and shall prepare, at least once per year, a report of the annual farm nutrient loading from the area of Maryburn Station 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.:
29. When undertaking the modelling outlined in Condition 28, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
30. A copy of the reports prepared in accordance with Condition 28 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
31. 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 28 from Maryburn Station does not exceed 23,129 kg of Nitrogen and 198 kg of Phosphorus. Where the NDAs have been reduced by the application of a receiving water quality nutrient trigger condition, the reduced NDA shall apply.
32. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the commencement of consent.
33. Where Overseer, or Overseer modelling, is referred for the purposes of calculating or determining compliance with the NDA limits associated with activities on the property, it shall be undertaken by an independent person with an Advanced Sustainable Nutrient Management Certificate issued by Massey University or an equivalent qualification
34. The consent holder shall at all times comply with the Farm Environmental Management Plan (FEMP) in particular, the mitigation measures and monitoring set out in section 5 of the FEMP for Maryburn Station, a copy of which is attached to these conditions and marked **CRC070406-A** and forms part of these conditions.
35. Subject to Condition 34, the consent holder shall implement, and update annually the FEMP for Maryburn Station. The FEMP shall include:
  - (a) Verification of compliance with NDAs (incorporating any reductions required by receiving water quality nutrient trigger conditions) by farm nutrient modelling using the model Overseer (AgResearch model version number 5.4.3 or later).
  - (b) Implementation of Mandatory Good Agricultural Practices ("MGAPS") and requirements to manage in accordance with the Maryburn Station Overseer model inputs.
  - (c) The Overseer parameter inputs report, which shall be supplied to the Canterbury Regional Council.
  - (d) 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.
  - (e) A requirement to review the risk assessment if there are any significant changes in land use practice.
36. Detailed records shall be maintained of fertilizer application rates, types of crops (including winter feed/forage crops), cultivation methods, stock units by reference to 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.

37. A report on Overseer modelling shall be provided within one month of completion of the Overseer modelling by the person with the qualifications described in Condition 33 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.
38. Changes may be made to the Maryburn 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. 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.

### **Subdivision**

39. The NDAs shall be recalculated if there is a sale or transfer of any part, but not the whole, of the total farm area of approximately 9,100.62 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 31. The new NDAs may be recalculated on any proportion as long as the total of all the NDAs does not exceed the NDAs of the parent title as set out in Condition 31. 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.

### **Fertiliser and soil management**

40. 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.
41. 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.
42. For land based spreading of fertiliser:
  - (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; or
  - (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 five years the fertiliser spreader will be certified by a suitably qualified person in accordance with 'The Code of Practice for Nutrient Management (With 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.
43. Nitrogen fertiliser shall not be applied to land between 31<sup>st</sup> May and 1<sup>st</sup> September.
44. All fertiliser brought onto the property which is not immediately applied to the land shall be stored in a covered area that incorporates all practicable measures to prevent the fertiliser entering waterways.
45. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
46. 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.
47. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.

48. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.

49. Where practicable, the consent holder shall:

- (a) use direct drilling as the principal method for establishing pastures; and
- (b) sow and irrigate all cultivated areas within the irrigation area as soon as possible following ground disturbance.

### **Irrigation Infrastructure**

50. The consent holder shall ensure that all new irrigation infrastructure (not on the property at the time of commencement of this consent) is:

- (a) designed and certified by a suitably qualified independent expert holding a National Certificate in Irrigation Evaluation Level 4, and installed in accordance with the certified design. Copies of certified design documents shall be provided to the Canterbury Regional Council upon request; and
- (b) tested within 12 months of the first installation of the new irrigation infrastructure 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.

51. Within two months of the testing referred to in Condition 50(b) the expert shall prepare a report outlining their findings and shall identify any changes needed to comply with the code of practice. Any such changes 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.

52. 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:

- (a) The evaluation shall determine the system's current performance in accordance with the Code of Practice for Irrigation Evaluation.
- (b) This report shall be obtained within three months of the first exercise of the consent.
- (c) Any recommendations identified in the report shall be implemented within five years from the date of receipt of the report.
- (d) A copy of the report shall be forwarded to the Canterbury Regional Council within three months of the report being completed.

