

**BEFORE THE ENVIRONMENT COURT  
I MUA I TE KOOTI TAIAO O AOTEAROA**

**UNDER** the Resource Management Act 1991

**IN THE MATTER** of appeals under Clause 14 of the First Schedule of the Act

**BETWEEN**

**TRANSPOWER NEW ZEALAND LIMITED**  
(ENV-2018-CHC-26)

**FONTERRA CO-OPERATIVE GROUP**  
(ENV-2018-CHC-27)

**HORTICULTURE NEW ZEALAND**  
(ENV-2018-CHC-28)

**ARATIATIA LIVESTOCK LIMITED**  
(ENV-2018-CHC-29)

**WILKINS FARMING CO**  
(ENV-2018-CHC-30)

---

**MEMORANDUM OF COUNSEL FOR SOUTHLAND REGIONAL COUNCIL  
REGARDING THE WATER QUALITY AND ECOLOGY (LAKES) EXPERT  
CONFERENCE AGENDA  
7 May 2019**

---

Judicial Officer: Judge Borthwick

---

Respondent's Solicitor  
PO Box 4341 CHRISTCHURCH 8140  
DX WX11179  
Tel +64 3 379 7622  
Fax +64 379 2467

Solicitor: P A C Maw  
(philip.maw@wynnwilliams.co.nz)

**WYNNWILLIAMS**

**GORE DISTRICT COUNCIL, SOUTHLAND DISTRICT  
COUNCIL & INVERCARGILL DISTRICT COUNCIL**  
(ENV-2018-CHC-31)

**DAIRYNZ LIMITED**  
(ENV-2018-CHC-32)

**H W RICHARDSON GROUP**  
(ENV-2018-CHC-33)

**BEEF + LAMB NEW ZEALAND**  
(ENV-2018-CHC-34 & 35)

**DIRECTOR-GENERAL OF CONSERVATION**  
(ENV-2018-CHC-36)

**SOUTHLAND FISH AND GAME COUNCIL**  
(ENV-2018-CHC-37)

**MERIDIAN ENERGY LIMITED Act 1991**  
(ENV-2018-CHC-38)

**ALLIANCE GROUP LIMITED**  
(ENV-2018-CHC-39)

**FEDERATED FARMERS OF NEW ZEALAND**  
(ENV-2018-CHC-40)

**HERITAGE NEW ZEALAND POUHERE TAONGA**  
(ENV-2018-CHC-41)

**STONEY CREEK STATION LIMITED**  
(ENV-2018-CHC-42)

**THE TERRACES LIMITED**  
(ENV-2018-CHC-43)

**CAMPBELL'S BLOCK LIMITED**  
(ENV-2018-CHC-44)

**ROBERT GRANT**  
(ENV-2018-CHC-45)

**SOUTHWOOD EXPORT LIMITED, KODANSHA  
TREEFARM NEW ZEALAND LIMITED, SOUTHLAND  
PLANTATION FOREST COMPANY OF NEW ZEALAND**  
(ENV-2018-CHC-46)

**TE RUNANGA O NGAI TAHU, HOKONUI RUNAKA,  
WAIHOPAI RUNAKA, TE RUNANGA O AWARUA & TE  
RUNANGA O ORAKA APARIMA**  
(ENV-2018-CHC-47)

