IN THE ENVIRONMENT COURT
AT CHRISTCHURCH
I MUA I TE KOOTI TAIAO O AOTEAROA
KI OTAUTAHI

ENV-2018-CHC-34

IN THE MATTER OF	the Resource Management Act 1991
AND	
IN THE MATTER OF	appeals under clause 14 of the First Schedule to the Act
BETWEEN	**BEEF+LAMB NEW ZEALAND LIMITED**
	Appellant
AND	**SOUTHLAND REGIONAL COUNCIL**
	Respondent

WILL SAY STATEMENT OF TOM SPENCER ORCHISTON FOR BEEF+LAMB NEW ZEALAND LIMITED
1 November 2021

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I, **TOM SPENCER ORCHISTON**, environment capability manager, **WILL SAY**:

1. My full name is Thomas Spencer Orchiston.

2. I am employed by Beef + Lamb New Zealand (B+LNZ) as an environment capability manager. This role aims to build the environmental capability of sheep and beef farmers to improve overall environmental outcomes on farms.

3. I hold a Bachelor of Science and a Postgraduate Diploma in Environmental Science from Otago University (2002).

4. I have a certificate in Sustainable Nutrient Management from Massey University (2010) and an AsureQuality Advanced Auditing Skills Certificate (2016).

5. My previous work experience includes 10 years for AgResearch Ltd as a Research Associate involved in soil, water and climate research based projects; four years with Crop and Food Research investigating sustainable and efficient landuse through crop diversification and; three years with Landcare Research measuring carbon sequestration and plant biodiversity in indigenous forests and shrublands.

6. I have been an auditor for a farm assurance programme that provided sustainable, high value meat from low chemical input New Zealand farms for export.

7. I have been a part of the New Zealand Institute of Primary Industry Management technical advisory group on farm planning certification.

8. I have been involved in development of B+LNZ refreshed farm plan documentation and training of facilitators to deliver the B+LNZ farm plans.

9. I have completed a Land Use Capability course held in Hawke's Bay.

10. I have been co-author in five peer-reviewed journal articles. I have been lead or co-author of eight conference papers or reports and at least 50 other forms of dissemination such as farmer presentations and media articles.

11. I confirm this will say statement has been prepared in accordance with the Code of Conduct for Expert Witnesses set out in the 2014 Environment Court Practice Note. I confirm that the opinions I express in this statement represent a summary of 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 that I express.

12. I have been asked by B+LNZ give this will statement and, in due course, evidence on management of contaminants of concern from sheep in pastoral farming enterprises, particularly in respect of exclusion from water ways.

13. Key contaminants of concerns for sheep and beef farms, in relation to stock proximity to water ways, are those that are lost in overland flow (primarily sediment, phosphorus and faecal bacteria).

14. The risk of sediment loss may be increased by animal grazing pressure, especially where this is accompanied by a significant loss of vegetative ground cover. Also increasing this risk is the breakdown of soil aggregates into small micro-aggregates and fine particles, which leads to their transportation in surface runoff. Sheep are smaller animals with a lower hoof and treading impact than larger animals. Less treading impact will mean lower sediment and P loss. The risk they pose to sedimentation through erosion of land is less than cattle too.

15. Phosphorus contamination of surface water from sheep and beef farms is typically the result of eroded sediment from surrounding land but may also be a result of higher than optimal Olsen-P levels in soils.

16. Faecal microbes contain organisms, such as *Escherichia coli (E. coli)*, which are deposited in dung and can be lost directly in waterways if animals have unrestricted access to them. When faeces are deposited on pasture the faecal bacteria can be mobilised during rainfall via overland flow and transported to waterways. I have seen the will say statement of Dr Corner-Thomas and agree sheep are less attracted to waterways than cattle and therefore are less likely to directly deposit faeces into waterways.

17. Identifying and applying farm-specific mitigation strategies to critical source areas (CSA) is a key strategy to successfully reduce the impact of sheep farming practices on freshwater health. Reducing the risk of overland flow occurring in CSA or minimising mobilisation of a contaminant source will help to reduce the overall risk of losing contaminants to waterways.

18. Management responses (for all contaminants of concern) require flexibility and need to be tailored to the specific farm system taking into consideration of underlying characteristics of the farm such as geology, soil, slope, topography, vegetation cover, erosion potential and climate. Farm planning is an effective way to do this. Management options recorded in farm plans include: stocking rate, appropriate paddock selection in certain weather conditions (areas prone to overland flow during wet periods, keep stock out when wet), keeping vegetative cover on pastures, careful cultivation or low tillage, stock exclusion from waterways at certain times, keeping animals well fed to reduce them wandering in search of feed and providing shelter for animals away from waterways. I am satisfied that Appendix N to the Proposed Southland Water and Land Plan provides an appropriate framework to give me confidence that these mitigations could be put in place, as does the B+LNZ farm planning environmental module.

19. Blanket fencing rules are unlikely to achieve the desired effect and do not account for the diversity and complexity of sheep and beef farms. I have seen the will say statement of Dr Stevens and note his evidence as to the cost to exclude sheep with fences. The costs are at least partly due to the nature of fences required (e.g. more wires) to keep sheep contained. This is because sheep are smaller and more adept at pushing around or through fences. Another issue, arising from their size, is the need for fences to closely follow the topography of a paddock to prevent sheep from going under fences.

20. Additionally, in some areas the topography will make it very difficult or impossible to fence adequately. The topography and threat of ground movement in some areas around waterways also make fencing impractical and inefficient in light of the risk.

21. Fencing and exclusion of sheep may also lead to excessive vegetation in and around waterways. In turn, that may exacerbate flooding risk due to

poor water flow though drains or waterways blocked by excess vegetation. Furthermore, the fences themselves can be barriers to the passage of water and do the same. Therefore, in addition to the direct cost of fencing, additional costs may arise.

22. The different characteristics of waterways also have an impact on the effectiveness and efficiency of fencing. For instance, some waterways are naturally protected from stock due to topographic features (e.g. steep sides) or vegetative cover excluding stock.

T S Orchiston
1 November 2021