

**BEFORE THE HEARING COMMISSIONERS**

**IN THE MATTER** of the Resource Management Act 1991  
("the Act")

**AND**

**IN THE MATTER** of the Resource Management Act 1991  
and the Environment Canterbury  
(Temporary Commissioners and  
Improved Water Management) Act 2010

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**STATEMENT OF REBUTTAL EVIDENCE BY CHRISTOPHER MARTIN KEENAN  
FOR HORTICULTURE NEW ZEALAND**

**9 SEPTEMBER 2014**

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**ATKINS | HOLM | MAJUREY**

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## **QUALIFICATIONS AND EXPERIENCE**

1. My full name is Christopher Martin Keenan, my qualifications and experience are set out in my evidence in chief.

## **CONTEXT AND SCOPE OF MY REBUTTAL EVIDENCE**

2. The context and scope of my rebuttal evidence is to respond to the statements of evidence from:
  - a. Gerard Willis;
  - b. S Pearson;
  - c. Alison Dewes;
  - d. Lionel Hume;
  - e. Stephen Douglass;
  - f. Robert Potts;
  - g. M Keaney;
  - h. Andrew Curtis;
  - i. Tim Ensor;
  - j. Anthony Davoren;
  - k. Geoffrey Deavoll;
  - l. Ian McIndoe; and
  - m. Jim Cooke.
3. A summary of my rebuttal evidence is:
  - a. Given the alternative approaches requested for clawback of nutrients by Willis, Pearson and Hume, I submit my preferred alternative to the notified approach in proposed policy 11.4.14.
  - b. A discussion on the evidence regarding transfers and reliability.
  - c. Use and frequency of nutrient budgets prepared by experts.
  - d. Accounting frameworks and the relevance of SOURCE modelling.

- e. Whether or not Variation 1 reflects a single nutrient approach.

## **APPROACHES TO MANAGING NITROGEN DISCHARGE ALLOWANCE**

4. Willis<sup>1</sup>, Pearson<sup>2</sup> and Hume<sup>3</sup> all seek different regimes for phasing out overallocation. Their responses include shorter timeframes to achieve objectives. They seek different objectives and some maintain that different parties are responsible for a greater or lesser proportion of the costs to phase out overallocation.
5. Alison Dewes introduces the concept of "equity in pollution rights"<sup>4</sup>. The difficulty is in defining what "equity" is in this context. In my view, the principles for nutrient allocation<sup>5</sup> attached to my Evidence in Chief describe the conditions where equity might be found.
6. In my view a system that grandparents some discharges in transition, followed by a move to an equal allocation of nutrients across similar production land after a period of time provides the most equity. In the short term, it recognises the legitimate expectations of individuals to depreciate out their invested capital, and in the long term it ensures that similar production land has a similar entitlement to encourage flexibility.
7. I agree with Dewes<sup>6</sup> that 2022 would be a suitable date for all farmers to achieve a minimum of Good Management Practice as defined by the MGM process This would include the systems developed to audit farm plans and the trained independent certifiers to ensure GMP is managing the risks associated with different farm systems.
8. It is my view that by 2022 the Regional Authority and the primary sector will have developed the on farm accountant and the catchment accountant to a point where a transfer system would be feasible to operate, to move nutrients to the

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<sup>1</sup> EIC G Willis para 111