**PETER CHARTRES**  
(ENV-2018-CHC-48)

**RAYONIER NEW ZEALAND LIMITED**  
(ENV-2018-CHC-49)

**ROYAL FOREST AND BIRD PROTECTION SOCIETY  
OF NEW ZEALAND**  
(ENV-2018-CHC-50)

**Appellants**

**AND**

**SOUTHLAND REGIONAL COUNCIL**

**Respondent**

## MAY IT PLEASE THE COURT

- 1 This Memorandum of Counsel is filed on behalf of the Southland Regional Council (**Council**) in respect of the appeals against the Council's decision on the proposed Southland Water and Land Plan (**pSWLP**).
- 2 In its Minute dated 15 April 2019, the Court directed that a final agenda for each expert conference is to be prepared in accordance with the Court's Minute dated 2 April 2019<sup>1</sup>, and filed with the Commissioner through the registry for review five full working days before the start of the conference.<sup>2</sup>
- 3 Ngā Rūnanga and Southland Regional Council filed a Joint Memorandum on 29 April 2019 seeking that the date for filing the water quality and ecology (lakes) conference agenda be extended to 7 May 2019.<sup>3</sup>
- 4 In accordance with that Joint Memorandum, this Memorandum provides the agenda for the expert conference on water quality and ecology (lakes).

### Agenda

- 5 The agenda is attached as **Appendix A**.
- 6 Counsel for the Council prepared the agenda, with input from the Council's relevant technical and planning experts, and in consultation with Counsel for Ngā Rūnanga and its expert, Dr Kitson.

---

<sup>1</sup> Which directed that the agenda is to be prepared with substantive input by the relevant experts to ensure it captures the issues adequately. It also directed that the agendas are to be prepared with input from planning experts, who must identify the proposed plan provisions relevant to each conference, so that the technical experts focus their conference outputs on matters of greatest interest to the court. When preparing the agenda, the experts should consider the interests and concerns of the parties involved.

<sup>2</sup> Minute of the Environment Court dated 15 April 2019 at [10(b)].

<sup>3</sup> Joint Memorandum of Counsel regarding the Court's Amended Notice of Expert Witness Conference Dated 18 April 2019.

- 7 If Commissioner Hodges has any comments or questions in relation to the agenda, the parties will endeavour to address these prior to the water quality and ecology (lakes) conference beginning.

**DATED** this 7<sup>th</sup> day of May 2019



.....  
**P A C Maw / K J Wyss**  
Counsel for the Southland Regional Council

**Appendix A – agenda**

**EXPERT CONFERENCE — WATER QUALITY AND ECOLOGY (LAKES)****ENV-2018-CHC — 26-50****Various s274 parties****Topic: Proposed Southland Water and Land Plan - Southland Regional Council****Date: 9 and/or 10 May 2019****Time: 09:00 AM****Venue: Conference Room, Kelvin Hotel, 20 Kelvin Street, Invercargill****Facilitator: Jim Hodges, Environment Commissioner****Recorder: Jan Brown,<sup>1</sup> Southland Regional Council, executive assistant**

- 1 The Environment Court directed in its Minute dated 2 April 2019 that expert witness conferencing is to occur in respect of water quality and freshwater ecology (lakes) in relation to the appeals against the proposed Southland Water and Land Plan (**pSWLP**).
- 2 The lakes water quality and freshwater ecology conference is expected to commence on 9 May 2019 (with 10 May 2019 available as contingency).<sup>2</sup>

**Attendees**

- 3 Witnesses who participated and agreed to the content of this Joint Witness Statement (**JWS**):

<b>Name</b>	<b>Employed or engaged by</b>	<b>Signature</b>
Nicholas Ward	Southland Regional Council	
Dr Jane Kitson	Ngā Rūnanga <sup>3</sup>	

---

<sup>1</sup> Or equivalent staff member from Council executive administrative team.

<sup>2</sup> In the Minute dated 15 May 2019, Commissioner Hodges directed that the lakes conference in relation to the appeals against the proposed Southland Water and Land Plan (**pSWLP**) will follow as soon as possible after the water quality and ecology (rivers and wetlands) conference. The rivers and wetlands conference is to begin on 7 May 2019 and is expected to conclude on 8 May 2019, however the Court has directed that it will continue until completed

### **Environment Court Practice Note**

- 4 All participants confirm that they have read the Environment Court Consolidated Practice Note 2014 and in particular Section 7 (Code of Conduct, Duty to the Court and Evidence of an expert witness) and Appendix 3 - Protocol for Expert Witness Conferences and agree to abide by it.
- 5 Mr Ward acknowledges that he is an employee of the Respondent, Southland Regional Council. Notwithstanding that, Mr Ward confirms that he prepared and will present his evidence as an independent expert and in compliance with the Code of Conduct.

