

**IN THE ENVIRONMENT COURT
WELLINGTON REGISTRY**

**I TE KŌTI TAIAO O AOTEAROA
TE WHANGANUI-A-TARA ROHE**

UNDER	the Resource Management Act 1991
IN THE MATTER	of appeals under sch 1, cl 14(1) against the decision of Manawatū-Whanganui Regional Council on Plan Change 2 to the One Plan
BETWEEN	TE RUNANGA O RAUKAWA ENV-2021-WLG-20 NGĀTI TURANGA ENV-2021-WLG-21 ANDREW DAY ENV-2021-WLG-22 WELLINGTON FISH AND GAME COUNCIL ENV-2021-WLG-23 Appellants
AND	MANAWATŪ-WHANGANUI REGIONAL COUNCIL Respondent

**SUPPLEMENTARY STATEMENT OF EVIDENCE OF PROFESSOR DAVID HORNE ON
BEHALF OF MANAWATŪ-WHANGANUI REGIONAL COUNCIL**

ON-FARM PRACTICES

Dated: 17 January 2024


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SUPPLEMENTARY STATEMENT OF EVIDENCE OF DAVID HORNE**A. INTRODUCTION**

- [1] My full name is David John Horne.
- [2] I prepared a statement of evidence dated 6 October 2023 (**Evidence**) on the management of nitrogen leaching from pastoral farms for Proposed Plan Change 2 to the One Plan (**PC2**), on behalf of the Manawatū-Whanganui Regional Council (**Horizons**). I also prepared a statement of reply evidence dated 13 November 2023 (**Reply Evidence**).
- [3] My experience and qualifications are set out in my Evidence.
- [4] I repeat the confirmation given in my Evidence that I have read and will comply with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023, and that my evidence has been prepared in compliance with that Code.

B. SCOPE

- [5] This supplementary evidence responds to requests for further information from the Court, as set out in emails from the Registry dated 22 November 2023 and 24 November 2023, in relation to further nitrogen leaching data.
- [6] I have focused on the questions set out in paragraph below for pastoral IFLU (dairy, irrigated sheep and beef, and arable).¹ Dr Jolly has prepared a response with regard to commercial vegetable growing (**CVG**). Dr Snelder has also addressed water quality matters in his supplementary evidence.
- [7] To avoid doubt, any reference to Table 14.2 in this supplementary evidence is to the recalibrated Table 14.2 in DV-PC2.

C. FARM DATA

- [8] The Court has requested, for each targeted water management sub-zone (**WMSZ**), broken down by intensive farming land use (**IFLU**) type:

¹ As set out in the Registry's email of 22 November 2023.

- (a) The number of farms that can meet the amended Table 14.2;
 - (b) The number of farms that can meet the relevant specified reduction target; and
 - (c) The number of farms that will need to apply for a discretionary activity consent.
- [9] In an attempt to answer the Court's questions, I have interrogated the output values from a large number of Overseer files for dairy farms in the targeted WMSZs. This is the same 2012 'base file' data I have previously described analysing in my Evidence, and is the most complete dataset I have available.² The Horizons database contains some information relating to later years, but it is far sparser, reflecting the reduction in consenting beyond 2017.
- [10] I note that I do not have access to the Overseer files themselves but rather the nitrogen leaching rate for the farms.
- [11] I have considered the nitrogen leaching rates from dairy farms in the priority catchments for two years: 2012, being the baseline year,³ and 2019. I have included the 2019 analysis (to the extent I can, as explained above and below) at the request of counsel for Fish and Game and Ngāti Turanga.
- [12] The recalibrated Table 14.2, which I understand is not contested by any of the parties, prescribes cumulative nitrogen leaching maximums (**CNLMs**) for three periods: Year 1, Year 5, Year 10, and Year 20.
- [13] DV-PC2 specifies that farmers can qualify as a controlled activity by meeting their CNLM (from the recalibrated Table 14.2) or decreasing nitrogen leaching rates by the greater of a 20% reduction from the baseline year or a reduction to the 75th percentile value (the **specified reduction pathway**).
- [14] I have explored farmer compliance with the recalibrated Table 14.2 in a number of scenarios using the 2012 baseline year as a starting point. This data also enables a comparison to be drawn with the alternative pathway – the ability to meet the specified reduction pathway relies on a 2012 baseline.

² At [42]–[43].

³ For the pastoral farms (dairy, irrigated sheep and beef, and arable).

For clarity, I have presented the data as a breakdown of sub-catchments and as an aggregate percentage value across all of those catchments.

