

IN THE MATTER

of the Resource Management Act 1991

AND

IN THE MATTER

Lake Rotorua Nutrient Management –
PROPOSED PLAN CHANGE 10 to the Bay of
Plenty Regional Water and Land Plan

BETWEEN

DairyNZ Limited

AND

Bay of Plenty Regional Council

**SUMMARY OF EVIDENCE OF CARLA FRANCES MULLER
FOR DAIRYNZ LIMITED AND FONTERRA CO-OPERATIVE GROUP LIMITED**

31 March 2017



Cnr Ruakura Road & SH 26
Newstead
Hamilton 3286

- I. My full name is Carla Frances Muller
- II. My qualifications and expertise are set out in my Statement of Primary Evidence.
- III. I confirm I have read the Expert Witness Code of Conduct set out in the Environment Court Practice Note 2014 and agree to comply with it.

1. SUMMARY OF KEY POINTS OF EVIDENCE

1.1. My evidence addressed the following matters:

- a) The economic impact of Proposed Plan Change 10 (PC10) on dairy farmers.
- b) The difference in nitrogen and phosphorus mitigation strategies.
- c) It supports LR Method 2 which relates to the science review, in particular it supports the amendments to LR Method 2 as set out in the Proposed Lake Rotorua Nutrient Management Plan Change 10- Staff Recommendations (Strikeout Version) (January 2017).

1.2. The scope for this evidence was set out in the Joint DairyNZ and Fonterra Submission on PC10. This submission did not request changes to nitrogen targets, however, it noted that PC10 rules impose significant costs to dairy farmers. Page 6 of Joint DairyNZ and Fonterra Submission on PC10 requested that LR Method 2 addresses all the scientific and policy aspects.

2. OVERVIEW OF EVIDENCE

2.1. In section 5 of my evidence I set out the case study analysis I undertook to assess costs of proposed PC10 to dairy farmers. While this was only a case study analysis of three farms, this farm systems modelling showed that for actual farms in the Lake Rotorua catchment achieving the 2032 NDA and managed reduction targets will incur economic costs. This ranged from an 8% to 22% reduction in operating profit. After this reduction in operating profit, farms still need to be able to pay interest and tax.

2.2. Section 6 and 7 of my evidence discussed the relationship between managing nitrogen and phosphorus losses. It discussed how mitigating nitrogen leaching does not mitigate phosphorus losses proportionally and it is important that farmers understand all required nutrient reductions in order to select the most cost-effective mitigation options for their farm.

3. Agreed Matters

3.1. I do not believe the farm systems modelling undertaken as part of the Joint DairyNZ and Fonterra Submission on PC10 is fundamentally different to other farm systems modelling undertaken by the Bay of Plenty Regional Council (and their relevant experts). Models provide an indication of what reality could be, rather than exact predictions of behaviour. Furthermore, models are approximations of reality and we can't know exactly how farms will, or are capable of, responding and therefore, assumptions are likely to differ slightly between modellers. Some assumptions differ in the farm systems modelling undertaken for PC10, including the possible productivity gains, however I do not believe these are significant enough to dramatically alter

the overall conclusions of negative economic consequences for dairy farmers as a result of PC10.

- 3.2. Nitrogen and phosphorus losses originate in fundamentally different processes. Mitigating nitrogen leaching does not mitigate phosphorus losses proportionally. The decision about which nutrient to prioritise markedly alters the choice of mitigation. It is most cost-effective to select mitigations based on which nutrient or nutrients is prioritised. This relates to mitigations targeted at nitrogen, phosphorus or both. I acknowledge that the Proposed Lake Rotorua Nutrient Management Plan Change 10- Staff Recommendations (Strikeout Version) (January 2017) has an increased focus on managing phosphorus losses via reducing risks of phosphorus loss through implementing GMP. This appears in the amendments to LR P2 and Schedule LR 6.

4. MATTERS DISCUSSED DURING PRESENTATION OF COUNCIL EVIDENCE

- 4.1. There is a risk associated with a lack of clarity in the amendments to LR P2 and Schedule LR 6 as to what is considered GMP and what will be considered appropriate mitigation actions within critical source areas. I do not support a numerical farm load for phosphorus as there is no widely accepted tool that both measures phosphorus loss from farm and models cost effective mitigations for phosphorus such as managing critical source areas.
- 4.2. I do not believe the Bay of Plenty Regional Council has a robust estimate of the potential cost of mitigating phosphorus losses, including a comparison of on-farm, edge-of-field or in-lake costs. McDowell (2014) has been used to quote a 2% reduction in profit to mitigate phosphorus losses by approximately 40% from focusing on critical source areas. However, this low cost is only applicable when a farm is suited to applying all the low cost mitigation options specified which is discussed in the McDowell (2014) paper. For example, if a farm is not suitable for the use of RPR or already has Olsen P levels at, or below, the agronomic optimum then the cost is likely to be higher for the same level of reduction in phosphorus loss. I am not aware of any work that looks at how applicable these mitigation options are to all dairy farms in the Lake Rotorua catchment, e.g. how many farms are suitable for the use of RPR, and therefore does not result in a robust estimate of the cost of mitigating phosphorus losses in the Lake Rotorua catchment.

5. CONCLUSIONS

- 5.1. I support the science review in LR M2 in the Proposed Lake Rotorua Nutrient Management Plan Change 10- Staff Recommendations (Strikeout Version) (January 2017), in particular part c(iii).
- 5.2. I support the provision of clarification on GMP and mitigation actions within critical source areas. This will enable farmers to choose the most suitable mitigations to address their required nitrogen targets as well as their required phosphorus management in the nutrient management.

REFERENCES

McDowell, R. (2014). Estimating the mitigation of anthropogenic loss of phosphorus in New Zealand grassland catchments. *Science of the Total Environment*, 468-469 (2014), 1178-1186.