### **Fertigation**

53. 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:

- (a) a reduced pressure zone device (RPZD), or
- (b) a pressure vacuum breaker (PVB), or
- (c) an air gap backflow prevention system.

54. 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.

55. 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.

56. 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.
57. 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.
58. 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

#### **River water quality monitoring and response**

59. The water quality of the Mary Burn shall be monitored within 6 months of first exercise of consent as follows: :
  - (a) The location for monitoring of Mary Burn shall be as follows unless minor changes are required to ensure that monitoring occurs upstream of all intakes and downstream of the irrigation area to appropriately monitor the localised river effects arising from the exercise of this consent:
    - i. Map reference: NZMS 260 I38: 960-668 upstream at SH8 Bridge
    - ii. Map reference: NZMS 260 H39: 968-623 downstream of irrigation on Maryburn Station
  - (b) Water quality variables monitored shall include:
    - i. dissolved inorganic nitrogen (DIN);
    - ii. dissolved reactive phosphorus (DRP);
    - iii. dissolved oxygen;
    - iv. conductivity;
    - v. turbidity;
    - vi. periphyton biomass as chlorophyll *a* per square metre (chl *a*); and
    - vii. *E. Coli*.
  - (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.
  - (d) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
  - (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.
  - (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.

- (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.
  - (h) 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.
60. If the monitoring undertaken in accordance with Condition 59 shows that the average sample result for the Mary Burn monitoring site specified in Condition 59 over the period December to April is greater than 0.10 mg/L of DIN; or 0.007 mg/L DRP; or 50 mg chl *a*/ m<sup>2</sup> (environmental standard trigger), then the consent holder shall commission a report into the cause of the breach of the early warning trigger.
61. The report referred to in Condition 60 shall:
- (a) 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; and
  - (b) include the experts' conclusion on whether the exceedance(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
  - (c) include an assessment as to whether the exceedance measured by the monitoring is likely to continue; and
  - (d) be completed by 30 July following the sampling; and
  - (e) be provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August following the sampling.
62. If both the authors of the report prepared in accordance with Condition 61 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 either:
- (e) 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; or
  - (f) that it is unlikely that there is a trend towards exceedance of the environmental standard trigger pertaining to the Mary Burn monitoring sites,
- then no further action needs to be undertaken by the consent holder.
63. If Condition 62 is not satisfied, then:
- (a) the NDA, as specified in Condition 31, 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 (i.e. 234 irrigated hectares divided by the total farm area of 9,100 hectares); and
  - (b) the consent holder shall prepare and implement a Remedial Action Plan in accordance with Condition 64.
64. In relation to the Remedial Action Plan referred to in Condition 63(b):
- (a) It 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 Mary Burn monitoring site, is returned as soon as practicable to and maintained below the average sample results of 0.10 mg/L of DIN; or 0.007 mg/L of DRP; or 50 mg chl *a*/ m<sup>2</sup> over the period December to April.

- (b) It shall be prepared by a suitably qualified and experienced person using Overseer or an equivalent method to demonstrate that the actions to be undertaken will achieve the necessary nutrient reductions as soon as practicable.
  - (c) If the Remedial Action Plan is prepared in collaboration with other consent holders who are required to prepare a Remedial Action Plan for this sub catchment a common Remedial Action Plan shall be deemed to comply with this condition.
  - (d) Any actions required by the Remedial Action Plan shall be incorporated into the consent holder's FEMP. The amended FEMP shall be implemented as soon as physically possible.
  - (e) The consent holder shall provide the Canterbury Regional Council with the Remedial Action Plan and an amended FEMP upon request.
65. If a required reduction in nutrient load is in effect under Condition 63(a) and monitoring for that period shows that the average sample results for the Mary Burn monitoring site over the period December to April is:
- (g) greater than 0.10 mg/L of DIN; or 0.007 mg/L DRP; or 50 mg chl *a*/ m<sup>2</sup> (environmental standard trigger), then there shall be a further NDA reduction of 10% x IPF for the subsequent irrigation season.
  - (h) less than 0.10 mg/L of DIN; or 0.007 mg/L DRP; or 50 mg chl *a*/ m<sup>2</sup> (environmental standard trigger), then for the subsequent season no NDA reduction shall be required under this condition, and the full NDA for the property, as specified in Condition 31 shall be restored.

