

BEFORE THE CANTERBURY REGIONAL COUNCIL

IN THE MATTER OF

The Resource Management Act 1991

AND

IN THE MATTER OF

applications by **Lone Star Farms Limited** filed under:

CRC031175 to divert, take and use surface water from the Mistake River at Godley Peaks Station, Lake Tekapo

CRC073236 to disturb the bed of Mistake River to install a pipeline

**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 applications CRC031175 and CRC073236 by **Lone Star Farms Limited** (the applicant). This decision follows and should be read in combination with our Interim Decision on these applications dated 23 March 2012.

2 INTERIM DECISION

- 2.1 In our Interim Decision, we concluded that some amendments to the proposal were required before it could be granted. In particular, we were not satisfied that the proposal with no mitigation would be entirely appropriate given its proximity to the lake edge. We considered that, without modification, the proposed activity would result in adverse landscape effects and would be inconsistent with the objectives and policies of the relevant plans relating to landscape.
- 2.2 We therefore concluded that no irrigation should occur within the Lakeside Protection Areas or Sites of Natural Significance in the Mackenzie District Plan or within 50m of the Cass River and Mistake Rivers and directed that the applicant provide the following further information:
- (a) A revised plan of the irrigation areas which excludes any irrigation within:
 - (i) the Lakeside Protection Areas or Sites of Natural Significance as shown on Planning maps 12 and 18 to the Mackenzie District Plan; and
 - (ii) 50m of the Cass River and Mistake Rivers.
 - (b) A revised annual volume based on this reduced irrigation area and using the WQN9v2 approach as described in our Interim Decision; and
 - (c) Any other amendments to the proposal that are necessary as a direct consequence of the above amendments, including, but not limited to:
 - (i) An updated Farm Environmental Management Plan and Development Staging Plan; and
 - (ii) Any revisions to the Nutrient Discharge Allowance for Godley Peaks Station to take account of the reduced irrigation area.

3 APPLICANT'S RESPONSE

- 3.1 In response to our Interim Decision, the applicant provided the following information on 6 June 2012:
- (a) A revised irrigation command area excluding the Lakeside Protection Areas or Sites of Natural Significance as shown on Planning maps 12 and 18 to the Mackenzie District Plan and all land within 50m of the Cass River and Mistake Rivers. This covered a revised area of 355 hectares, reduced from the 447 hectares originally proposed.
 - (b) A revised annual volume of 1,917,937 cubic metres, reduced from 2,682,000 cubic metres originally proposed. This revised annual volume was calculated using the WQN9v2 method and is based on the revised command area.
 - (c) A revised Farm Environmental Management Plan based on the revised command area. The applicant noted that the proposal is not subject to a Development Staging Plan and no change to this position is proposed.
 - (d) A revised Nutrient Discharge Allowance of 41,460 kg/N/yr and 1,456 kg/P/yr.

4 OUR CONSIDERATION

- 4.1 We are satisfied that the applicant's response fully addresses the concerns expressed in our Interim Decision regarding the potential adverse effects of the proposal on landscape values and is within scope of the original proposal. 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 conditions.

- 4.2 In relation to conditions, the only additional matter that we wish to comment on relates to lake monitoring. In our Interim Decision we supported the agreed conditions between the applicant and Environment Canterbury including monitoring at two sites on the lake margin as well as a lower Tekapo site. However we have since been made aware the ECan is currently carrying out long term State of the Environment monitoring for Lake Tekapo and have removed the requirement for lake monitoring for the nearby Glenmore Station proposal (CRC052502). We have therefore reconsidered whether it is appropriate to retain lake monitoring conditions for this proposal.
- 4.3 For Glenmore Station, the primary reason why lake monitoring was not imposed was that we were satisfied that monitoring Mailbox Swamp Creek would provide a robust measure of the effects of the activities on that property. However in this case there is no such perennial stream or river site downstream of the irrigation area prior to entering Lake Tekapo that provides a suitable location for monitoring nutrients.
- 4.4 We therefore consider that some form of monitoring in Lake Tekapo remains appropriate. However on balance we have decided that as ECan is undertaking monitoring at the lower Tekapo monitoring site, requiring the applicant to carry out additional monitoring at this site is unnecessary. We consider that the monitoring should occur at the two lake margin sites, as this represents the most direct and reliable measure of the effects of the applicant's activities.