### **Experts' qualifications and experience**

- 6 These are set out in each experts' statement of evidence.

### **Purpose of expert conference**

- 7 The purpose of the conferencing is to, if possible, narrow the issues as between the experts thereby streamlining the hearing. Another potential advantage of conferencing is that the joint witness statement can, if comprehensive, stand-in for rebuttal evidence.
- 8 The experts will assist the court by responding to a series of questions agreed by counsel and experts relating to lake water quality and ecology and associated issues that the court may wish to consider when determining the appeals. For each question, the experts state matters on which they agree and on which they do not agree, with reasons.

### **Key information sources relied on**

- 9 The experts relied on the following key sources of information [noting that this list is a draft, to be amended as necessary by the experts]:

---

<sup>3</sup> Comprising Waihopai Rūnaka, Hokonui Rūnaka, Te Rūnanga o Awarua, Te Rūnanga o Oraka Aparima, and Te Rūnanga o Ngāi Tahu.



- (a) Hodson R., Dare J., Merg MJ. and M. Couldrey. 2017. Water Quality in Southland: Current State and Trends. Southland Regional Council: Invercargill.
- (b) The 2018 Land Air Water Aotearoa (**LAWA**) website <https://www.lawa.org.nz/explore-data/southland-region/lakes/>
- (c) Robertson, B.M., Stevens, L.M. 2013 The Reservoir – Broad Scale Habitat Mapping. Report prepared by Wriggle Coastal Management for Environment Southland
- (d) Robertson, B.M., Stevens, L.M. 2013b Lake Vincent – Broad Scale Habitat Mapping. Report prepared by Wriggle Coastal Management for Environment Southland
- (e) Robertson, B.M., Stevens, L.M. 2013c Lake George – Broad Scale Habitat Mapping. Report prepared by Wriggle Coastal Management for Environment Southland
- (f) Robertson, B.M., Stevens, L.M. 2013e Lake Brunton Broad Scale Habitat/Macrophyte Mapping 2013. Report prepared by Wriggle Coastal Management for Environment Southland
- (g) Robertson, B.M., Stevens, L.M. 2013f Lake Murihiku - Broad Scale Habitat Mapping 2013. Report prepared by Wriggle Coastal Management for Environment Southland
- (h) Schallenburg M. and Kelly D. 2012. Ecological condition of six shallow lakes. Report prepared by Cawthron Institute for Environment Southland
- (i) New Zealand Government (2017). National Policy Statement for Freshwater Management 2014 updated August 2017 to incorporate amendments from the National Policy Statement for Freshwater Amendment Order 2017

10 The experts have also reviewed a copy of the signed Joint Witness Statement for the Surface Water Quality and Freshwater Ecology (rivers and wetlands) expert conference dated X May 2019.

- 11 A map of the Southland Region, including major surface water bodies, is attached as **Appendix 1**.<sup>4</sup> A map depicting the location of the main lakes in Southland that are monitored is attached as **Appendix 2**.<sup>5</sup>

### **Proposed plan provisions relevant to this conference**

- 12 The following plan provisions are relevant (at a high-level) to this conference, and have been included as directed by the Court.<sup>6</sup> Note that the plan provisions themselves are not a topic/issue for the experts to consider.
- (a) Te Mana o te Wai (page 5 of the Appeals version of the pSWLP).
  - (b) Purpose and Framework (page 7 of the Appeals version of the pSWLP).
  - (c) Issues:
    - (i) Water quality (insofar as it relates to lakes) (page 15 of the Appeals version of the pSWLP).
    - (ii) Surface Water (page 16 of the Appeals version of the pSWLP).
    - (iii) Indigenous Biodiversity (page 17 of the Appeals version of the pSWLP).
  - (d) Objectives 1 (noting this objective is not subject to appeal), 3 (noting this objective is not subject to appeal), 6, 7, 14 and 15 (noting this objective is not subject to appeal).
  - (e) Policies 45 and 47.
  - (f) Appendix E (noting that the content of Appendix E is outside the scope of the hearing on Topic A and is to be considered as part of the hearing on Topic B).

