

**IN THE MATTER OF**

The Resource Management Act 1991

**AND**

**IN THE MATTER OF**

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

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**REBUTTAL EVIDENCE OF SANDRA BARNES  
ON BEHALF OF THE BAY OF PLENTY REGIONAL COUNCIL**

**Evidence topic: Statement of rebuttal evidence – Economic and social impacts**

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**Qualifications and experience**

1. My full name is Sandra Alison Barnes. My qualifications, experience and commitment to the Code of Conduct for Expert Witnesses are as set out in paragraphs 2-7 of my evidence in chief dated undated, completed 15 January, and filed 20 January 2017.

**Scope of evidence**

2. Since preparing my evidence in chief I have reviewed the expert evidence of Carla Muller on behalf of DairyNZ Limited and Fonterra Group Limited, Philip Mark Osborne on behalf of Rotorua Lakes Council, and James Britton Fuller on behalf of Rotorua Lakes Council.

**Carla Muller for DairyNZ Limited and Fonterra Co-operative Group Limited**

3. Ms Muller has analysed three dairy farm case studies in the Lake Rotorua catchment (para 3.10). The report of this analysis is appended to the DairyNZ and Fonterra submission on Plan Change 10.<sup>1</sup> The three dairy farms analysed are of similar size (230-276ha), similar pNDA (52-56kgN/ha/yr).
4. However, the dairy farms in the catchment are fairly diverse. Of the 20 (of 26, or 77%) dairy farmers that have engaged with Council to work out their Nutrient Management Plan and provisional NDA:

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<sup>1</sup> Joint DairyNZ and Fonterra Submission on the Proposed Plan Change 10 to the Bay of Plenty Land and Water Plan.

- Farm sizes range from 28ha to 479ha, average 199ha, standard deviation 130ha.
- Benchmarks based on 2001-2004 farming activities range from 22kgN/ha/yr to 149kgN/ha/yr, average 88kgN/yr, standard deviation 28.3kgN/ha.
- Provisional NDAs range from 37kgN/ha/yr to 79kgN/ha/yr, with an average of 58kgN/ha/yr, standard deviation 12.8kgN/ha/yr.

Based on this sample, the three farms studied are larger than average, and close to average in terms of provisional NDA. This is a narrow area within the range of dairy farms. We aren't given information about where they sit in terms of dairy farm system, and the farm characteristics (e.g. soil type, rainfall). The results of this study should not be extrapolated to the catchment.

5. Of the three farms Ms Muller analysed, one is currently non-compliant. With nitrogen losses above its benchmark, and currently leaching 106kgN/ha/year, the non-compliant farm is substantially higher than most, if not all, other farms in the catchment. The cost of reduction for this farm from this level could reasonably be expected to be high. This farm is clearly not representative of farms in the catchment.
6. This leaves two compliant dairy farms of which we have partial information, with operating cost losses of 8% and 22% to achieve their provisional NDAs (para 4.3).
7. In the analysis of these farms the assumptions for each farm are that (a) the cows will have an annual \$10 gain in breeding worth each year, and (b) that a support block is added to the farm. It isn't clear why a support block is added. As a mitigation it is costly given the cost of run-offs, the opportunity cost of capital, and the comparative cost of grazing.
8. Of the 20 dairy farms that have engaged with Council to establish their Nutrient Management Plan and their provisional NDA, 17 are currently operating below their 2001-04 benchmark. If we assume that dairy farmers, as business people, are rational economic actors (see para 5.3, Muller evidence), then we must also assume that they are maximising profits. That is, the current reduction does not reduce profit. The range for current leaching is 23 to 952kgN/ha/yr, average 63kgN/ha/yr, standard deviation 20.8kgN/yr. Across the 20 farms this is a 29% average reduction.
9. The DairyNZ and Fonterra submission on Plan Change 9 (Appendix 1) also supports the profit maximising view of farmers, stating that the reductions in current leaching 'are due to high urea prices, moving away from forage crops due to variability and uncertainty in weather patterns, and small reductions in stocking rate together with slight increases in per cow production.'
10. While I acknowledge that many farms in the Lake Rotorua catchment will experience reductions in operating profit to meet their provisional NDA, the fact that 6 dairy farms are currently achieving their provisional NDA with nitrogen excesses is more aligned with the research that Mr Matheson (Perrin Ag) has done for the Stakeholder Advisory Group (StAG) and the Council. The resulting analysis revealed two of the