<sup>2</sup> EIC Pearson Appendix 5

<sup>3</sup> EIC Hume paras 29 - 30

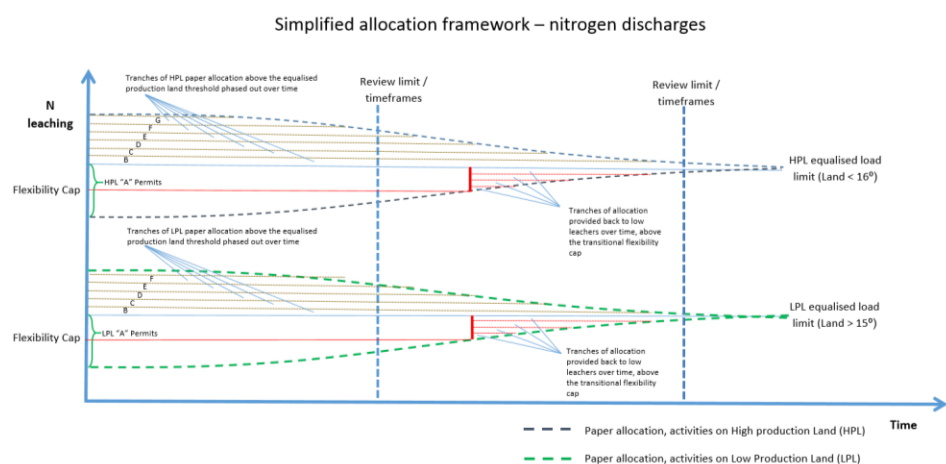
<sup>4</sup> Dewes EIC Para 122.

<sup>5</sup> <http://www.hortnz.co.nz/users/Image/Downloads/PDFs/hortnz-nutrient-allocation-principles-final.doc>

<sup>6</sup> Dewes EIC para 179.

highest value uses within a catchment limit. In my view that would be required to encourage flexibility of land use to the greatest extent possible.

9. With a transfer system in place, a transitional grandparenting approach can be phased out over time. In my view, the imposed “flexibility cap” could also be phased out, potentially by 2028. Phasing out of overallocation should not necessarily require low leaching land use activities to absorb the effects of higher discharges in perpetuity.
10. I propose the Variation outlines a set of numeric values for discharge allowances to be equalised over time; with tranches of nutrient discharge allowance phased out progressively for high emitters, and tranches of allocation to be phased in for low emitters over time.
11. **Figure 1** below outlines my preferred approach (note a larger version of this figure is attached at the end of this statement of rebuttal evidence):



12. In Figure 1 above, I would propose that the start date for the issuance of discharge allowances would begin in 2022. Regular reviews would be required to ensure the on farm accountants and catchment accountants could be updated. The reviews would also allow for ongoing assessment of the economic consequences, allowing for an adaptive management approach to achieving the limits.
13. Land could be divided simply into land with a slope greater than 15 degrees or less than 15 degrees. The basis for this division is that land less than 15 degrees is more accessible with tractors / cultivation equipment / and or irrigation equipment. I have checked with the SKM / Jacobs team providing science

support for primary submissions and they note<sup>7</sup> that production land divides in this way as follows:

- a. Area greater than 15 degrees: **151 ha**;
  - b. Area less than 15 degrees: **183,968 ha**.
14. I would propose that land below 15 degrees could be allocated at a ratio of 2 units to every 1 unit of allowance for land greater than 15 degrees. If I base my calculations on these proportions an equalised load limit would be roughly **22kg/N/ha/yr** on land less than 15 degrees, and **11kg/N/ha/yr** on land greater than 15 degrees in slope.
15. The equalised load limits per hectare would be reached at the end of the transition period. Activities that leach higher than the allowed discharge limit would have the following options to comply:
- a. Obtain a transfer of nitrogen allowance from land that is not utilising the full allowance;
  - b. Provide offsite mitigation that reduces total nitrogen discharge to the affected waterbodies;
  - c. Improve their capital investment in technology to reduce outputs / discharges;
  - d. Operate as a group of farmers akin to an irrigation scheme, to share a proportion of the load for greater flexibility;
  - e. Change the system to reduce discharges.
16. I would propose that the tranches of allocation phased out initially would be those of higher leaching activities. With reference to figure 1 provided above, the "G"<sup>8</sup> tranche would expire first, followed by the other tranches in descending order. Table 1 below provides a schedule of suggested dates. I have concentrated on populating the HPL figures given the LPL proportions of land are very low:

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<sup>7</sup> See **Attachment 1** to this rebuttal - email from Thomas Nation (Jacobs SKM) outlining land figures. Please note: the land figures do not match up to Table 2 land proportions because non production land (mostly lifestyle blocks) have been removed from the totals. The per hectare discharge allowance would change should lifestyle blocks be excluded from the discharge allowance regime.

