

**BEFORE THE ENVIRONMENT COURT**

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*Under* the Resource Management Act 1991 (“Act”)

*In the matter of* appeals under clause 14 of the First Schedule to the Act concerning the Proposed One Plan for the Manawatu-Wanganui Region and the topic of Surface Water Quality – non-point source

*between* **FEDERATED FARMERS OF NEW ZEALAND**  
ENV-2010-WLG-000148

*and* **MINISTER OF CONSERVATION**  
ENV-2010-WLG-000151

*and* **DAY, MR ANDREW**  
ENV-2010-WLG-000158

*and* **HORTICULTURE NEW ZEALAND**  
ENV-2010-WLG-000155

*and* **WELLINGTON FISH & GAME COUNCIL**  
ENV-2010-WLG-000157  
Appellants

*and* **MANAWATU-WANGANUI REGIONAL COUNCIL**  
Respondent

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Statement of Supplementary Rebuttal Evidence of **HELEN MARIE MARR** on behalf of  
the Minister of Conservation and Wellington Fish & Game Council

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Dated: 15 May 2012



## **1. Introduction**

1. My full name is Helen Marie Marr. I have prepared evidence and rebuttal evidence on behalf of the Minister of Conservation and the Wellington Fish and Game Council in this matter. A full description of my qualifications and experience was provided in my evidence in chief dated 14 March 2012, which was filed with the Court. I repeat the confirmation in that statement that I have read and agree to comply with the Code of Conduct for Expert Witnesses.
2. Since I wrote my rebuttal evidence I have received and read the statements of rebuttal evidence of Mr Willis, Dr Ledgard and Dr Scarsbrook. These contain new evidence including the modelling of Mr Willis's proposed new approach to controlling nitrogen leaching from land use. The purpose of this statement is to respond to that new material.
3. I have also received and read a supplementary statement of evidence from Dr Roygard, a statement of further information from Dr Roygard and Ms Clark, and supplementary statements of evidence from Dr Ledgard and Mr Hansen. I address those as necessary in this evidence as well
4. For the purpose of this evidence, I have adopted the same terminology to refer to the Proposed Horizons One Plan as used in my evidence in chief.

## **2. Approach to supplementary rebuttal evidence**

5. In my rebuttal evidence I noted that I was unable to comment on many aspects of the approach put forward by Mr Willis in his evidence in chief because no information had been provided on the effectiveness of his approach. I noted that Mr Willis had indicated it would be available in his rebuttal evidence, and said that I would respond to it following its receipt.
6. Information on the effectiveness of Mr Willis's approach has now been made available in the rebuttal evidence of Dr Ledgard, Dr Scarsbrook and Mr Willis.

Dr Roygard has also provided supplementary evidence<sup>1</sup> commenting on the approach taken by Dr Ledgard and Dr Scarsbrook.

7. Since I wrote my rebuttal evidence, Mr Hansen has also refined his approach and identified N leaching limits for his permitted and controlled activity rules<sup>2</sup>.
8. In response to the new information that has been provided, I wish to comment on the following matters:
  - a) the approach proposed and lately refined by Mr Hansen
  - b) a comparison of the approaches of Mr Willis, Ms Barton and myself;
  - c) an appropriate timeframe over which to measure effectiveness;
  - d) the ability to change N leaching entitlements;
9. I also briefly comment on a further matter introduced (possibly by error) in the housekeeping memorandum from MWRC<sup>3</sup>:
  - e) the inclusion of an Amenity Value in Schedule AB.
10. I deal with each of these points in turn.

### **3. Comment on approach of Mr Hansen**

11. In the course of the hearing Court on the 3 May<sup>th</sup> 2012, counsel for Ravensdown advised for the first time that numbers for the 'X' and 'Y' values included in the approach put forward by Mr Hansen had now been identified as '24' and '27' respectively. This information had not been presented in any evidence at the time that I wrote my rebuttal evidence. Mr Hansen

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<sup>1</sup> Supplementary Statement of evidence of Dr Jonathon Kelvin Fletcher Roygard on the Topic of Surface Water quality – Nonpoint Source Discharges on Behalf of Manawatu-Wanganui Regional Council Dated 27 April.

<sup>2</sup> Supplementary Statement of Evidence of Christopher Hansen dated 4 May 2012

<sup>3</sup> Housekeeping Memorandum on Surface Water Quality – Non-Point Source Discharges April 2012

subsequently provided brief supplementary evidence proposing these numbers on 4 May 2012<sup>4</sup>.