six farms increasing operating profit while reducing nitrogen reductions (refer Mr Matheson evidence para 21).

11. I acknowledge Ms Muller's point (para 5.3) regarding the economic costs of farmer training and consultant advice to achieve the nitrogen reductions required. Council has set up the Advice and Support Fund to fund farmers working with farm advisors to build an OVERSEER file and develop a Nutrient Management Plan for their farm to take them through to their 2032 provisional NDA target. This funding also covers business support for farmers who find it particularly difficult to meet their provisional NDA. Where significant of-farm changes are made the Nutrient Management Plan may have to be reworked. This will be a cost to the farmer.
12. Ms Muller references the Dairy Statistics 2014 publication, which records a compounding 1.5% year-on-year increase in milk solids production per cow in the 20 years to 2012. In the same publication, in the 22 years to 2014, the year-on-year increase is >1.7%/annum (compounding) Over the same period the per hectare production of milk solids has increased 2.32% per annum (compounding). The total per hectare productivity gain for dairying over the 22 year period of 65.7%. Ms Muller's point that such a productivity gain will not offset the nitrogen reduction required may be correct.

#### **Philip Mark Osborne Rotorua Lakes Council**

13. Mr Osborne refers to the economically inefficient land uses as an aspect of a grandparenting approach to allocation, compared to a natural capital allocation (para 35). Without commenting on the rightness or wrongness of this claim, there are many reasons why a landowner of good quality land might undertake the highest return land use. For the purposes of modelling we generally assume people in businesses are solely economic actors, but in real life we make decisions for a range of reasons that reflect our preferences. For example, dairy farming requires large financial investment, and lifestyle commitments such as daily milking. It therefore does not follow that allocating nitrogen to high class land will change the land use.
14. Mr Osborne refers to the cost for purchasing nitrogen as a deterrent for developing previously unutilised dairy farming land by creating a barrier to entry (para 42). This is not the only barrier to entry. There are many barriers to entry, such as those mentioned in para 13 (above).
15. Mr Osborne correctly points out (para 66) that the nitrogen allowance requirement creates a difference in the market price of land, which is related to the differential between allocations to different properties. This suggests that future landowners will pay a price for the property that reflects the allocation of nitrogen – a lower price for land with a low nitrogen allocation. It follows that the barrier to entry will be no greater than previously, it is now separated into a property price and a nitrogen allocation price.
16. In para 70 Mr Osborne refers to the impact of trading frictions, observing that if trading is more efficient under a natural capital allocation than under sector range allocation, then the direct economic impacts are relatively less, and natural capital

becomes a better option. However, a natural capital allocation is based on long term sustainability of land use (see para 47, Mr Osborne's evidence). This suggests that trading would not occur. See for example the Market Economics research where 50% trading restriction reduces the Rotorua economy by \$8.3m – a reduction 137% greater than the \$3.5m reduction projected under the same trading scenario. Less trading increases the cost of any allocation scenario.

