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

AT CHRISTCHURCH

IN THE MATTER	of the Resource Management Act 1991
AND	of appeals under clause 14 of the First Schedule of the Act
BETWEEN	**FONTERRA CO-OPERATIVE LTD** **(ENV-2018-CHC-27)** Appellant [Continued on next page]
AND	**SOUTHLAND REGIONAL COUNCIL** Respondent

STATEMENT OF REBUTTAL EVIDENCE OF EMILY PEARL FUNNELL FOR DIRECTOR-GENERAL OF CONSERVATION AS A SECTION 274 PARTY

Dated 20 May 2019

Department of Conservation
Planning, Permissions and Land
RMA Shared Services
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BETWEEN **HORTICULTURE NEW ZEALAND**

(ENV-2018-CHC-28)

ARATIATIA LIVESTOCK LTD

(ENV-2018-CHC-29)

WILKINS FARMING CO

(ENV-2018-CHC-30)

GORE AND SOUTHLAND DISTRICT COUNCILS, INVERCARGILL CITY COUNCIL

(ENV-2018-CHC-31)

DAIRYNZ LTD

(ENV-2018-CHC-32)

H W RICHARDSON GROUP LTD

(ENV-2018-CHC-33)

BEEF + LAMB NEW ZEALAND

(ENV-2018-CHC-34 AND 35)

DIRECTOR-GENERAL OF CONSERVATION

(ENV-2018-CHC-36)

SOUTHLAND FISH & GAME COUNCIL

(ENV-2018-CHC-37)

MERIDIAN ENERGY LTD

(ENV-2018-CHC-38)

ALLIANCE GROUP LTD

(ENV-2018-CHC-39)

FEDERATED FARMERS OF NEW ZEALAND

(ENV-2018-CHC-40)

HERITAGE NEW ZEALAND POHERE TAONGA

(ENV-2018-CHC-41)

STONEY CREEK STATION LTD

(ENV-2018-CHC-42)

THE TERRACES LTD

(ENV-2018-CHC-43)

CAMPBELL'S BLOCK LTD

(ENV-2018-CHC-44)

ROBERT GRANT

(ENV-2018-CHC-45)

SOUTHWOOD EXPORT LTD, SOUTHLAND PLANTATION FOREST COMPANY OF NZ

(ENV-2018-CHC-46)

TE RUNANGA O NGAI TAHU, HOKONUI RUNAKA, WAIHOPAI RUNAKA, TE RUNANGA O AWARUA AND TE RUNANGA O ORAKA APARIMA

(ENV-2018-CHC-47)

PETER CHARTRES

(ENV-2018-CHC-48)

RAYONIER NEW ZEALAND LTD

(ENV-2018-CHC-49)

ROYAL FOREST AND BIRD PROTECTION SOCIETY OF NZ INC

(ENV-2018-CHC-50)

Appellants

AND **SOUTHLAND REGIONAL COUNCIL**

Respondent

Introduction

1. My full name is Emily Pearl Funnell.

2. My qualifications and professional background are set out in my evidence in chief dated 1 March 2019 and are not repeated here.

Code of Conduct

3. I confirm that I have read the code of conduct for expert witnesses as contained in section 7.1 of the Environment Court's Practice Note 2014. I have complied with the practice note when preparing my written statement of evidence and will do so when I give oral evidence before the Court.

4. The data, information, facts and assumptions I have considered in forming my opinions are set out in my evidence to follow. The reasons for the opinions expressed are also set out in the evidence to follow.

5. Unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope

6. This rebuttal evidence is relation to the evidence of Mr Sycamore for Federated Farmers regarding Waituna Lagoon (paragraphs 175-185) of Mr Sycamore's evidence dated 15 March 2019.

Waituna Lagoon

7. Mr Sycamore states that the water in Waituna Lagoon is not a freshwater body (para 180) and therefore the Waituna catchment falls outside of the definition of a FMU and the guidance on identifying FMU's (para 183).

8. Waituna Lagoon is classified as an "intermittently closed and open coastal lake or lagoon" (ICOLL)[1]. It forms part of an extensive (20,000 ha) Ramsar site. The Ramsar designation (1976) recognises the outstanding values of the wetlands and lagoon.

9. Waituna Lagoon is separated from the sea by a long narrow gravel beach that allows some leakage of the lagoon water. Opening of the lagoon to the sea occurs mechanically (digger) on average once a year[2]. This artificial regime is

primarily implemented to prevent inundation of surrounding farmland. However, it is also used as a management tool for reducing eutrophication.

10. When open to the sea, Waituna Lagoon becomes tidal, experiencing marine intrusions and mixing with sea water. When it is closed to the sea, Waituna Lagoon loses the tidal connection and behaves like a freshwater lake[2].

11. ICOLLs are recognised as complex systems that reflect characteristics of both freshwater lakes and coastal lagoon estuaries[3]. This is apparent in Waituna Lagoon, where salinity (amount of salt in the water) ranges from 0.7 to 33.5 parts per thousand (ppt)[1]. They are ecologically different to shallow lakes due to the intermittent regime shifts in hydrology, chemistry and ecology[3].

12. ICOLLs are recognised as sensitive to inputs of nutrients and sediments due to long water residence times, and limited interaction with the ocean[4]. Waituna Lagoon can be closed for prolonged periods of time (> 1 year). Management of the freshwater phase is imperative to the health of the Lagoon.

Emily Pearl Funnell

20 May 2019

References

1. Schallenberg M, Larned ST, Hayward S, Arbuckle C 2010. Contrasting effects of managed opening regimes on water quality in two intermittently closed and open coastal lakes. Estuarine, Coastal and Shelf Science 86: 587–597.
2. Robertson HA, Funnell EP 2012. Aquatic plant dynamics of Waituna Lagoon, New Zealand: trade-offs in managing opening events of a Ramsar site. Wetlands Ecology and Management 20: 433–445.
3. Hamil KD, Kelly D, Hamilton D, Howard-Williams C, Robertson B, Schellenberg M, Vant B, Ward N. 2014. Attributes for Intermittently Open and Closed Lakes and Lagoons (ICOLLs) applicable to the National Objectives Framework for Freshwater. Report prepared for Ministry for the Environment by River Lake Ltd.
4. Scanes P 2012. Nutrient Loads to Protect Environmental Values in Waituna Lagoon. Report prepared for Environment Southland NZ. 11 pp.