---

<sup>4</sup> From the Statement of Evidence of Roger Hodson dated 14 December 2018 at Appendix 1.

<sup>5</sup> From the Statement of Evidence of Nicholas Ward dated 14 December 2018 at Appendix L.

<sup>6</sup> Minute of the Environment Court dated 2 April 2019 (on conferencing) at [7(v)].

## Definitions

- 13 Any definitions required for the purpose of this conference, in light of the issues to be discussed below (to be completed by the experts referring to the proposed plan definitions were possible), including but not limited to [noting that this list is a draft, to be amended as necessary by the experts]:
- (a) Ecosystem health - assessment of the biophysical condition of a freshwater ecosystem akin to life supporting capacity may utilise multiple indicators to assess
  - (b) Enhancement or improvement of water quality – a statistically significant decrease in concentration of a contaminant, increase in clarity or MCI score
  - (c) Indicators – a variable, attribute, or contaminant such as a chemical or biological property which is measureable as a concentration or index score
  - (d) Parameters – the numerical statistic used to summarise sample data e.g. mean, median, 95 percentile, and could include an indicator specific minimum sample size, sample frequency and time period
  - (e) Maintenance (of water quality) – the situation where there is no deterioration of an indicator through either time series analysis or assessment of a parameter within an accepted range of variation or attribute band
  - (f) Over-allocation – the use of a resource beyond a numeric threshold.
  - (g) Shallow lakes – lakes of a depth of approximately less than 2 m.
  - (h) Intermittently Open and Closed Lakes and Lagoons (ICOLLs) – lakes / lagoons that are characterised by being less than 3m deep and experience periodical mouth closure or constriction.
  - (i) Deep glacial lakes - large deep lakes formed from glacial processes.
  - (j) Eutrophication- the changes caused in plant and animal communities in a waterbody due to the input of excessive nutrients.

- (k) Trophic Lake Index (TLI) - Measures four parameters: water clarity, chlorophyll content, total phosphorus, and total nitrogen. From these parameters a TLI value is calculated. In cases where water clarity data is missing, a three parameter TLI is calculated. The higher the value, the greater the nutrients and fertility of the water. The categories range from very poor – Supertrophic (>5), poor - Eutrophic (4-5), average - Mesotrophic (3-4), good - Oligotrophic (2-3) to very good – Microtrophic (<2). In absence of suitable comparative measures of clarity in shallow lakes (i.e. horizontal not vertical due to depth) the index TLI3 is used, using the three remaining parameters.
- (l) Chlorophyll-a - Chlorophyll-a is a pigment in plants, which gives a measure of primary production (photosynthetic growth) in the system from photosynthesis. It gives a measure of biological response to water quality.
- 14 What does “overall” water quality mean to a freshwater scientist? - A water quality index used to combine multiple indicators of water quality to a single scale using a repeatable methodology. However, this will vary between the spatial scale used and whether a precautionary approach is necessary for the given situation.

### **Issues to be considered**

- 15 The conference will address the issues as follows. These agenda items are provided to guide the relevant expert witnesses on matters where the evidence appears to be in dispute, but the experts should use their judgment to discuss and record their positions on the matters that they consider relevant arising out of the evidence and the discussions on the day.

#### *Description of the lakes environments in the Southland region*

- 16 An overview of Southland’s lakes is provided in paragraphs 74 to 79 of the evidence of Mr Ward. The experts are in general **agreement/disagreement** with this overview.

#### *Current state of lakes’ ecology in Southland, including:*

- 17 What are the important features of Southland’s lakes’ ecology?

- (a) Is it degraded?
- (b) If so, how?
- (c) Is this related to water quality or some other factor (e.g. water quantity)?

