**BEFORE THE INDEPENDENT COMMISSIONERS**

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of the Proposed Waikato Regional Plan Change 1 - Waikato and Waipa River Catchments, and Variation 1 to proposed Plan Change 1

**AND**

**IN THE MATTER** of submissions under clause 6 First Schedule

**ON BEHALF OF** **BEEF + LAMB NEW ZEALAND**
**Submitter**

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# EXECUTIVE SUMMARY OF RICHARD PARKES
# 26 MARCH 2019

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## INTRODUCTION

1. My full name is Richard Parkes

2. I am the Environment Capability Manager – North Island for Beef + Lamb New Zealand

3. I have been engaged by Beef + Lamb New Zealand to provide evidence on managing nutrient, pathogen and sediment loss on dry stock farm with a particular focus on supporting meaningful action, for the hearing on Proposed Plan Change 1 for the Waikato and Waipa Rivers, and Variation 1 to this plan change (PC1).

4. I provided a Statement of Evidence in Chief on behalf of Beef + Lamb New Zealand dated 15 February 2019

5. I confirm the qualifications and experience set out in my Statement of Evidence in Chief.

6. As set out in my Evidence in Chief, I have read the Code of Conduct for Expert Witnesses in the Environment Court's 2014 Practice Note and I have complied and continue to comply with it. I confirm that the opinions I have expressed represent my true and complete professional opinions. The matters addressed by my evidence are within my field of professional expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

## EXECUTIVE SUMMARY

7. Over the past 30 years and in part as a response to neo-liberal reforms, international markets and environment conditions the sheep and beef sector has demonstrated its ability to adapt. Whilst doubling its contribution to national GDP, Sheep and beef cattle numbers have fallen from 58 and 4.6 million, respectively, in 1990 to 27.4 and 3.6 million, respectively, in 2017 (Mackay et al, 2019) with corresponding reductions in greenhouse gas emissions (GHG) (30% less than 1990's), along with decreased nitrogen (N) and phosphorus (P) footprints.

8. There has been an increased recognition that farming systems must fit with the 'natural capital' of the land. Where 'natural capital' is

defined as the “stocks of natural assets that yield a flow of ecosystem goods or services into the future” (Dominati et al., 2010). At the farm scale they can be considered the farm’s soil, geology, climate, slope, freshwater, and biodiversity values.

9. This can be observed through, for example, the retirement of areas of the farm that are less suited to pastoral agriculture, and the selection of livestock age and class that recognises the underlying characteristics of the farm such as soil, slope, aspect, topography, and risk of erosion.

10. Farms and particularly dry stock farms are complex and dynamic systems, socio-ecosystems with people at the core. Farmers are managing a dynamic landscape which in turn requires dynamic management.

11. An outstanding feature of the sheep and beef sector, in comparison with other agricultural land uses, is the high degree of spatial and temporal variation in both landscape characteristics and in farm systems and processes.

12. For the sector to remain resilient moving forward, the retention of the ability for farm businesses to be flexible, adapt, innovate, and respond to both climate and market changes as well as personal circumstances, is essential.

13. Policy and regulation that supports dynamic management is required. One size fits all prescriptive solutions underestimate the complexities of the agro-ecosystem, and can have perverse outcomes in relation to the ability of the farm to optimise its environmental performance.

14. Key potential water contaminants for the sheep and beef sector are sediment, phosphorus (P) and faecal microorganisms. The risk of losses from sheep and beef farms of these contaminants is not comparatively higher than other pastoral land uses, and in some cases can be lower. In comparison, N losses from sheep and beef farm systems are generally lower than that of other agricultural sectors (except forestry). Table 1 and Figure 1 in paragraph 36 of

my evidence speak to the relevant differences.

15. Sheep and beef farmers are generally extensive with low inputs as they farm to the grass curve (i.e. farmers stock the land according to the pasture growth curve), with low inputs such as fertiliser and low nitrogen leaching profiles in comparison with other land use.

16. Overland flow is the primary contaminant transport pathway associated with sheep and beef farming, although the nature and scale of this loss are highly variable throughout the region.

17. The management of Critical Source Areas (CSAs)[1] is one of the best ways to mitigate environmental risk associated with sheep and beef farming, with up to 80 percent of sediment and phosphorus loss able to be mitigated in this way (McDowell et al., 2011; Monaghan et al., 2017).

18. With CSA management much like a number of Good Farming Practices (GFP) relevant to the dry stock sector require dynamic or active management to manage associated risk. CSA are dynamic and temporal, requiring a potential pollutant and a transport mechanism. As the timing and location of the farm practice is rotated around the farm often over a number of years, for example cropping, the location and management consideration required to manage CSA's also change. What is required by regulators, the public and consumers is assurance that risk management system or processes are in place. This level of assurance supports the complexity and dynamic nature of the risk being managed. Prescribed farm actions firstly don't cater for the complexity of the risk and secondly do not provide assurance of its management.