#### Lake water quality monitoring and response

66. The water quality of the Haldon (Northern) Arm of Lake Benmore and Lower Lake Benmore shall be monitored in accordance with this condition from the commencement of consent as follows:
- (a) Locations:
    - i. Haldon Arm, Map reference: NZMS 260 8823-3531
    - ii. Lower Lake Benmore, Map reference: NZMS 260 H39:8802-2371
  - (b) Depths: depth integrated 0-10m, 25m, 50m
  - (c) Water quality variables:
    - i. total nitrogen;
    - ii. ammonia;
    - iii. nitrate;
    - iv. nitrite;
    - v. total Kjeldahl nitrogen;
    - vi. total phosphorus;
    - vii. dissolved reactive phosphorus;
    - viii. Secchi disc depth; and
    - ix. Chlorophyll *a*.
  - (d) Calculated key water quality variable: Trophic Lake Index (TLI), using the following equations:
    - i.  $TLI_c = 2.22 + 2.54 \log(\text{chlorophyll } a)$

- ii.  $TLp = 0.218 + 2.92 \log (\text{total phosphorus})$
  - iii.  $TLn = -3.61 + 3.01 \log (\text{total nitrogen})$
  - iv.  $TLI = \Sigma (TLc + TLp + TLn)/3$
- (e) Frequency of monitoring: Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (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.
- (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.
- (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 and shall be capable of analysing the variables listed in subparagraph c above with detection limits generally recognised by the scientific community as appropriate for oligotrophic lakes.
- (i) The results of all sampling including the 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.
67. If the monitoring undertaken in accordance with Condition 66 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Haldon Arm monitoring site or the Lower Benmore 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:
- (a) the NDA, as specified in Condition 31, shall be reduced 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 under irrigation (i.e. 234 irrigated hectares divided by the total farm area of 9,100 hectares); and
  - (b) 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.
68. If a reduction in nutrient loading is required under Condition 67(a) 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:
- (a) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
  - (b) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 31 shall be restored.
69. If the monitoring undertaken in accordance with Condition 66 shows that the average TLI for the 1 - 10 m depth integrated samples for either the Haldon Arm monitoring site or the Lower Benmore monitoring site monitoring site over the period December to April is greater than 3.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 31, 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 (i.e. 234 irrigated hectares divided by the total farm area of 9,100 hectares); and

- (b) 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.
70. If a reduction in nutrient loading is required under Condition 69(a) and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for either the Haldon Arm monitoring site or the Lower Benmore monitoring site over the period December to April:
- (a) continues to be greater than 3.0 then there shall be a further NDA reduction of 15% x IPF for the subsequent irrigation season and rising to 20% compounding reductions for any further irrigation season.
- (b) continues to be greater than 2.75 but does not exceed 3.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
- (c) is less than 2.75, then for the subsequent season the full NDA for the property, as specified in Condition 31 shall be restored.
71. The nutrient load reductions and investigation referred to in Conditions 67 to 70 inclusive shall not be required if a two person expert scientist 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 or environmental standard (as applicable) was unlikely to have been caused in whole or in part by nutrient loss associated with the irrigation authorised by this consent.

#### **Review of conditions**

72. The Canterbury Regional Council may, once per year, on any of the last five 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.

#### **Lapse**

73. The lapsing date for the purposes of section 125 of the Resource Management Act shall be five years from the commencement of this consent.

#### **Advice notes:**

- *In relation to the lake monitoring required under Condition 66, 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 may provide resources to facilitate that coordination and recover the costs of that facilitation 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 and may be the subject of enforcement proceedings.*
- *The Waitaki Power Scheme referred to in Condition 4 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, Pūkaki, Ōhau, Ruataniwha, Benmore, Aviemore, and Waitaki to generate electricity.*
- *If any additional land use consents are required to carry out the proposed activity, those consents must be obtained before giving effect to this consent.*

PLAN CRC070406

