

**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)

*(Continued next page)*

---

**STATEMENT OF REBUTTAL EVIDENCE OF NICHOLAS WARD ON BEHALF  
OF THE SOUTHLAND REGIONAL COUNCIL  
27 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**

## **Introduction**

- 1 My full name is Nicholas James Haydon Ward.
- 2 My qualifications and experience are set out in my Statement of Evidence in Chief dated 14 December 2018.
- 3 As with my Evidence in Chief, I confirm that I have read and am familiar with the Code of Conduct for expert witnesses contained in the Environment Court consolidated Practice Note 2014. I agree to comply with that Code. Other than where I state that I am relying on the evidence of another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

## **Scope of Rebuttal Evidence**

- 4 In my rebuttal evidence I provide a response to the:
  - (a) Rebuttal evidence of Ben Farrell on behalf of the Southland Fish and Game Council and the Royal Forest and Bird Protection Society of New Zealand Incorporated dated 15 May 2019; and
  - (b) Statement of Evidence of Kathryn Jane McArthur on behalf of the Royal Forest and Bird Protection Society of New Zealand Incorporated dated 15 February 2019.

## **Ben Farrell – Southland Fish and Game Council and Royal Forest and Bird Protection Society of New Zealand Incorporated**

- 5 Mr Farrell states at paragraph 21 and footnote 11, that:<sup>1</sup>

21 The freshwater science experts have identified and summarised the waterbodies they consider are already degraded or at risk<sup>11</sup>. The freshwater science experts who participated in expert conferencing regarding lakes did not similarly identify degraded water bodies, but I am unsure whether this means lakes are not degraded, or simply that the experts did not consider that issue at conferencing.

---

<sup>1</sup> Rebuttal evidence of Ben Farrell on behalf of the Southland Fish and Game Council and the Royal Forest and Bird Protection Society of New Zealand Incorporated dated 15 May 2019.

[11] At [50]-[78] and Appendices 1-2 in the JWS (Rivers & Wetlands) and at [42]-[47] (in relation to estuaries) in the JWS (Lakes and Estuaries)

- 6 I attended the expert witness conference – water quality and ecology (lakes, intermittently closed and open lakes and lagoons (ICOLLs) and estuaries on 9 and 10 May 2019, along with Dr Kitson.
- 7 I participated and agreed to the content of the Joint Witness Statement Water Quality and Ecology (Lakes, Intermittently Closed and Open Lakes and Lagoons (ICOLLs) and Estuaries dated 9 and 10 May 2019 (**JWS (Lakes, ICOLLs and Estuaries)**).
- 8 The state of lakes has been tabulated in Appendix 3 of the JWS (Lakes, ICOLLs and Estuaries). Degradation was not specifically identified for lakes as it was considered to be lacking important context, and therefore a risk management approach was adopted, which is contained in Appendix 4 of the JWS (Lakes, ICOLLs and Estuaries).
- 9 By way of explanation, lakes may respond to pressures from the catchment in a nonlinear way i.e., little change to state, followed by high variability and then an ecological regime shift. This ecological regime shift has been termed ‘ecological threshold’ in the JWS (Lakes, ICOLLs and Estuaries)<sup>2</sup>. Once this ecological threshold has been crossed and a regime shift occurs the management considerations are quite different. Therefore, solely reporting on or identifying a degraded state for lakes was considered to be very limiting for assisting in management decisions, by the expert witnesses in the Lakes, ICOLLs and Estuaries witness conferencing.

**Kathryn Jane McArthur - Royal Forest and Bird Protection Society of New Zealand Incorporated**

- 10 Ms McArthur states in relation to the Waiau Lagoon (placed in the Waiau FMU group), referring to the summary of effects as being ‘sediment and nutrient capacity exceeded’.<sup>3</sup>
- 11 As discussed in my Evidence in Chief,<sup>4</sup> and the JWS (Lakes, ICOLLs and Estuaries)<sup>5</sup> the system is stressed from sediment. However, there is

---

<sup>2</sup> JWS (Lakes, ICOLLs and Estuaries) at [29,d].

<sup>3</sup> Statement of Evidence of Kathryn McArthur dated 15 February 2019, Table 1 at p 11.

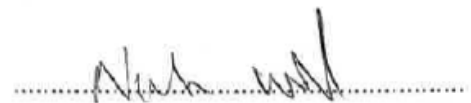
<sup>4</sup> Statement of Evidence of Nicholas Ward dated 14 December 2018 at [116]-[117].

<sup>5</sup> JWS (Lakes, ICOLLs and Estuaries) at Appendices 3 and 4.

insufficient evidence to reach a conclusion on whether the Te Waewae (Waiau) Lagoon system is receiving sediment input beyond its capacity.