*Current state of lake water quality in Southland, including:*

- 18 What are the key contaminants that need to be considered?

The experts agree that the following contaminants need to be considered:

**(a) Experts to list**

Experts to explain why the contaminants are important and state any disagreements

- 19 What are the key parameters for assessing lake water quality in Southland (if not addressed above)?

- 20 What are the key indicators to assess lake ecosystem health in Southland (if not addressed above)?

- 21 What is missing, if anything, from the monitoring that would be appropriate to inform the current state of health of Southland's lakes (including for human health and cultural health)?

*National Objectives Framework*

- 22 What are the current NOF bands for Southland's lakes?

*Grouping of lakes*

- 23 How should Southland's lakes be grouped (taking into account the NOF bands)?

*Monitoring / in relation to lakes*

- 24 Do the bands in the NPSFM to assess ecological health understate the level of degradation, and are the causes of degradation able to be understood?

*Indicators of ecosystem health for lakes, including:*

- 25 Can, and if so what, numeric values for the indicators in **question 20** would safeguard ecosystem health?

- 26 Can, and if so what, numeric values for the indicators in **question 20** would safeguard human / public health?
- 27 Can region wide nitrate nitrogen, dissolved reactive phosphorus and sediment attribute states be set in order to safeguard ecosystem health?
- If yes:
- (a) What are the risks and uncertainties of doing so?
  - (b) What is the relationship between nutrient concentrations/loads and lake health?
  - (c) Can national models or data sets be used?
  - (d) Can, and if so how should, the numeric values be measured?
  - (e) Do the waterbodies across the region have different characteristics requiring adjustments to be made to the region-wide indicators?
- If no:
- (f) Why not?
  - (g) What (if any) further information or additional work would be required to make region-wide numeric indicators effective?
  - (h) Can such additional work (if any) be undertaken by expert scientists, and in what timeframes?
- 28 Is it appropriate to set region wide numeric values for lakes, ahead of determining where, how, and when such numeric values will be measured?

Note: the above topics (where relevant) are limited to the theoretical question as to whether the limits proposed might be appropriate in the Southland Region (having regard to the unique characteristics of this region), and the scope of the caucusing expressly excludes the question of whether those limits should be imposed in this regional plan (or through some future FMU process), and if so, what those limits should be.

**Joint Expert Witness Statement**

- 29 The experts must produce a joint expert witness statement stating their findings and conclusions, along with reasons why, for each of the issues included in this agenda.
- 30 In the event of any disagreement on any matter, the joint statement should identify the expert witnesses in agreement and the expert witnesses in disagreement. The expert witnesses in disagreement on any matters should record their reasons for any disagreement.
- 31 The joint expert witness statement is to be completed, signed by all expert witnesses and dated at the end of the conference, unless otherwise agreed by Commissioner Hodges (in which case it is to be signed as soon as possible following the close of the conference).<sup>7</sup>