12. In that evidence, Mr Hansen does not provide any commentary or any evidence as to the environmental result or effectiveness of his proposed approach. He refers<sup>5</sup> to Dr Roygard's Supplementary Evidence Figure 1 which identifies that, at the specific monitoring site Manawatu at Hopelands, a single number N loss limit of 24 is expected to lead to water quality improvement. My understanding of Dr Roygard's evidence is that that this improvement is only expected if all existing and new dairy farms in the catchment are limited to 24kg/N/ha/year.
13. Mr Hansen's approach does not propose that all dairy farms be limited to 24kg/N/ha/year. His proposal specifically provides for leaching up to (and potentially exceeding) 27kg/N/ha/year as a controlled activity<sup>6</sup>. Further, Mr Hansen states that it may be possible to justify a permitted activity level of up to 27kg/N/ha/year 'on the basis of effects'<sup>7</sup>.
14. Dr Roygard's and Dr Ausseil's modelling of a single number of 27kg/N/ha/year shows a decline in water quality at all modelled sites under Mr Hansen's approach. As this would not achieve the objective of the RPS and regional plan of improving water quality where it is degraded (which includes the Upper Manawatu), I consider that Mr Hansen's proposed approach would not be effective and therefore would not be appropriate.

## 4. Comparison of approaches

15. In my evidence in chief I analysed the comparative effectiveness, efficiency, costs and benefits of the four different approaches for managing nitrogen ("N") leaching<sup>8</sup> as I understood them to be at the time. Subsequently Mr Willis

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<sup>4</sup> Supplementary Statement of Evidence of Christopher Hansen dated 4 May 2012

<sup>5</sup> Hansen Supplementary Statement paragraph 2.4

<sup>6</sup> It is not clear what regime will apply to those seeking to leach greater than 27kg/N/ha/year, conditions in Mr Hansen's Rule 13-1B provide for N loss to be limited to below Y (condition b) and for it to exceed Y (condition c), so potentially Mr Hansen could be anticipating leaching could exceed Y as a controlled activity. I have discussed this issue in section 10 of my rebuttal evidence.

<sup>7</sup> Hansen Supplementary Statement paragraph 2.5

<sup>8</sup> EIC section 2.3.4

proposed an additional approach in his evidence in chief, which I discussed in my rebuttal evidence (paragraph 9.1) and much later Mr Hansen clarified his approach, as discussed in the previous section of this evidence.

16. It had been my intention to review and update my section 32 analysis of alternative approaches to N leaching from my evidence in chief<sup>9</sup> in this supplementary evidence<sup>10</sup> with the benefit of new information provided by the witnesses for Fonterra in their rebuttal evidence.
17. Unfortunately the modelling provided by Fonterra in rebuttal evidence differs in at least two important aspects from the modelling provided by the other parties. I will discuss these differences later in this evidence. I also understand from the evidence of Dr Ausseil that in addition to the differences in approach, the modelling completed by Dr Scarsbrook (and relied on by Mr Willis) contains a number of errors which mean that it cannot be relied upon.
18. These differences and errors mean that I am unable to directly compare the effectiveness and benefits of Mr Willis' approach with those of Ms Barton, myself, and the DV POP. To do this in any meaningful way, in my view, it is necessary to compare the approaches using a common set of assumptions and as far as possible the same type of modelling. In short, it is necessary to compare 'apples with apples'.

## **5. Differences between modelling approaches**

19. In this section I will discuss the two main differences between the modelling approaches that mean I am unable to directly compare the effectiveness and benefits of Mr Willis' approach with those of the approaches of Ms Barton and myself.
20. In my opinion there are two important reasons why it is incorrect to draw comparisons between the modelling completed by Dr Scarsbrook, and that completed by Dr Roygard and Dr Aussiel. These are the assumptions used in preparing the model and the timeframe over which the approach is modelled. I will deal with each of these in turn.

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<sup>9</sup> EIC section 2.3.4

