

Proposed Southland Water and Land Plan Hearing Statement

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1. My name is Carly Sluys.
2. I am the Environmental Data Analyst at B+LNZ, and my role involves modelling Sheep and Beef farms using Overseer and Farmax.
3. Today I am going to provide you with:
 - a. an overview of the current nutrient losses from the case study farms used for the Southland Economic Project;
 - b. the mitigations modelled to reduce nutrient loss; and
 - c. the effect that these modelled mitigations had on the nutrient loss profile and farm profitability.
4. Sheep and beef farming systems are complex and diverse. These complexities make it difficult to identify any set of specific factors that drive nutrient loss, and there is a different combination of factors causing nutrient loss on every farm.
5. This complexity can make it challenging to represent and model sheep and beef farming systems in OVERSEER.
6. For the sheep and beef sector, phosphorus loss is a more important focus for contaminant management when compared with nitrogen loss. However, sheep and beef farm systems do not lose disproportionate amounts of phosphorus when compared to other land uses in the study.
7. Managing phosphorus through critical source areas is a key way to mitigate loss of this contaminant on sheep and beef farms. However, OVERSEER is not the most effective method of capturing, modelling or predicting Critical Source Areas, nor is it able to estimate the degree to which phosphorus loss can be reduced through critical source area management. This is because current nutrient budget guidelines are based on a farm operation.
8. Figure 1 shows the nitrogen losses for the Project case study farms. To put these results into context regionally, we can compare our findings with the other pastoral land uses. As shown sheep and beef farms tend to be minor contributors to nitrogen.

9. The baseline nutrient loss results show that losses were less than 15kg N/ha/year on two-thirds of the drystock case study farms. The Project found that across the 43 case study farms, average loss was 15kg N/ha/yr and median loss was 13kg N/ha/yr. The range was 5 to 37kg N/ha/yr, and with the deer farms included the range extended to 50kg N/ha/yr.

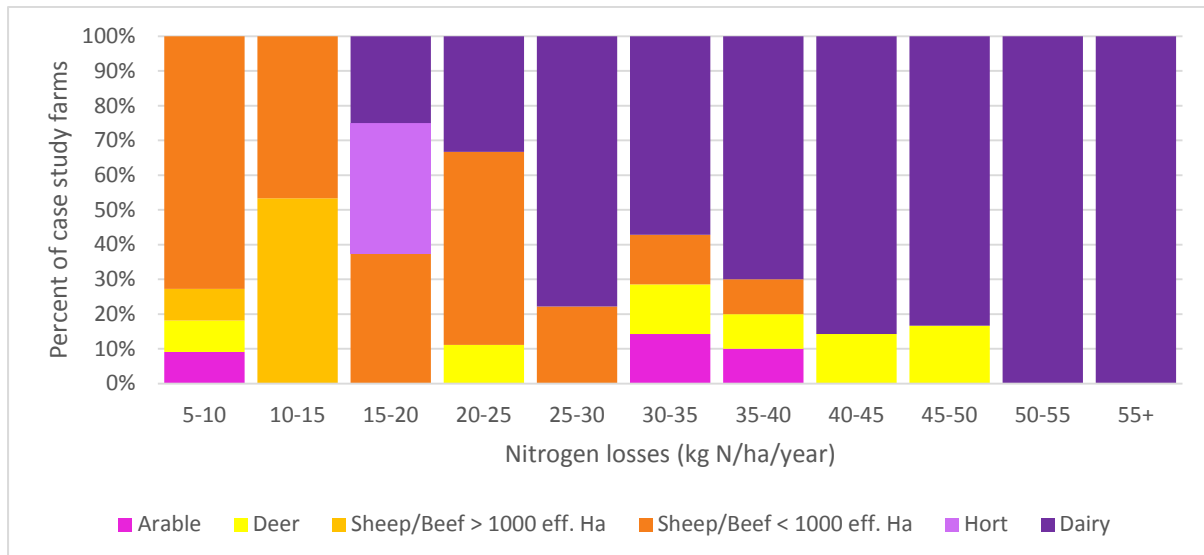


Figure 1: Baseline Nitrogen losses for Southland case study farms

10. By comparison, Figure 2 shows modelled phosphorous loss across all case study farms. Baseline phosphorus loss ranged between less than 0.3 to 1.4kg P/ ha/ yr, with an average of 0.7kg P/ ha/yr. When the deer farms are included the range increase to 2.5kg P/ha/yr.