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** the following applications by Lone Star Farms Limited:
- CRC031175** to divert, take and use surface water from the Mistake River at Godley Peaks Station, Lake Tekapo
- CRC073236** to disturb the bed of Mistake River to install a pipeline
- 5.2 Pursuant to section 108 RMA, the grant of consent is subject to the conditions specified at **Appendices A and B**, which conditions form part of this decision and consent
- 5.3 The duration of CRC031175 shall be until the 30th April 2025. The duration of CRC073236 shall be for 35 years from the commencement of the consent.

DECISION DATED AT CHRISTCHURCH THIS 12TH DAY OF JUNE 2012

Signed by¹:

Paul Rogers



Dr James Cooke



Edward Ellison



¹ This decision has been signed as a majority decision of the three named Commissioners due to the death of Commissioner Mike Bowden

APPENDIX A

Conditions of Consent (CRC031175) – Divert, take and use

Diversion and take of water

1. Water shall only be taken from the Mistake River via a gallery intake installation at surface water abstraction point I37/0041 at or about map reference NZMS 260 I37:063-036, at a maximum rate of 261 L/s, with a daily volume not exceeding 22,550m³ per day and a total volume not exceeding 1,917,937m³ per year for a period of 212 days between 1 October and the following 30 April.
2. Whenever the flow (expressed in litres per second) in the Mistake River as estimated by the Canterbury Regional Council from measurements at the Mistake River recorder site, map reference NZMS 260 I37:080-040:
 - (a) Is equal or greater than 1,110 litres per second, the maximum rate at which water is diverted shall not exceed 261 litres per second;
 - (b) Is equal to or less than 1,110 litres per second and greater than 980 litres per second, the maximum rate at which water is diverted shall not exceed 195 litres per second;
 - (c) Is equal to or less than 980 litres per second and greater than 850 litres per second, the maximum rate at which water is diverted shall not exceed 130 litres per second;
 - (d) Is equal to or less than 850 litres per second and greater than 720 litres per second, the maximum rate at which water is diverted shall not exceed 65 litres per second;
 - (e) Is equal to or less than 720 litres per second and greater than 590 litres per second, the maximum rate at which water is taken shall not exceed half of the amount available above 590 litres per second;
 - (f) Is equal to or less than 590 litres per second, abstraction shall cease.
2. Water shall only be temporarily diverted within the bed of the Mistake River as follows:
 - (a) Diversion shall only be for the purpose of installation and maintenance of a water supply pipeline in accordance with consent CRC073236;
 - (b) The diversion of water shall only occur over a maximum reach of 50 metres located in accordance with Condition 1.
 - (c) The diversion of water shall not impede fish passage or cause the stranding of fish in pools or channels.
 - (d) For the period of diversion, all water diverted shall remain within the bed.
 - (e) When diversion ceases, water shall be returned to its original course.

Use of water

3. Water taken pursuant to this consent shall be used only for spray irrigation of 355 hectares of crops and pasture per irrigation season for grazing sheep, beef cattle or non-milking dairy cows, as described in the application, on the area of land shown in attached **Plan CRC031175**, which forms part of this consent.
4. 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 CRC031175**.
5. 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.
6. 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.
 7. 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 51 is registered on the computer registers for the land shown on **Plan CRC031175**, and any other evidence of registration as the Canterbury Regional Council may require (if any).