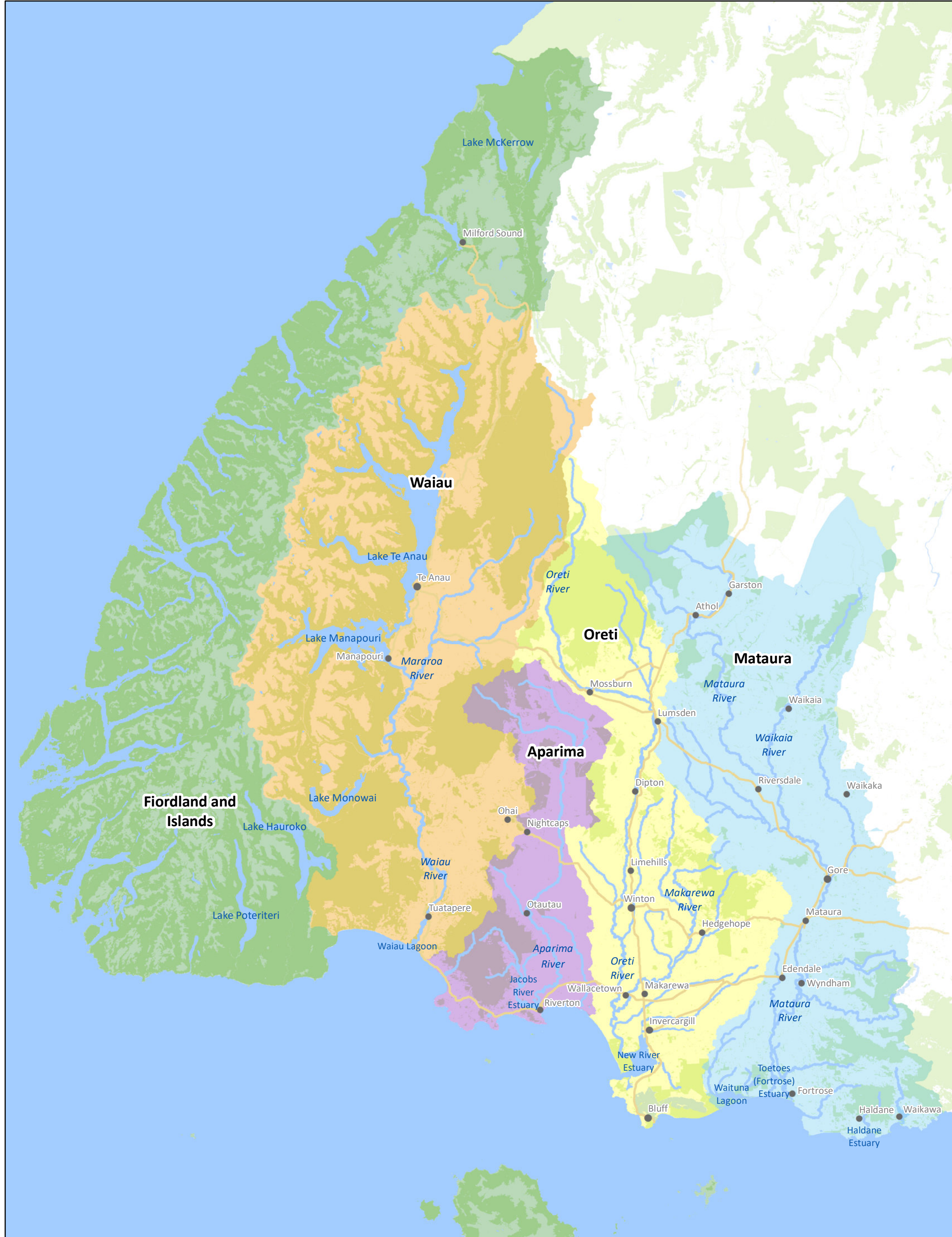
---

<sup>7</sup> Minute of the Environment Court dated 2 April 2019 at [7(iii)]; Notice of Expert Witness Conference dated 3 April 2019.

**Appendix 1**

**Map of the Southland Region, including major surface water bodies**





**Southland  
New Zealand**

**Date: 5/12/2018**

- State Highways
- Rivers
- Vegetation
- Fresh Water Management Units**
- Fiordland and Islands
- Mataura
- Oreti
- Waiau
- Aparima



1:800,000

**DISCLAIMER**  
 Environment Southland uses reasonable endeavours but does not warrant that this information is current, complete or accurate. Professional or specialist advice should be obtained before taking or refraining from taking any action on the basis of this information. To the extent permitted by law, Environment Southland will not be liable for any loss, liability or costs suffered or incurred as a result of any reliance placed on this information

DATA SOURCE: ES GIS 2018

**Appendix 2**

**Map of the location of the main lakes in Southland that are monitored**

**Appendix L**

Figure 11. A map depicting the location of the main lakes in Southland that are monitored. Lake Murihiku is located North West of Waituna Lagoon.

