



## Qualifications and experience

1. My full name is Warren James Parker.
2. My qualifications are BAgrSc (Hons I, Farm Management); MAgrSc (Hons I, Farm Management) and PhD (Animal Science). My work experience includes teaching and research in farm systems and agribusiness (18 years at Massey University); executive leadership at the Crown Research Institutes AgResearch, Landcare Research and Scion; and directorships of technology start-up and other companies. I was CEO of Landcare Research and Scion, each for 6 years. This diversity of roles across sectors - pastoral; conservation and environment, and forestry – has equipped me with skills in strategy formulation and execution, and knowledge and expertise in sectoral integration and value chain design. These senior leadership roles have also given me first-hand understanding of how to boost technology and practice transfer to and increase innovation within these sectors.
3. While I retired as CEO of Scion on 6 March 2017, the original submission (#71) was made whilst I was still in the role. I have the sanction of the new CEO, Dr Julian Elder to speak on behalf of Scion for this submission. Scion, a Crown Research Institute, has a core purpose *“To drive innovation and growth from New Zealand’s forestry, wood product and wood derived materials and other biomaterial sectors, to create economic value and contribute to beneficial environmental and social outcomes for New Zealand”*.

## Scope of Evidence and Summary

4. The scope of my evidence concerns the process of developing Proposed Plan Change 10 and how this will impact on the forest industry within the Rotorua Lakes Catchment. However, because Scion has a national responsibility with respect to the growth and development of the forest industry in New Zealand, I am mindful that the learnings from the procedures and rule setting for this catchment could be applied to districts administered under different regional authorities who are also having to address the issue of excess nitrogen entering some of their waterways. This is important because forest owners often have forests located in several local government jurisdictions and consistency nationally such as via national policy statements is helpful.
5. My evidence addresses the following subjects:
  - The inequity to forestry of the proposed grandparenting nitrogen allowances.
  - The importance of establishing a framework that encourages the development of a future lakes catchment economy with sustainable and economically efficient use of nitrogen and not simply focussed on rectifying the historical over use of nitrogen.
  - The importance of providing consistent, easily interpreted information to land owners (and the owners of enterprises on land) concerning nitrogen reduction which keeps both them and other community stakeholders well informed and engaged; and provides them with future planning certainty.
  - The need for research to target knowledge gaps in OVERSEER® and build a better understanding amongst stakeholders as to “how it works” in order that it can be applied with confidence across different land types and enterprises within the Rotorua Lakes Catchment.

## Scion’s role in the Lake Rotorua Catchment

6. Scion owns 114 hectare of land adjacent to the Whakarewarewa forest and approximately 500 metres from the shores of Lake Rotorua. This includes a 6.1 hectare research nursery and 40 hectares of different selection lines of plantation tree species in the Long Mile Area.

7. Scion supports the objective of the proposed Plan Change 10 to limit the amount of nitrogen entering Lake Rotorua from land use and thereby restore the Trophic Level Index (TLI) of Lake Rotorua to a sustainable 4.2 provided - as Scion submitted and I restate below - those rules do not unfairly limit the options to increase the future productivity and economic contribution of plantation forestry in the Lake Rotorua Catchment.

## **Grandparenting is inequitable to plantation forestry**

8. The proposed allocations via grandparenting generate an inequity to plantation forestry (whether in established exotic or native tree species such as Manuka for honey production). The roots of this unfair and uneven treatment to the business of forestry are easy to identify – forestry is a very low “leacher” of nitrogen (3kg/ha/year) compared to other land use activities such as pastoral farming, yet it is to be restricted to its historic level into the future despite having played almost no role in the present excess flow of nitrogen into the Lake.
9. Further, this injustice to forest owners will increase into the future when the value of nitrogen is projected to increase, via two pathways: the opportunity cost of productivity gains foregone and the cost and difficulty of acquiring a consent to use additional nitrogen above the 3kg/ha/yr allowed (as described per Policy WL 4B of the Regional Water and Land Plan). Further, those with high allocations have potential to monetise this in the future by changing to a less intensive, low nitrogen input land use such as forestry. Forest owners have no such opportunity.
10. A similar inequity is imposed on Maori, as for example outlined by Central North Forestry iwi (CNI), who for various reasons (including time taken to settle Treaty negotiations and the fragmented nature of their land holdings) have not been able to intensify their land use through the use of fertiliser.
11. The solution is to not grandparent such generous nitrogen allocations to the sectors that generated the problem in the first place. A more appropriate solution would be to match the ability to use land to the land’s intrinsic use capability. As others have submitted, a natural capital approach would achieve this<sup>1</sup>.
12. Two considerations appear to have had undue influence on the present proposal: concerns about the impact of nitrogen allocations on the capital values of land particularly those where high levels of nitrogen input has occurred; and misunderstanding the overall economic returns to the district from high versus lower levels of nitrogen use.
13. These considerations are well-illustrated by the capital uplift that occurred when central North Island plantation forestry was converted to dairying (i.e. the land use change decision was not simply driven by measures of post-tax free operating cash flows or return on equity). As outlined by Monge et al. (2016) the conversion from forestry to dairy essentially privatised the capital gain to land owners whilst mostly socialising environmental costs<sup>2</sup> related to water quality and climate change. The fact that land use change to a more intensive nitrogen use continued to occur after rules to limit nitrogen leaching were advised is particularly egregious to forest owners (and Maori). As well, farm values reflect production output as reflected by land prices expressed in terms of

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<sup>1</sup> See for example, O’Brien, B. 2015. Allocation principles. Beef + Lamb New Zealand Environment Conference, accessed at <http://www.beeflambnz.com/farm/environment/environment-research/>

<sup>2</sup> Even with increased investment for on-farm assets for environmental management such as for dairy shed effluent this does not redress increased nitrogen leaching such as that from under cow urine patches.