<sup>10</sup> as I indicated I would in my rebuttal evidence paragraph 7.5

## Assumptions used in the model

21. It is my understanding from the technical evidence that the modelling completed by Dr Ausseil and Dr Roygard to model the approaches put forward by Ms Barton and myself assumed that all regulated land uses leached nitrogen at the maximum allowable under each of the approaches<sup>11</sup>. Dr Ausseil refers to this as a 'worst case scenario'<sup>12</sup>. However, Dr Scarsbrook's scenario modelling draws on work by Dr Ledgard that assumes that some farmers will voluntarily choose to operate in a way which reduces their N loss to a level below that to which they are entitled to leach. This is referred to by Dr Ausseil as a 'potentially achievable' scenario.
22. My understanding of Mr Willis' approach is that there is nothing in the regime proposed by Mr Willis that requires farmers to reduce their leaching below their grandparented level. Mr Willis proposes a regime that provides for existing farmers to leach N at a rate equivalent to their grandparented rate as a controlled activity (Rule 13-1). For those farms leaching greater than 27kg/N/ha/yr the regional council has the ability to require the farmer to implement Tier 1 Nitrogen mitigation measures. There is nothing in Mr Willis's proposal that requires the implementation of these measures Tier 1 measures to a reduction in N leaching, in fact his Policy 13-2C(c)(ii) and (i)(A) together provide for an increase in leaching in some circumstances from these farms. For farms currently leaching less than 27kg/N/ha/yr, there is nothing in Mr Willis's approach that requires them to reduce their N leaching, and the regional council do not have control to require this as part of the resource consent.
23. There is also no certainty in Mr Willis's proposed regime as to the reduction which will be required from farms currently leaching over 27kg/N/ha/yr. It is not possible to quantify what implementing "reasonably practicable measures" will mean in terms of N leaching.
24. Dr Ledgard must therefore be relying on an assumption that farmers will do things voluntarily that they are not required to do under the regulatory approach

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<sup>11</sup> See for example Roygard supplementary evidence paragraph 6 last sentence.

<sup>12</sup> Dr Ausseil additional statement of rebuttal evidence paragraph 23

proposed by Mr Willis. It is beyond my area of expertise to comment on whether or not this is likely. However I note that Dr Dewes supplementary rebuttal evidence identifies that she considers it unlikely that farmer will adopt some of the mitigation strategies voluntarily because of the degree of farm system change required.

## **Timeframe of modelling**

25. The second reason that I do not think that it is appropriate to draw comparisons and conclusions between the three approaches in the way Mr Willis has done in his rebuttal evidence is the different time scale on which Dr Scarsbrook has modelled Mr Willis' approach, compared with the modelling completed for the other two approaches. Mr Willis' Table 1<sup>13</sup> compares his approach with those of Ms Barton and myself based on outcomes modelled to be achieved by 2030, which Mr Willis refers to as 20 years in the future<sup>14</sup>. However, Mr Willis' proposal has been modelled based on outcomes in 10 years. In my opinion, it is inappropriate and unhelpful to compare different approaches based on different time horizons, in my opinion, and as a result little weight should be placed on Mr Willis' conclusions based on that comparison (in his paragraphs 102 and 104).
26. In order to try and provide the court with a comparison between the approaches, Dr Roygard and Dr Ausseil have modelled Ms Barton's and my own approach over a 10 year time horizon. The results of this analysis are usefully summarised in Dr Ausseil's Table 1.
27. However, I do not consider that analysis of the effectiveness of the approaches over a 10 year timeframe only is appropriate. I set out the reasons for this in more detail in my appendix 1. In summary:
  - a) The changes required to both farm systems and consequently water quality require a longer term view than the traditional 10 year plan review period;
  - b) Relying on a future plan change to address issues that arise after 10 years that are readily understood and provided for today is inefficient; and

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<sup>13</sup> Mr Willis Rebuttal evidence 18 April 2012

<sup>14</sup> It is in fact 18 years, but I will continue to use the 20 year terminology for ease of reference.



- c) Consent terms longer than 10 years are likely to be sought and granted, and I consider the ability to reduce the N leaching granted by these consents following a plan review will be quite limited.

## **Conclusion**

28. In this supplementary rebuttal evidence I would have liked to revisit the section 32 analysis contained in my evidence in chief to analyse Mr Willis' proposal against the other options. Because of the serious issues identified above with the modelling of Mr Willis' approach I do not think it is appropriate or possible for me to compare the approaches of Ms Barton, myself and Mr Willis and draw any conclusions based on that modelling. I understand that experts from Fonterra and the Regional Council are working together to provide amended modelling. When that is available I may be able to compare the approaches and update my section 32 analysis.

## **6. Amenity value**

29. The house keeping memorandum filed by the respondent on 23<sup>rd</sup> April 2012<sup>15</sup> included a table at Appendix 4 of amended provisions for Chapter 6, 13, Schedule AB and D that MWRC now supports.
30. This table of provisions included in Table 6.2 the addition of a Value of Amenity and associated management objective. The inclusion of this value was agreed by all parties at mediation<sup>16</sup>. The MV POP provisions for Schedule AB that was circulated by MWRC on 14 March 2012 showed changes to Schedule AB that reflected this agreement. I have attached this as Appendix 2.
31. I did not cover this matter in my evidence in chief or my rebuttal evidence as it was included (in Table 6.2) as agreed in Ms Barton's evidence in chief, the MV POP, and not opposed by any party in their evidence. I do not propose to provide evidence on the matter at this point, as I suspect that it has not been included in the most recent table of provisions as an error. However if this is

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<sup>15</sup> Housekeeping Memorandum on Surface Water Quality – Non-Point Source Discharges April 2012

<sup>16</sup> Memorandum Regarding Policies 6-1, 6-2, 6-3 and Table 6.2 in POP Dated [undated] October 2011 Memos Bundle SWQRPS9 page 244

not the case, and its inclusion is now opposed by any party, I would like the opportunity to provide evidence on this point at a later date.