17. As Mr Osborne points out (para 43) that existing landowners, including Māori landowners, face a disproportionate loss under the proposed allocation where land is underdeveloped in terms of a nitrogen intensive use. This is the argument regarding a barrier to entry (para 15 – above). Having said this, developing this land for dairy farming would still necessitate investment in to a milking shed, fencing, ensuring adequate water, and the other costs of dairy farming. Allocation for undeveloped land will be addressed in evidence by Gemma Moleta, BOPRC.
18. Mr Osborne refers to the PC10 approach to allocation as 'grandparenting'. Grandparenting is historical allocation directly related to historical discharges. Mr Osborne correctly points out (para 44) that grandparenting favours landowners with high leaching. The allocation method in PC10 is 'sector range', and while it does take into account historical discharges, it establishes a range for land use sectors that does not benefit those leaching above the sector norms, and does lift low leaching farms (relative to sector norms) into that range.
19. In para 48 Mr Osborne refers to the lack of analysis of all costs and benefits of an assessment of the alternative allocation approaches. The criteria for considering allocation methods are set in the Regional Policy Statement Policy WL 5B, and include a range of criteria broader than economic costs and benefits. In a collaborate process, StAG assessed the allocation options in a transparent way. Consideration included the economic reports provided by Parsons et al. and Market Economics Limited, and StAG's knowledge and experience of the catchment. StAG recommended sector range allocation as best representing the RPS principles and considerations.
20. In para 62, Mr Osborne suggests that the Council has been too narrowly focused and has not adequately assessed the level of risk and the costs and benefits of all possible options for managing nitrogen discharges into Lake Rotorua. I consider that within the requirements for Lake Rotorua nitrogen reduction as set out in the RPS, we identified the *reasonably practicable* ways of achieving the objective, as is required by s32 of the RMA.
21. Mr Osborne makes several criticisms of the s32 evaluation. See for example, paras 48, 62, 71 and 88. The s32 evaluation report describes the policy process, and includes the work and the findings of that process. In this case the policy process included extensive work with StAG. StAG membership included representatives from the Lake Rotorua Primary Producers Collective, Lakes Water Quality Society, the Bay of plenty Regional Council (elected member), the Rotorua Lakes Council (elected member), Te Arawa Lakes Trust, Māori Trustee, Forestry sector, Māori

landowners, and small block owners.<sup>2</sup> Observers from industry sectors included representatives from Beef and Lamb NZ and DairyNZ. As required, the s32 evaluates the effectiveness and efficiency of the provisions for achieving the objectives, and *where practicable*, has quantified these benefits and costs (s32(2)(b)). Prior to notification Council commissioned Rob Van Voorthuysen (Director of Van Voorthuysen Environmental Limited, with extensive experience in environmental and resource management, policy analysis and senior corporate management) to peer review of the s32. Where appropriate changes were made in the s32 at that time. These were not substantive. Mr VanVoorthuysen stated that he considered that he considered the general framework and content of the s32 report was sufficient for plan notification purposes. I consider that the s32 contains a *level of detail that corresponds to the scale and significance of the environmental, economic, social and cultural effects that are anticipated from the implementation of the proposal*, as is required in s32(1)(c) of the RMA.

### **Rotorua District Residents and Ratepayers (RDRR)**

22. Under the title 'Economic analysis of the impacts of PPC 10', this submission refers to the Section 42A report and perceived inadequacies in economic analysis.
23. Regarding the effect on the Rotorua economy, I refer RDRR to the report by Dr Nicky Smith, Market Economics Limited on which projects the economic consequences to the district, region and nation of land use change. Evidence will be presented by Dr Nicky Smith, Market Economics Limited, and author of the report *Economic Impacts of Rotorua Nitrogen Reduction. District, Regional and National Evaluation*. This report is publicly available and is part of the s32 evaluation.
24. Regarding the effect on rural land values, I refer RDRR to the report by Martyn Crave, Telfer Young (Rotorua) Limited, titled Land values in the Rotorua area and Lake Rotorua Catchment. This report is publicly available and is part of the s32 evaluation. This report does not address the impact on the rates take.

**Name:** Sandra Barns

**Date:** 6 March 2017

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<sup>2</sup> Stakeholder Advisory Group (StAG) Terms of Reference