

**BEFORE COMMISSIONERS APPOINTED
BY THE OTAGO REGIONAL COUNCIL**

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Proposed Otago Regional Policy Statement 2021
(Non-freshwater parts)

AND

IN THE MATTER of the First Schedule to the Act

AND

IN THE MATTER of a submission under clause 6 of the First Schedule

BY **BEEF + LAMB NEW ZEALAND LIMITED and DEER
INDUSTRY NEW ZEALAND
Submitters**

**BRIEF OF SUPPLEMENTARY EVIDENCE OF JANE MARIE CHRYSTAL
4 May 2023**

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BACKGROUND

1. My name is Jane Marie Chrystal.
2. My qualifications and experience are set out in paragraphs 2 to 15 of my brief of evidence dated 23 November 2023.
3. I have read the Code of Conduct for Expert Witnesses in the Environment Court 2014 Practice Note and agree to comply with it. I confirm this evidence has been prepared in accordance with the Code of Conduct for Expert Witnesses set out in the 2014 Environment Court Practice Note. I declare I am an employee of the submitter B+LNZ. I confirm the opinions I have expressed in this brief of evidence represent my true and complete professional opinions. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

EVIDENCE

4. Today I will give a brief summary of my evidence in chief and then make additional comments on relevant work that I have been involved in since writing my evidence and also the changes recommended by B+LNZ and DINZ.
5. Sheep and beef farms are complex and diverse. They are predominantly low input and the particular farming system operated is designed to match animal feed demand with pasture and feed supply. The climate is important to drystock as the farming system adopted relates directly to the climate, soils and topography of the farms location. Farmers adopt an integrated management of the natural resources to optimize their farming business.

6. My evidence highlights the complexity of drystock farm systems and the implications of regulatory response to the complex and multifaceted aspects of the farming business and environment. It is this reason that policy direction must recognise the diversity in farm systems and provide for bespoke management while enabling adoption of innovative responses that best address the impact of farming on the environment.
7. There is an inextricable link between agricultural land uses and freshwater quality. In particular, losses of nitrogen (N), phosphorus (P), sediment and pathogens from farming systems and practices to surface and groundwater can ultimately impact on the health of freshwater ecosystems.
8. The scale and magnitude of the impacts from agriculture on freshwater depend on a range of factors, including the type, scale and intensity of land use, farming systems and practices, along with environmental conditions such as climate, and the geology and topography of the farm and catchment.

New information

9. In addition to my evidence from 23 November 2022 I have been asked to give an update on the Economic Work Programme I have been involved in. This was initiated by the Otago Regional Council (ORC) in the second half of 2021, to form a better understanding of the use of fresh water in Otago's economy.

10. The reporting and analysis in the main report covers 6 industries in Otago:
- (a) Sheep and beef cattle farming;
 - (b) Deer farming;
 - (c) Arable farming;
 - (d) Dairy farming;
 - (e) Horticulture; and
 - (f) Viticulture
11. I was involved in phase two of this work where I led the analysis done for the sheep and beef section in the report titled “*Otago’s rural businesses and environmental actions for fresh water*”.¹ Sixteen case study sheep and beef farms were modelled to assess the impact of different environmental actions on those businesses. The environmental actions covered the following general topics:
- (a) water quality
 - (b) biodiversity
 - (c) land use change
 - (d) irrigation efficiency
 - (e) fertiliser use

¹ *Chrystal, J., Fisher, A., Burt, A., (2022). Chapter 3: Sheep and Beef Cattle Farming. In Otago’s rural businesses and environmental actions for fresh water. (Ed. Moran, E.) Otago Regional Council Economic Work Programme, Dunedin. IN Moran, E. (Ed.) (2022). Otago’s rural businesses and environmental actions for fresh water. Otago Regional Council Economic Work Programme, Dunedin.*

Changes to the LF chapter

12. With regard to the National Policy Statement for Highly Productive Land (NPSHPL) relating to land classes 1-3, sheep and beef production occurs on a range of land classes (1 to 7) both within a farm and across different farms. Within an integrated farming system, land classes 4-7 can be utilised as highly productive land. An example of this is producing lambs for finishing on LUC classes 1-3 (and others) and this is an efficient way to make effective use of those highly productive soils. Without the breeding country, drystock farmers are less able to realise the potential of the highly productive soils of LUCs 1-3.

Recommendations

13. I agree with the inclusion of LF-LS-P20- Mapping of Highly Productive Land and community engagement where the regional council must actively engage with the farming community and landowners when mapping highly productive land. Those with the grass-roots knowledge of catchments and the interconnectedness of the farming systems in their area are best placed to most accurately identify areas of land that are considered highly productive and these are not necessarily just LUC classes 1-3.
14. I also agree with the inclusion of 1 (c) in LF-LS-P24- *District plans*. Significant areas of productive drystock land is being blanket planted in pine forestry in response to the carbon market. This loss of land and reduction in beef and sheep meat production has implications for rural communities, the regional and national economy. Mr Burtt outlines in his evidence the significant financial

contribution at both a regional and national level that sheep and beef farming have.

Jane Marie Chrystal

4 May 2023