Mitigation

8. The consent holder shall undertake the following activities in respect of Rapuwai Lagoon:
 - (a) Erect (in so far as there is not already a fence in place) a stock-proof fence to protect the riparian boundary from stock damage; and
 - (b) Carry out a progressive riparian regime over two years in accordance with the details set out in the Farm Environment Management Plan (FEMP) for Godley Peaks Station, a copy of which is attached and marked **CRC031175-A**; and
 - (c) Introduce a 20 metre fertiliser and spray buffer area around the lagoon (except spot spraying) and grass ephemeral channel flow into Rapuwai Lagoon within 2 years, in accordance with details set out in the attached FEMP.

Water metering – Minimum flows

9. The consent holder shall, prior to exercising this consent, install:
 - (a) a water level measuring device in a stable reach of the Mistake River at map reference NZMS 260 I37:080-040 that will enable the determination of the continuous rate of flow in the reach of the water body to within accuracy of ten percent.
 - (b) a tamper-proof electronic recording device such as a data logger(s) that shall time stamp a pulse from the flow meter at least once every 15 minutes.
10. The measuring device shall be installed at a site that will retain a stable relationship between flow and water level. The measuring device shall be installed in accordance with the manufacturer's instructions.
11. The recording device(s) shall:
 - (a) be set to wrap the data from the measuring device such that the oldest data will be automatically overwritten by the newest data (i.e. cyclic recording); and
 - (b) store the entire season's data in each 12-month period from 1 July to 30 June in the following year, which the consent holder shall then download and store and provide to the Canterbury Regional Council in a format and standard specified in the Canterbury Regional Council's form for Water Metering Data Collection; and be readily accessible to be downloaded by the Canterbury Regional Council or by a person authorised by the Canterbury Regional Council: RMA Compliance and Enforcement Manager; and
 - (c) shall be connected to a telemetry system that 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.
12. The measuring and recording devices described in Condition 9 shall be available for inspection at all times by the Canterbury Regional Council.

13. Data from the recording device and the corresponding relationship between the water level and flow, and any changes in that relationship shall be provided to the Canterbury Regional Council annually in the month of June, and shall be accessible and available for downloading at all times by the Canterbury Regional Council.

Water metering – Take of water

14. The consent holder shall, prior to exercising this consent, install:
 - (a) a water meter(s) that has an international accreditation or an equivalent New Zealand calibration endorsement suitable for use with an electronic recording device, from which the rate and the volume of water taken can be determined to within an accuracy of plus or minus five percent at a location(s) that will ensure the total take of water from the Mistake River is measured; and
 - (b) 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) 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;
 - (e) be maintained throughout the duration of the consent in accordance with the manufacturer's instructions; and
 - (f) 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.

Water metering – Compliance Checks

19. Within one month of the installation of the measuring or recording device(s) specified in Conditions 9 and 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.

Nutrient Loading

21. For the purposes of interpretation of the conditions of this consent Godley Peaks Station shall be defined as the areas in certificates of title and Pastoral Lease numbers Part Run 80, Part Rural Section 42000 and Section1 Survey Office plan 19295, Certificate of Title CB 30B/914, which total 14,576 hectares.
22. The consent holder shall prepare once per year:
- (a) an Overseer[®] nutrient budgeting model report not less than one month prior to the commencement of the irrigation season; and
 - (b) a report of the annual farm nutrient loading for Godley Peaks Station using the model Overseer[®] (AgResearch model version number 5.4.3 or later).
23. When undertaking the modelling outlined in Condition 22, the consent holder shall use either weather records collected on-farm or from constructed data from the nearest weather station.
24. A copy of the reports prepared in accordance with Condition 22 shall be given to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager within one month of their completion.
25. 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 22 from Godley Peaks Station does not exceed 41,560 kg of Nitrogen and 1,456 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.
26. The NDAs, incorporating any reductions required by receiving water quality nutrient trigger conditions, shall be complied with from the commencement of consent.
27. 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
28. 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 Godley Peaks Station, a copy of which is attached to these conditions and marked **CRC031175-A** and forms part of these conditions.
29. Subject to Condition 28, the consent holder shall implement, and update annually the FEMP for Godley Peaks 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 Godley Peaks 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.
30. 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.
 31. 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 27 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.
 32. Changes may be made to the Godley Peaks 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

33. 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 14,576 hectares. The recalculated NDAs shall be undertaken to accurately redistribute the NDA between the resultant properties and shall replace the NDAs specified in Condition 25. 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 25. 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

34. 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.
35. 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.
36. 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.
37. Nitrogen fertiliser shall not be applied to land between 31st May and 1st September.