## **Appendix 1 – 10 year timeframe for assessing effectiveness**

32. Mr Willis gives two reasons for considering a 10 year timeframe for comparison more appropriate than a '20 year' timeframe, being; an appropriate planning review period; and speed of movement in N leaching science and regulation. I will address each of Mr Willis' points, and then comment on a further reason why, in my opinion, consideration of effectiveness over a longer timeframe is more appropriate.

### **Appropriate planning review period**

33. Mr Willis's first reason for preferring a 10 year time horizon, is because 'it is more consistent with the anticipated regional planning horizons before review is due) [sic]'<sup>17</sup>. Mr Willis does not explicitly state so, but I assume that he is referring here to the requirement in section 79 of the Act that each provision in a regional plan and in a regional policy statement (or part of) must be reviewed at least every 10 years. Following the review a change to the provisions may be proposed, or the plan may be notified unchanged.
34. While 10 years is the time period by which provisions must be reviewed, there is nothing in the Act that prevents either longer term horizons being proposed for the achievement of objectives or the assessment of the effectiveness of provisions over a longer time period. It would be very limiting and I believe inappropriate for those preparing plans to only concern themselves with a ten year planning horizon. This would not achieve the purpose of the Act, and in particular the requirement under section 5(2)(a) to sustain the potential for natural and physical resources to meet the foreseeable needs of future generations. I believe it is appropriate to assess effectiveness over a longer period in some cases, such as where the type or rate of change required to achieve the objectives of the plan or RPS is such that change must be slow or gradual to allow for cultural and social change. That is the case in this situation where gradual change in behaviour of established uses is required.

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<sup>17</sup> Mr Willis rebuttal evidence paragraph 92.1

35. Mr Willis also refers to a commitment already in the POP to review the effectiveness of the regime in five years time. He does not state so but I assume he is referring to Policy 6-7A proposed by Ms Barton in her EIC. I have not recommended this same approach, as I believe any review should occur when new information is available, and it is unnecessary to lock in a review time into the plan itself.
36. For a regime to be effective at achieving the purpose of the Act, it needs to be judged against its effectiveness over a reasonable period of time. For example a regime that is effective in the short term, but less effective in the long term needs to be assessed over that longer term as well, not just the short term. Mr Willis' proposal is a good example of this point. Mr Willis alludes that there has been modelling of his proposal over a 20 year scenario<sup>18</sup>. The modelling in Dr Ledgard's rebuttal evidence shows<sup>19</sup> that because of the anticipated likely changes in land use over the 20 year time period Mr Willis' proposal will be less effective in 20 years than it will be in 10 years, ie. Dr Ledgard shows that under Mr Willis' approach, average leaching from dairy farms will increase between years 10 and 20. It is not appropriate to simply ignore this point when assessing effectiveness. In real terms this means that water quality may improve within a 10 year period and then decline after that period, ie from year 10 to year 20 water quality is expected to decline using this approach. I note that Dr Roygard's modelling of Ms Barton's approach over 10 years shows a similar result, being a 5% reduction in SIN loads at Hopelands in Year 10 reducing to a 4% reduction (from Year 1) at year 20.
37. Mr Willis concludes that this will be a reason to review the plan provisions and impose greater controls in the future. I do not consider that is good planning practice. There is information today that signals that Mr Willis's proposal will be less effective in the future than other options. As there is information about an option to address this deficiency (by which I mean the option proposed in my evidence in chief), it would be more efficient to address that issue now. Instituting a review of the plan and embarking on a plan change process in the future will be both time consuming and expensive. I will return to this point later

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<sup>18</sup> Mr Willis rebuttal evidence foot note 22

<sup>19</sup> Dr Ledgard rebuttal evidence, Appendix B paragraph 10 - 11

in my evidence when I discuss the ability to 'claw back' N leaching entitlements set now.