- 12 An assessment of the water quality data for Te Waewae (Waiau) Lagoon has been made subsequent to the Lakes, ICOLs and Estuaries expert witnessing conference, against the criteria within the JWS (Lakes, ICOLs and Estuaries)<sup>6</sup>.
- 13 Applying the same criteria as in the JWS (Lakes, ICOLs and Estuaries)<sup>7</sup> Te Waewae (Waiau) Lagoon falls into two categories (At risk; and Assimilative capacity exceeded and potentially beyond ecological thresholds) as it has Chlorophyll-a in Band B, but has also experienced Cyanobacteria blooms. The secondary attributes also indicate poorer water quality. As the two categories have been triggered, I have allocated the Te Waewae (Waiau) Lagoon to the category (being “assimilative capacity exceeded and potentially beyond ecological thresholds”). This has been done as Chlorophyll-a concentrations can be reduced when excessive aquatic plant growth occurs (as has been observed in the Lagoon). This growth from aquatic plants will be utilising and absorbing the elevated nutrients (**Appendix 1**, secondary attributes water quality) in the water. Though the Chlorophyll-a concentrations are reduced, a cyanobacterial bloom has still occurred, indicating that the system may be approaching an ecological threshold.
- 14 The assessment of the Te Waewae (Waiau) Lagoon for state can be found in **Appendix 1** and the subsequent risk category in **Appendix 2**. The supporting data assessments can be found in **Appendix 3**.

DATED this 27<sup>th</sup> day of May 2019



Nicholas J H Ward

---

<sup>6</sup> JWS (Lakes, ICOLs and Estuaries) at Appendix 3.

<sup>7</sup> JWS (Lakes, ICOLs and Estuaries) at Appendix 4.

### Appendix 1. Te Waewae (Waiau) Lagoon state

	Primary Attribute		Secondary Attribute (NPSFM NOF bands)	
	Chlorophyll a (NPSFM NOF bands)	Cyanobacteria bloom	Total Nitrogen	Total Phosphorous
Te Waewae (Waiau) Lagoon	B	Yes*	D	C

The same conditions in the JWS (Lakes, ICOLLs and Estuaries)<sup>8</sup> apply.

This assessment is based on 2018/19 data combined, and uses the two less river influenced sites Middle Lagoon site and Monitoring station site which have the same state bands, see Appendix 3.

The state is determined by satisfying all statistical numeric attributes e.g. median and max

\*Te Waewae Lagoon had public health alert issued 11 Jan 2018, it was active for 26 days; biovolume concentration 3 mm<sup>3</sup>/L, dominant species Dolichospermum cf. lemmermannii.

### Appendix 2. Te Waewae (Waiau) Lagoon risk management category

State category	Level of Catchment Modification	Lake	FMU
Assimilative Capacity exceeded and potentially beyond ecological thresholds	Modified	Te Waewae (Waiau) Lagoon	Waiau

---

<sup>8</sup> JWS (Lakes, ICOLLs and Estuaries) at Appendix 3.

**Appendix 3. Data assessment for Te Waewae (Waiau) Lagoon. Bands are those from National Policy Statement for Freshwater Management 2014, amended 2017.**

mg/ m <sup>3</sup>	TN		TP		Chl-a		n
	Median	Max	Median	Max	Median	Max	
A	≤160	≤300	≤10	≤10	≤2	≤10	
B	>160 and ≤350	>300 and ≤500	>10 and ≤20	>10 and ≤20	>2 and ≤5	>10 and ≤25	
C	>350 and ≤750	>500 and ≤800	>20 and ≤50	>20 and ≤50	>5 and ≤12	>25 and ≤60	
D	>750	>800	>50	>50	>12	>60	
mg/ m <sup>3</sup>							
Waiau Lagoon Middle 2017	380	1660	21	21	2.6	19	12
Waiau Lagoon Middle 2018	615	1700	24	24	3.2	17	13
Waiau Lagoon Middle both years	595	1700	22	22	3	19	25
Waiau Lagoon Monitoring Station 2017	470	1820	23	23	3	19	12
Waiau Lagoon Monitoring Station 2018	670	1770	27	27	3.1	19	13
Waiau Lagoon Monitoring Station both years	640	1820	24.5	24.5	3.1	19	25
Waiau Lagoon opp boat ramp 2017	340	1050	17	17	1.05	9	12
Waiau Lagoon opp boat ramp 2018	530	1060	20	20	1.3	26	13
Waiau Lagoon opp boat ramp both years	430	1060	19	19	1.3	26	25