38. 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.
39. Applications of nitrogen fertiliser shall not exceed 50 kg nitrogen / hectare per application.
40. 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.
41. Fertiliser filling areas shall not occur within 50 metres from a water course, spring or bore.
42. For land based spreading, fertiliser should not be applied within 20 metres of a watercourse.
43. 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

44. 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.
45. Within two months of the testing referred to in Condition 44 (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.
46. 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

47. 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.
48. 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.
49. 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.
50. 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.
51. 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.
52. 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

Farm Management

53. The consent holder shall ensure that stock do not have any access to any open irrigation channel.
54. The consent holder shall ensure that all silage is made and stored on a concrete pad which drains to an effluent collection facility.
55. The consent holder shall ensure that all silage effluent is stored in a lined temporary storage facility.
56. The consent holder shall ensure that the storage facility referred to in condition 55 has at least three days storage capacity.
57. The consent holder shall ensure that all liquor from the silage storage area is recycled to land or tankered from the site.

Lake water quality monitoring and response

58. The water quality of Lake Tekapo shall be monitored as follows:
- (a) Locations:
 - i. Two Lake Margin Monitoring Sites, at or about map references: NZTopo50 BY17: 996420 and 996400 or NZTMZ000: 1399600E / 5142000N and 1399600E / 5140000N
 - (b) Depth:
 - i. depth integrated 0-10m, 25m, 50m
 - ii. minimum depth 3 m; depth integrated 0 – max or 10m, whichever is lesser
 - (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. $TLc = 2.22 + 2.54 \log (\text{chlorophyll } a)$
 - ii. $TLp = 0.218 + 2.92 \log (\text{total phosphorus})$
 - iii. $TLn = -3.61 + 3.01 \log (\text{total nitrogen})$
 - iv. $TLI = \Sigma (TLc + TLp + TLn)/3$
- (e) Frequency of monitoring:
- i. Once per month from 01 December to 30 April each year, with a minimum of three weeks between sampling.
- (f) Methods:
- i. 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.
 - ii. 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.
 - iii. 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.
 - iv. The detection limits for those analyses shall be less than the following values:
 - Total nitrogen – 0.01 g/m³
 - Total phosphorus – 0.001 g/m³
 - Chlorophyll *a*. – 0.1 mg/m³

- v. 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.
59. If the monitoring undertaken in accordance with Condition 58 shows that the summer average TLI for the 1 - 10 m depth integrated samples for the lower Lake Tekapo monitoring site or for a Lake Margin monitoring site over the period December to April is greater than 1.5 (early warning trigger) but does not exceed 2.0 (environmental standard trigger), then:
- (a) the NDA, as specified in Condition 25, 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. 355 irrigated hectares divided by the total farm area of 14,576 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.
60. If a reduction in nutrient loading is required under Condition 59 and monitoring in the period that that reduction applies shows that the average TLI for the 1 – 10 m depth integrated samples for the lower Lake Tekapo monitoring site or for a Lake Margin monitoring site over the period December to April:
- (a) continues to be greater than 1.5 but does not exceed 2.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (b) is less than 1.5, then for the subsequent season the full NDA for the property, as specified in Condition 25 shall be restored.
61. If the monitoring undertaken in accordance with Condition 58 shows that the average TLI for the 1 - 10 m depth integrated samples for the lower Lake Tekapo monitoring site or for a Lake Margin monitoring site over the period December to April is greater than 2.0 (environmental standard trigger), then
- (a) the NDA, as specified in Condition 25, 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. 355 irrigated hectares divided by the total farm area of 14,576 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.
62. If a reduction in nutrient loading is required under Condition 61 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 lower Lake Tekapo monitoring site or for a Lake Margin monitoring site over the period December to April:
- (a) continues to be greater than 2.0 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 1.5 but does not exceed 2.0 then there shall be a further NDA reduction of 5% x IPF for the subsequent irrigation season.
 - (c) is less than 1.5, then for the subsequent season the full NDA for the property, as specified in Condition 25 shall be restored.
63. The nutrient load reductions and investigation referred to in Conditions 59 to 62 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

