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*in the matter of:* the Resource Management Act 1991

*and:* submissions and further submissions in relation to  
proposed Variation 1 to the proposed Canterbury Land  
and Water Regional Plan

*and:* **Central Plains Water Limited**  
*Submitter*

Supplementary evidence of Hamish Lowe

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Dated: 17 November 2014

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## **SUPPLEMENTARY EVIDENCE OF HAMISH LOWE**

### **INTRODUCTION**

- 1 My name is Hamish Lowe.
- 2 My qualifications and experience are set out in my statement of evidence dated 29 August 2014.

### **SCOPE OF EVIDENCE**

- 3 This evidence concentrates specifically on the requirements and detail of Schedule 24 (a)(i), and in particular the need for nutrient budgets.

### **ANNUAL NUTRIENT BUDGETS**

- 4 At the hearing on 13 October, Commissioner van Voorthuysen asked for clarification on my interpretation of baseline farming systems as they relate to a comparison with annual nutrient budgets.
- 5 I commented on annual nutrient budgets in my Rebuttal Evidence. I expand further on this issue below, along with comments on Schedule 24(a)(i) in general, which for clarity reads:

#### **Schedule 24 – Farm Practices**

##### **(a) Nutrient Management:**

(i) A nutrient budget based on soil nutrient tests has been prepared, using OVERSEER in accordance with the OVERSEER Best Practice Data Input Standards [2013], or an equivalent model approved by the Chief Executive of Environment Canterbury and is reviewed annually

- 6 The key parts of that definition are discussed below.

#### **Soil nutrient tests**

- 7 The schedule makes reference to soil nutrient tests. With respect to nitrogen, I am unaware of how the soil nutrient tests impact on nitrogen leaching in pastoral farms, as no soil nitrogen is added into the model. I am also not too sure how the tests impact on phosphorus losses. The bottom line is that soil nutrient tests are fundamental for setting up an Overseer model, and I am not sure why 'based on soil nutrient tests' needs to be specified in the provision. Reference to soil tests seems to be redundant, and creates confusion.

### **Reviewed annually**

- 8 Reviewing annual nutrient budgets without significant farm changes will not be beneficial. Utilising and inputting seasonal production data, which varies from year to year, and then having it relate to annualised averaged data within Overseer, will result in numbers that are not specifically related to that season. In my view this process served little purpose and potentially results in erroneous results, with the potential for extreme production information being compared to average climatic data.
- 9 In addition, without changing the farming system there is little purpose in annually reviewing a nutrient budget as it introduces work with no clear benefit. If the purpose of re-running Overseer is to assess the impact of fundamental changes to the farming operation, and possibly the implementation of changes such as better management, then I believe there is merit in rerunning the model. But such changes are not likely to be an annual occurrence.
- 10 There seems to be consensus among technical experts (Kearney paragraphs 5.1 and 5.2, Hansen paragraphs 105 to 110, Sneath paragraphs 19 to 34 and Catto email dated 9 October 2014) that better definition and clarity is needed around the need and what constitutes a review, whether annually or at some other frequency.

### **Capacity**

- 11 If there is good reason to update the nutrient budget, then it should occur. Updates and revisions in my view should not occur for no sound reason, especially as it may be difficult to find sufficient resources (personnel) to accurately run the annual model for all farms in the catchment. In my view there are not sufficient rural professionals to undertake the reviews as currently proposed.

### **Compliance**

- 12 It is unclear how compliance with the proposed changes to Schedule 24 will be demonstrated. Ensuring an Overseer file is present and reviewed is straight forward, however demonstrated that the model has been reviewed and updated relies on the integrity of the process. I foresee that if there are resource limitations, then diligent reviews will not be undertaken by competent rural professionals. Further, it is unclear how will Environment Canterbury will assess if reviews have been undertaken at all. I question the enforceability of requiring the annual review, especially as it theoretically should be an average years and not using data from the actual season just been.

### **Frequency of Review**

- 13 Catto (email dated 9 October 2014) has made a suggestion of a three yearly review, unless there has been a material change. I support the suggested three year review, but to determine if there

has been a material change will still require a revised annual model to be run.

- 14 Sneaths (paragraph 23) makes a similar suggestion, referring to 'triennially' reviews and after 'any significant change'. As with Catto's material change, definition is required.

#### **SUGGESTED CHANGE**

- 15 Reviews of the initial Overseer models are needed. I believe a solution for initiating these reviews is the setting of threshold triggers for changes of key input parameters. If this threshold is exceeded for a nominated parameter then a review is required. This might be a change in stock numbers of 10 % or an increase in the area cropped by 15 %.

- 16 I have suggested the following wording

(i) A nutrient budget ~~based on soil nutrient tests~~ has been prepared, using OVERSEER in accordance with the OVERSEER Best Practice Data Input Standards [2013], or an equivalent model approved by the Chief Executive of Environment Canterbury and is reviewed:

a) ~~annually~~ every three years;

b) or when there has been an increase or decrease of 10 % in stocking rate or 15 % of the total areas cropped over the initially modelled year.

- 17 The nominated change values of 10 and 15 % could be debated and refined, but at least it is a starting point from which there is certainty about the trigger for a review. There is also the potential that the nominated values could initially be greater and when rural professional capacity becomes available the rate of change required to trigger a review decreases.

Dated: 19 November 2014




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Hamish Lowe