<sup>8</sup> The Figure is just illustrative – In the Table I have provided tranches up to "I" to fit the proposed timeframe although some other range may be appropriate.

**Table 1 - proposed rates of reduction**

<b>Descriptor</b>	<b>Allocated leaching rate (kg/N/ha/yr)</b>	<b>Proposed date of expiry / granting</b>
Flexibility Cap HPL	15	2028
Tranche 1 reductions for high emitters (I)	Between current and 82	2026
Tranche 2 reductions for high emitters (H)	82 - 75	2030
Tranche 3 reductions for high emitters (G)	75 - 65	2035
Tranche 4 reductions for high emitters (F)	65 - 55	2040
Tranche 5 reductions for high emitters (E)	55 - 45	2045
Tranche 3 reductions for high emitters (D)	45 - 35	2050
Tranche 3 reductions for high emitters (C)	35 - 25	2055
Tranche 3 reductions for high emitters (B)	25 - 22	2060
HPL low leaching entitlement returned Tranche 1	15 - 17	2028
HPL low leaching entitlement returned Tranche 2	17 - 19	2030
HPL low leaching entitlement returned Tranche 3	19 - 21	2032
HPL low leaching entitlement returned Tranche 4	21 - 22	2034

17. One criticism of this approach may be that low levels of discharge attract less cost as a result of this framework. However I consider that the low emitters may be less of the overallocation issue so this is appropriate. There will be costs imposed with undertaking farm planning, audit and moving to good management practice in many cases. It is also likely that land valuation effects impact on capital values for low leachers, due to the reduced flexibility for land use activity change.
18. I disagree with the approach adopted by Gerard Willis<sup>9</sup> because his "equalised approach" to reductions does not account for the fact that there is not an equalised approach in respect to the discharge allowances of differing activities. Nor does he clarify who will bear the costs of his approach succinctly enough in my view to guide implementation of the plan.
19. I disagree with the approach adopted by Dr Hume, because it provides a greater allowance to land that leaches more in

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<sup>9</sup> EIC G Willis para 111

perpetuity. In my view that would reward activities with higher discharges, and this would appear to run against the “polluter pays” principle.

20. I disagree with the approach presented by Pearson, Deavoll and Dewes because they seek an uncostered series of reduction targets, and there is no economic rationale to support them.
21. I disagree with the approach of Potts<sup>10</sup> and Douglass<sup>11</sup> because they infer non-point source discharge allowances from consented point source – type activities and seek preferential rates of leaching that are higher than the proposed non – complying activity threshold for production land. In my view it would be preferable to deal with these industrial discharges as point source activities.

### **COMMISSIONING OF NUTRIENT BUDGETS**

22. Mr Keaney seeks that nutrient budgets are produced every year using Overseer. He also seeks that the nutrient budget is provided by someone who has completed the Overseer – related nutrient budget courses from Massey.
23. I have provided as **Attachment 2** an email containing a word document from Mr Roger Lasham, an agronomist for Turley Farms. His email and attached document quite clearly demonstrate some of the issues with undertaking this approach on cropping farms.
24. I have also discussed the Overseer courses from Massey (with respect to cropping) with many growers. No growers have indicated to me that the courses equip someone to provide nutrient budgeting advice to a cropping farmer. Growers are far more likely to seek the advice of an experienced agronomist, who understands the unique nature of rotational cropping.
25. The cropping systems are in my view not similar at all to pastoral systems. The vast majority of certified nutrient management advisors specialise in pastoral systems, so the courses provide no guarantee that a certified nutrient management advisor is fit for the purpose of designing a nutrient budget for a cropping farm.