19. Land Environment Planning (LEP) provides the most efficient and effective way of identifying the opportunities and limitations of the natural capital assets (climate, soil, topography, biodiversity, and water) of the farm, including the identification of CSA areas, and ensure that farming systems and practices sustainably manage these natural resources. We can look to SLUI (Sustainable Land

[1] Parkes (2019) Evidence in Chief, paragraphs 18 and 46

Use Initiative) plans in the Horizons Region and WRECI (Wellington Regional Erosion Initiative) programme in Greater Wellington region as successful examples that will be amplified and replicated through MPI's Hill Country Erosion Fund.

20. The effectiveness of adopting advanced LEP[2] supported by LUC mapping has been demonstrated in a study of the use of SLUI in the Horizons region (Snelder, T. 2018). Since the 2004 storm event, 683 plans covering 493,650 ha (22% of the region) have been developed with 80-85% of mitigations implemented at a cost to farmers of $22 million, resulting in modelled reductions in regional sediment load of 47% and average catchment reductions of 27%.

21. Land Environment Planning[3] takes a wider approach to sustainability than purely acting as a compliance tool. Land Environment Planning also consider the economic, environmental and family wellbeing components of the farming enterprise. It acts to add real value to the farming business, guiding long-term strategic farm and business planning as well as day-today management decisions.

22. The process of Land Environment Planning[4] focusses on categorising the farm's natural capital assets and undertaking an assessment of their health, production opportunities, and vulnerabilities. It takes the farmer through an assessment of the farm's natural capital and enables the farmer to adopt farm systems and management approaches that manage environmental risk, while providing production opportunities. Such an approach can help to link stock classes and stocking rate to the capability of the land. It can even identify issues with the capability of the LMU, leading to areas of the farm being retired. Areas may be identified where lighter or younger stock should be carried, or where other productive opportunities exists (e.g. horticulture on high-value and robust soils). While the approach incorporates GMP or GFP, the first element is to consider matching farming systems to the capability of the land,

[2] Parkes (2019) Evidence in Chief, paragraphs 78 and 79
[3] Parkes (2019) Evidence in Chief, paragraph 21
[4] Parkes (2019) Evidence in Chief, paragraphs 61 and 62

and once this is undertaken to then consider what practices should be applied and how they should be undertaken.

23. Land Use Capability (LUC)[5] remains the backbone of advanced land environment, or farm environment, planning. It provides a system that categorises the natural capital of a farm's land resources. The system can be further strengthened through the identification of critical source areas and the identification of sensitive receiving environments.

24. Land Environment Planning captures stewardship and sustainability as measures of success, offering a way to both provide proof points for programmes such as the Sustainable and Ethical New Zealand Farm Assurance Programme (SENZFAP) and support access to environmentally discerning markets. Frameworks that support and empower collective community ownership of the issues and the solutions provide a more enduring and outcomes-based approach than reliance on prescriptive regulatory frameworks (OECD, 2017).

25. Sub-catchment planning allows for the identification of risk at the catchment scale and translates it into targeted on-the-ground action, which is more efficient and effective than methods that approach risk at a larger, regional, scale. It also enables those implementing the change to understand why the changes need to be made and to have a say in designing solutions. This brings with it both individual and collective ownership of the issues and the solutions. This means that change is more enduring, and outcomes are more likely to be achieved (OECD, 2017)

26. The majority (e.g. 80%) of P surface runoff losses occur from areas that occupy a minority (e.g. 20%) of the catchment (Gburek et al 1998)[6]. Sub-catchment planning enables the identification of these areas of risk and supports the efficient and effective targeting of resources. Targeting risk closer to source is far more cost-efficient and environmentally effective than targeting the bottom of

[5] Parkes (2019) Evidence in Chief, paragraph 77
[6] Parkes (2019) Evidence in Chief, paragraph 49

catchments.

27. By pooling resources and choosing the best location for mitigation a much more effective and less costly solution may result[7]. These benefits go well beyond just constructed wetlands.

28. Sub-catchment approaches, which may be supported by advanced land management tools such as Land Use Capability Indicator (LUCI) and MitAgator, provide the opportunity to target intervention at those areas within the catchment where the biggest environmental outcomes can be achieved. This includes all contaminants of concern such as sediment, Phosphorus, pathogens, and Nitrogen.

29. Sub-catchment approaches support integrated and holistic approaches, such as ki uta ki tai (from the mountains to the sea). A sub-catchment approach provides for a whole-of-catchment approach, which connects communities with each other and environmental outcomes of their actions.

30. BLNZ research undertaken as part of the review of our Land and Environment Planning (LEP) programme has identified the need for ongoing support for farmers to complete and implement their LEP's. Farmers have also said that they want their LEP's to integrate with catchment planning. In response BLNZ have developed a Catchment Community Programme. This programme supports farmers and farming community to take ownership of solutions.

**DATED** this 26 day of March 2019

Name Richard Parkes

[7] Section 42A report (2019), para 138 page 27.