## **Movement in science and regulation**

38. Mr Willis's second reason for preferring a 10 year time horizon is that the field of N leaching management, science and regulation is moving fast. Mr Willis anticipates that the regulatory environment, science and commitment of industry will change over that timeframe.
39. I consider that this is inappropriate justification for assessing the effectiveness of a proposal over only a 10 year horizon. Changing knowledge is a good reason to review policies and rules within 10 years, but it is not a good reason to avoid assessing the effectiveness of options proposed today over a longer period.
40. Assessment over a longer period is reasonable and useful when there is reason to believe that the effectiveness of an approach will change over time (in this case as more land is converted and intensified).

## **Summary**

41. I consider that the assessment of the effectiveness, benefits and costs of a proposal over a period of time longer than the plan provision review period or 10 years is useful and necessary for managing surface water quality. It is particularly useful to look at the effectiveness and benefits of a N leaching management approach when the decisions made on the approach are likely to be 'locked in' by way of resource consent for a timeframe longer than the 10 year plan provision review period. I believe that this will be the case in this situation where N leaching rates are granted by resource consent for a period longer than 10 years, which I will discuss in the following section.

## **Locking in long-term N leaching via resource consent**

42. There is no policy in the plan that specifically guides the term of consents to be granted for land use activities that will be regulated by Rule 13-1 and its equivalents. There is general policy guidance on consent duration provided in Policy 11A-5: Consent Durations. This policy states at clause (a) that 'the Regional Council will generally grant resource consents for the term sought by

the applicant' this is unless it is appropriate to impose a common catchment expiry date under (b) or the circumstances in (c) apply. In response to questioning, Mr Taylor identified that resource consents for new dairy farms are being granted for terms between 10 and 19 years.

43. Mr Willis suggests (footnote 22) that a review of the plan which shows that any approach to N leaching is less successful than anticipated will mean that a review of the whole approach to non-point source N management will be necessary and “may signal a need to impose further planning controls to either limit conversions and/or lower N leaching entitlement in around 10 years time.”<sup>20</sup>
44. This suggests to me that Mr Willis considers that it may be necessary and appropriate in the future to ‘claw back’ N leaching entitlements granted under his proposal. I agree with Mr Willis that this may be necessary; however, in my opinion, Mr Willis has not considered some important factors that may affect the ability of the Council to ‘claw back’ this N entitlement in the future.
45. Under Mr Willis’s approach, in 10 years (or any other time when the relevant plan provisions are reviewed) all existing dairy farms in target catchments and any new conversions to dairy farms will have resource consents for that dairy farming in place. These will ‘lock in’ nitrogen losses from those farms for the term of their consent, which is likely to be some years beyond the review of the plan provisions.
46. There is only one opportunity available under the Act to alter the granted nitrogen loss levels on those consents during their term; review of conditions under section 128 of the Act. This is only available if it is provided for in the conditions of the resource consent. The consent template conditions provided in the evidence of Mr Taylor<sup>21</sup> include a condition that provides for one review of consent conditions during the life of a consent. I do not know which year this is currently being specified as the year for review, (but I suspect it is the common catchment review date). If the review date is prior to the review of the plan provisions, then even if a review of the plan sets different N leaching

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<sup>20</sup> Mr Willis rebuttal evidence foot note 22

<sup>21</sup> Mr Taylor EIC Attachment 1

entitlements, there will be no opportunity for the Council to review the N leaching entitlements for consents granted under the current regime, for the life of the consent.

47. Section 128(b) of the Act provides for the review of a resource consent when a new standard is included in a regional plan. However, this only applies to coastal, water and discharge permits. Because the primary consent to which the N leaching entitlement is attached is a land use consent, the ability to review the consent to impose new N leaching standards as a result of a plan change does not apply.
48. If the council would like the opportunity to review the conditions of consent following a review of the plan provisions, this would need to be specifically provided for as a s128 condition of the resource consent. I understand that this issue was considered in the context of Variation 5 concerning Lake Taupo, and in that case the ability to review the consent following a review of the plan which imposes a new target for the amount of nitrogen entering the Lake been included as both a matter of control within the rule and a specific policy provision guiding consent duration and review.
49. For the reasons outlined above a 10 year planning horizons for assessing effectiveness may be appropriate if consents are only granted for 10 years or less, or if there is fairly certain ability to review those consents and 'claw back' any N leaching entitlements granted. I do not believe that to be the case in the consideration of the land use consents granted under the framework proposed by Mr Willis, unless significant changes relating to the ability to review consents are incorporated into his approach.
50. In my view it is more appropriate to assess the effectiveness of any proposal relating to N leaching entitlements over a longer timeframe, of at least 20 years. It is inefficient to rely on a future plan review and plan change process when it is possible to assess the impacts of those decisions today.

## **Appendix 2 – Schedule AB including Amenity Value**