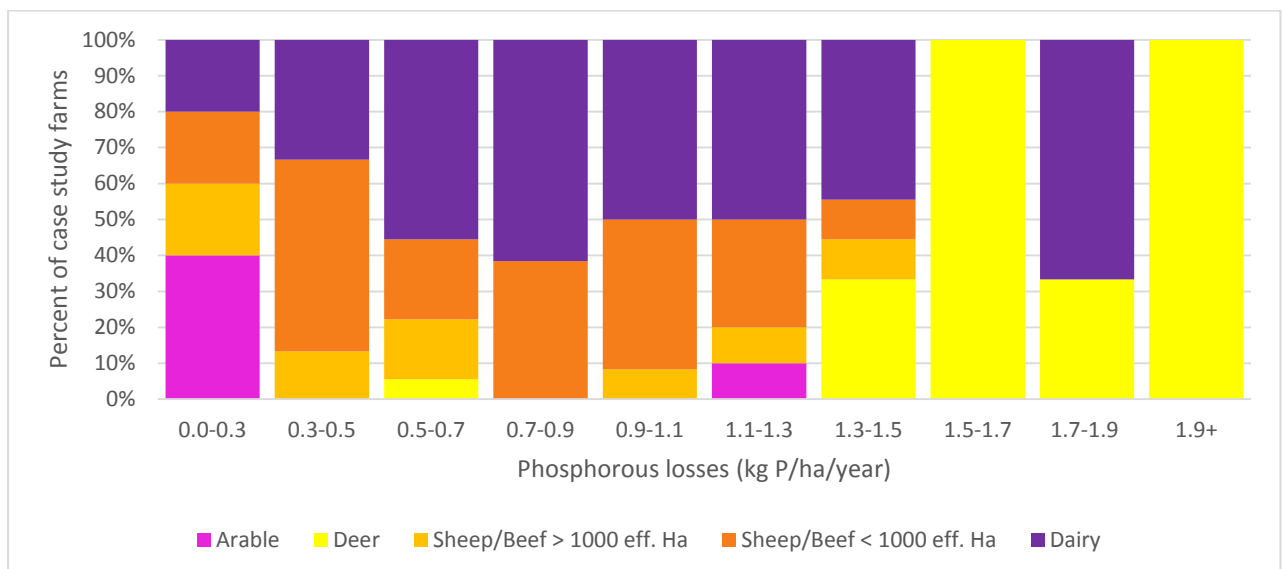


Figure 2: Baseline Phosphorus losses for Southland case study farms. Note: Horticulture did not report phosphorus losses

11. Through my work in modelling the farm data for the Project, no clear relationship between nitrogen and phosphorus loss was established.
12. In terms of mitigations available the sector has very few 'levers to pull'. We targeted farm management practices to model, in particular nutrient inputs, crop and stock policies.
13. Generally speaking, the mitigations modelled in the Project had a minor effect on the nutrient loss profile, but some effect on farm profitability. The effect on profitability was positively correlated with stocking rate. For example, if a mitigation resulted in destocking, farm profitability declined.
14. A blanket activity threshold of 50 hectares, for winter grazing or other key focus activities, particularly in relation to larger farms (i.e. farms over 1000 hectares), will not necessarily result in Council being able to target practice change to areas where losses are high.
15. In conclusion sheep and beef farms are complex and diverse farm systems. They generally have lower nutrient loss profiles, with limited levers to pull to mitigate losses.