64. 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, including (but not limited to) amending the flow in the Mistake River at which abstraction is required to be reduced or discontinued.

Lapse

65. 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 58, 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.*
- *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.*
- *Works affecting archaeological sites are subject to a consent process under the Historic Places Act 1993. An authority (consent) from Historic Places Trust must be obtained for the work prior to commencement. It is an offence to damage or destroy a site for any purpose without an authority. The consent holder is advised to contact the New Zealand Historic Places Trust for more information.*
- *Prior to the exercise of consent any additional approvals required under the Land Act 1948 and the Crown Pastoral Land Act 1998 in association with easements to occupy the bed of a stream or to cross crown land or for discretionary action will need to be obtained from Land Information New Zealand.*

APPENDIX B

Conditions of Consent (CRC073236) – Disturb the bed

Scope

1. Works in the bed and banks of the Mistake River shall be limited to the installation, use and maintenance of a water supply pipeline to take water pursuant to consent CRC012408.1 and CRC031175 including:
 - a. Excavation of a trench of up to 1m in width, 64m in length and 2m in depth; and
 - b. Installation of a pipeline 200mm in diameter.
2. The pipeline described in 1(b) shall be buried to a minimum depth of 1m and a maximum depth of 2m below lowest bed level.

Location

3. The works shall be located in the bed and banks of the Mistake River between approximately map references NZMS 260 I37:070-038 and NZMS 260 I37:071-039 such that the buried pipeline extends the full width of the Mistake River bed.

Prior to works

4. Prior to commencing works, a copy of this resource consent shall be given to all persons undertaking activities authorised by this consent
5. The Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager shall be notified in writing not less than 48 hours prior to the commencement of works authorised by this consent.
6. Prior to any construction works being carried out the consent holder shall ensure that:
 - a. A suitably qualified and independent person inspects the proposed area of works, no earlier than eight working days prior to any works being carried out, and locates any bird breeding sites of birds listed in Schedule A.
 - b. The person carrying out the inspection prepares a written report that identifies all the located bird breeding or nesting sites and provides copies of that report to the consent holder and the Canterbury Regional Council.
 - c. The name and qualifications of the person carrying out the inspection are provided to the Canterbury Regional Council with the report;
 - d. Any person carrying out works authorised by this consent are informed of any bird breeding or nesting sites located; and
 - e. Where work ceases for more than 10 days, the site will be re-inspected for bird breeding and nesting sites in accordance with parts (a) to (d) of this condition.

Works / construction

7. Works to install the pipeline described in Condition 1 are to be undertaken only during the months of January February or March of any year and shall take no longer than any 15 days to complete.
8. Prior to the commencement of construction, the consent holder shall prepare a Construction Management Plan (CMP) to be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager. The CMP shall cover (but not be limited to) the following matters:

- a. Construction hours and days of the week when construction activity may occur.
 - b. Protocols for the handling and management of hazardous substances.
 - c. Protocols associated with the accidental discovery of archaeological matter.
 - d. Measures to be taken to prevent the erosion of excavated areas, including the prevention (as far as is practicable) of sediment discharge.
 - e. Post construction measures to ensure that the construction area is rehabilitated as closely as practicable to its natural state (as it was pre construction).
 - f. Safety measures to ensure that the general public is not at risk of harm when accessing Crown land in close proximity to the construction area.
9. Erosion controls shall be installed on all earthworks to prevent (as far as practicable) sediment from flowing into any surface water body.
10. Works shall not be undertaken in any manner likely to cause erosion of or instability to the bed or banks of the Mistake River; or reduce the flood-carrying capacity of the Mistake River.
11. The consent holder shall adopt the best practicable options in general accordance with the Environment Canterbury Erosion and Sediment Control Guidelines (2007) to:
- a. Minimise soil disturbance and prevent soil erosion;
 - b. Prevent sediment from flowing into any surface water; and
 - c. Avoid placing cut or cleared vegetation, debris, or excavated material in a position such that it may enter surface water.
12. To prevent the spread of Didymo or any other aquatic pest, the consent holder shall ensure that activities authorised by this consent are undertaken in accordance with the Biosecurity New Zealand's hygiene procedures.
- Note: The most current version of these procedures can be accessed from the Biosecurity New Zealand website <http://www.biosecurity.govt.nz> or Environment Canterbury Customer Services.*
13. The consent holder shall ensure that during construction:
- a. All practicable measures shall be undertaken to prevent oil and fuel leaks from vehicles and machinery.
 - b. There shall be no storage of fuel or refuelling of vehicles and machinery within 20 metres of the bed of a river.
 - c. Fuel shall be stored securely or removed from site overnight
14. The consent holder shall ensure that during construction as far as practicable, vehicles or machinery shall not enter the wetted area of the river.
15. In the event that works are required in the wetted area of the river, the consent holder shall survey the site of works prior to vehicles or machinery entering the wetted area and translocate any galaxids likely to be affected to suitable habitat in the river, ensuring that the fish are protected from the effects of works in flowing water.
16. The consent holder shall ensure that works do not prevent the passage of fish, or cause the stranding of fish in pools or channels
17. The consent holder shall ensure that vehicles and machinery used during works are:
- a. Free of plants and plant seeds prior to use in the waterbody; and
 - b. That the machinery is thoroughly washed after use in the Mistake River.

18. Vehicles and/or machinery shall not operate within 100 metres of birds listed in **Schedule A** which are nesting or rearing their young in the bed of the river.
19. In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall immediately:
 - a. Advise the Canterbury Regional Council of the disturbance;
 - b. Advise Te Runanga o Arowhenua, and Te Runanga o Waihao, and Te Runanga o Moeraki, or their representative, and the New Zealand Historic Places Trust, of the disturbance; and
 - c. Cease earthmoving operations in the affected area until an area has been marked off around the site, and Kaumatua and archaeologists have given approval for the earthmoving to recommence.

Upon completion

20. Following completion of the works the trench will be back-filled, levelled and compacted to resemble the original river bed as far as is practicable. All fill used for the installation and reinstatement shall be comprised of sand, silt and gravel, and shall be free of vegetation.
21. All spoil and any other waste material from the installation works shall be removed from the site on completion of the works.

Administrative matters

22. The Canterbury Regional Council may, once per year, on any of the last five working days of February or July each year, serve notice of its intention to review the conditions of this consent for the purposes of dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage.
23. The lapsing date for the purposes of section 125 of the Resource Management Act 1991 shall be five years from the commencement of this consent.

Schedule A – List of Birds

South Island Pied Oystercatcher

Black Stilt

Pied Stilt

Wrybill

Banded Dotterel

Grey warbler

Fantail

Bellbird

Silvereye

Spur-winged Plover

Paradise Shelduck

Grey duck

NZ Shoveler

Grey Teal

NZ Scaup

Black-billed Gull

Red-billed Gull

Caspian Tern

White-fronted Tern

Black-fronted Tern

White-winged Black Tern

Australasian Bittern

Marsh Crake

Spotless Crake

Cormorant/Shag colonies