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<sup>10</sup> EIC Potts para 64

<sup>11</sup> EIC Douglass para 35



26. In Horizons, this has been demonstrated in implementing the One Plan. Horticulture NZ has had to train two independent consultants in use of a Code of Practice to assess leaching risk based on adherence to recognised practices.
27. In the future we hope to reorganise the Massey Nutrient Advisor courses to incorporate the material we have been developing, to provide better certification for qualified professionals, but this has not been done.
28. I have attached (**Attachment 3**) the readings for the advanced course in nutrient management at Massey regarding nutrient leaching. You will note that the most recent literature is 2003. In my assessment the material is very out of date given the advances in understanding that have occurred in the last ten years.

### **RELIABILITY OF SUPPLY AND TRANSFER**

29. Geoffrey Deavoll<sup>12</sup> supports the lowered reliability (8.5 years out of ten as opposed to 9) but does not indicate he has done any assessment of what the results of lower reliability would be. Andrew Curtis<sup>13</sup> points out how this would significantly influence the presence of horticultural opportunity. Lower reliability would be more supportive of pastoral land use in my view.
30. I consider this would decrease the resilience of the rural sector because there would be less options for horticultural land use activities. Given that one of the key objectives for the plan change appears to be managing excess nitrogen discharges (and that low leaching fruit production may support this, but would require higher reliability).
31. Curtis<sup>14</sup> also provides a good outline of why transfer should be encouraged, particularly short term transfer. Given the need for high reliability water users often have excess water. To increase the availability of this water for other users in times of need would improve allocative efficiency.

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<sup>12</sup> EIC Paras 29 - 38

<sup>13</sup> EIC Andrew Curtis para 23

<sup>14</sup> EIC Andrew Curtis Paras 12 - 20

32. So I agree with the views of A Davoren<sup>15</sup> and Tim Ensor<sup>16</sup> regarding the inappropriateness of the proposed clawback of 50% for any transferred water.

### **ACCOUNTING FRAMEWORKS**

33. Dr Jim Cooke<sup>17</sup> notes that an accounting framework will be necessary to manage within limits on an ongoing basis, and the need for models to account for attenuation appropriately. I agree with his assessment of the importance of accounting frameworks.
34. I consider that the SOURCE modelling produced by the SKM / Jacobs team could provide the basis for the catchment scale accountant, given that it meets the criteria Dr Cooke lays out<sup>18</sup>.

### **SINGLE / DUAL NUTRIENT APPROACHES**

35. I do not consider that Variation 1 is taking a “single nutrient” approach to managing water quality. Dewes<sup>19</sup> suggests there is not enough evidence on management of phosphorous.
36. Phosphorous controls in the plan are both regulatory and non-regulatory. They are often mixed with controls for soil conservation.
37. I agree there is no modelled phosphorous load and the accounting framework is less developed than it is regarding nitrogen. I have attached as evidence reports written by Stuart Ford that outline some of the challenges using Overseer to estimate phosphorous leaching.
38. In addition, I have attached to my evidence in chief our code of practice for minimising erosion from cultivated land. The Code does not mandate a range of practices, rather it provides a risk assessment framework and a range of tools, to allow growers to make practical and effective decisions given differing circumstances.
39. The farm plan is probably the most effective place to incorporate management techniques to manage phosphorous

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<sup>15</sup> EIC Davoren for Hydrotrader paras 24 - 28

<sup>16</sup> EIC Ensor for Winstone Aggregates paras 24 - 33

<sup>17</sup> EIC Jim Cooke paras 56 – 58

<sup>18</sup> EIC Cooke para 55

<sup>19</sup> EIC Dewes para 69

and sediment. I do not consider it is necessary to undertake changes to the plan to better manage phosphorous given the combination of regulatory and non-regulatory controls aimed at managing this.

## **CONCLUSIONS**

40. For all the reasons outlined in this statement of rebuttal evidence nothing I have given in evidence in chief has changed as a result of my review of the various statements of evidence outlined above.

**Christopher Martin Keenan**

**9 September 2014**

TABLE 1 (SEE PARAGRAPH 11)

Simplified allocation framework – nitrogen discharges