\$/stock unit or \$/kg milk solid (MS). Whilst environmental limits are now a more prominent consideration in land purchase decisions, the above matters were not in Scion's view adequately considered during the consultation period for Rule 10.

14. This is why I observed in Scion's submission, *"Grandparenting of allowances, irrespective of the time of land use change to a higher discharge land use enterprise, together with the potential for land owners to now monetise NDAs at some future point in time is effectively a wealth transfer to those who caused the problem. Thus rather than "polluters paying" they are being rewarded."*

## **More attention should be paid to future best use of nitrogen and sustainable economic growth**

15. Scion is also concerned that grandparenting gives insufficient emphasis to the future value of nitrogen. From an economic development perspective nitrogen is now a capped resource with different marginal economic returns for land use enterprises and urban waste disposal (e.g. the cost to rate payers could be lower by allocating more nitrogen to Rotorua city to accommodate population growth than to supporting land production activities). In particular, with respect to plantation forestry we know trees established on nitrogen deficient soils respond well to relatively small amounts of nitrogen at planting and after thinning operations<sup>3</sup>. As well it will be advantageous as carbon prices rise, for post-1990 plantation forests that qualify for Emissions Trading Scheme (ETS) NZU (carbon) payments, to increase tree growth rates.
16. Thus, while forest owners to date have generally not elected to use much nitrogen, as Davis<sup>4</sup> noted in a report for Environment Waikato on reducing nitrogen into the Lake Taupo catchment, this could change as the earnings from the products of trees – timber, wood fibre, bark, oils, chemicals - and via carbon sequestration increase. Here, it is important to note the Paris 21 Climate Agreement and the need for signatories to this, to meet National Determined Contributions (NDC) for greenhouse emissions (i.e. decarbonise their economies). The Agreement provides a large and positive economic driver for forestry. New Zealand's NDC target, which will be reviewed and likely increased at five yearly intervals<sup>5</sup>, is a 30% reduction below 2005 levels. The New Zealand ETS started 1 January 2008 and therefore its purposes were well known prior to consultation with stakeholders on Rule 10.
17. As I described in Scion's submission, *"It is not clear from the material provided that the future returns that could be generated from each incremental unit of nutrient or other water quality attribute has been estimated. For example, research evidence from Central North Island forests shows a forester adding modest amounts of Nitrogen to their estate at key points of the growing cycle could have a substantial total impact on forest productivity and thus returns to the owner and also the wider region."*

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<sup>3</sup> Davis, M. 2005. Nutrient losses from forestry in the Lake Taupo Catchment. <https://www.waikatoregion.govt.nz/assets/PageFiles/3596/tr05-37.pdf>

<sup>4</sup> *Ibid.*

<sup>5</sup> Parker, W. 2016. Paris climate agreement and current forest plantings don't add-up. <http://www.scionresearch.com/general/publications/scion-connections/previous-issues/past-issues-list/issue-19,-march-2016/paris-climate-agreement-and-current-forest-plantings-dont-add-up>

18. Taking the above into account, we submit more attention should be paid to estimating likely future economic values of nitrogen. It is not onerous to do so – economic models such as those applied by Market Economics for the Lakes Catchment and Doole for the Waikato Healthy Rivers initiative can be used to estimate the marginal returns/costs of water quality attributes.

### **A common and consistent approach to information transfer should be adopted**

19. In Scion's submission we observed, *"The layout of the material and method of presenting the nutrient discharge allowances (NDAs) as per Schedule 1 is not intuitive. In particular, land owners have become accustomed to seeing NDAs expressed as units per hectare per year, eg kilograms Nitrogen/hectare/year."*
20. While this was not the final document, it did provide critical information for key stakeholders on nitrogen allowances. A scan of research papers and land owner extension documents (e.g. DaryNZ, Beef + Lamb<sup>6</sup>, Forest Owners) cite nitrogen inputs, outputs and allowances in units per hectare. Forest owners speak in terms of kgN/leached per year. We submit it would be very helpful for Councils – district and regional - to adopt a nationally consistent lexicon for nitrogen limits and allowances. Considerable complexity and difference in templates already exists for environmental plans across regions – we should not add to this. As noted earlier these differences in language and measures are especially not helpful where the land owner has properties in several local authority jurisdictions.

### **Prioritise research to address gaps in OVERSEER® with respect to the Rotorua Lakes Catchment**

21. Scion is aware of the criticisms made of OVERSEER® and the dominant focus during its early development on pastoral farming systems. Our pragmatic view is despite the well documented limitations and lack of understanding about its 'inner workings' it is the best available to policy, resource use and land management staff. Further, it provides the basis for nutrient balance calculations in other jurisdictions (e.g. Canterbury and Waikato), is being upgraded through the information derived from a wide range of research trials and can be integrated with other decision support tools. Recommencing with a different method for establishing baseline nutrient balances and leaching would be expensive and slow.
22. For these reasons we submit OVERSEER® must be enhanced with respect to its functionality for forestry and other non-pastoral land uses; and its algorithms should be made clearer to stakeholders than they are now. In particular, the Scion developed NuBalm for plantation forestry should be made available to land owners because, as well documented, afforestation provides one of the most powerful means for land owners to meet new nitrogen limits.
23. These improvements and better communication management when new versions of OVERSEER® are released is essential to build confidence in the model to support an equitable and genuine reduction in nitrogen to waterways and Rotorua's lakes.

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<sup>6</sup> O'Brien, B. 2015. Allocation principles. Beef + Lamb New Zealand Environment Conference, accessed at <http://www.beeflambnz.com/farm/environment/environment-research/>