- [15] I note that I have considered only dairy IFLUs because there is no corresponding data to analyse for irrigated sheep and beef or arable farms. I explained at the Council-level hearing that the number of these farms is very small, and more importantly, it is relatively easy for these farms to meet their CNLM. (The latter point was demonstrated via case studies of real farms which I completed for the purpose of the Council-level hearing).⁴ I envisage that the number of other pastoral IFLUs applying for discretionary consent would be very small indeed under either DV-PC2 or Table 14.2 alone.

D. NUMBER OF FARMS THAT CAN MEET THE RECALIBRATED TABLE 14.2

- [16] As a starting point, I have considered how many farms would have met the (recalibrated) Table 14.2 CNLM based on 2012 actual Overseer data. Percentage values (rather than numbers) are provided, as while Horizons has a large dataset of leaching rates, it does not hold leaching rates for all farms within the priority catchments. However, given the large number of leaching rates Horizons does hold, the percentage values are considered representative.
- [17] I note that this scenario (as with Table 3 below) does not assume any further nitrogen leaching reduction on farm; it simply compares the nitrogen leaching rate for a farm in 2012 from the Horizons database with the CNLM in recalibrated Table 14.2.

Table 1: The number of farms who would have met the recalibrated Table 14.2 CNLM in the 2012 baseline year.⁵

	Year 1	Year 10	Year 20
Horowhenua	79	63	42
Rangitikei	92	88	83
Mangatainoka	30	16	8

⁴ Section 42A Technical Report of David Horne (4 September 2020) at 93–106.

⁵ Note that Y5 has not been included as within all priority catchments it has already passed. See Table 14.1 of the One Plan.

	Year 1	Year 10	Year 20
Upper Manawatu	52	29	21

[18] Table 2 below provides the above analysis as an aggregate percentage across all of the priority catchments. I note that these figures are slightly lower than the percentages provided in my Evidence (65%).⁶ This is because (following the Court's directions to include all priority catchments) I have included the Mangatainoka. Previously I had not included this sub-catchment in my analysis, due to the very high number of consented farms in the area, as is reflected in the data set held by Horizons. I can readily provide the analysis without the Mangatainoka if this would also be beneficial for the Court.

Table 2: The percentage of farms who would have met the recalibrated Table 14.2 CNLM in the 2012 baseline year.

Year 1	Year 10	Year 20
60%	44%	35%

[19] Using the information available to me, I have also considered the number of farms that would have met the recalibrated Table 14.2 CNLM using 2019 Overseer data. I note that there was insufficient 2019 Overseer data for the Upper Manawatu to give meaningful analysis of this sub-catchment. This reflects the lower consenting numbers in the Upper Manawatu, which resulted from the staged approach Horizons took to consenting IFLU in the targeted WMSZs. This staged approach corresponded to the dates on which the One Plan rules for each catchment took effect, as set out in Table 14.1.⁷

Table 3: The number of farms who would have met recalibrated Table 14.2 CNLM in 2019.

	Year 1	Year 10	Year 20
Horowhenua	94	81	75

⁶ Statement of Evidence of David Horne (6 October 2023) at [42].

⁷ The progress that Horizons had made through that staged process before the drop-off in consenting in 2017 can be seen in Figure 1 of the Panel's decision, at page 27 – most of the pastoral IFLUs in the Mangapapa, Waikawa, Papaitonga, Mangatainoka, and Horowhenua catchments are consented, while some in Coastal Rangitikei were unconsented, and most in the Upper Manawatu above Hopelands and Manawatu above Gorge catchments were unconsented.

	Year 1	Year 10	Year 20
Rangitikei	96	87	83
Mangatainoka	44	29	18

[20] I have not provided the above analysis as an aggregate percentage across all of the priority catchments given the absence of the Upper Manawatu data. This would not provide an accurate representation of the catchments.

[21] The difference in N leaching rates between 2012 and 2019 (i.e. a greater number of farmers who can meet their CNLM) most likely reflects the adoption of GMP/BMPs on farms in this period. In a very general (and approximate) sense, the changes show about a 20% improvement in leaching rates across IFLU in the region since the One Plan was introduced. However, as I have noted it does not account for the farms in the Upper Manawatu, which is where consenting is yet to occur, and where reductions in nitrogen leaching will be the most difficult to achieve due to biophysical factors.

E. NUMBER OF FARMS THAT CAN MEET THE SPECIFIED REDUCTION TARGET

[22] As stated above, DV-PC2 provided an alternative pathway which, as a minimum, would have required farmers to reduce leaching rates by 20% (or reduce to the 75th percentile value if this resulted in a greater decrease in N leaching) to qualify as a controlled activity.

[23] In making a 20% reduction in leaching rates, many farmers would then also meet their CNLM. This is not surprising given that the 20%/75th percentile value was arrived at by requiring farmers to reduce nitrogen leaching rates to as close as possible to the Table 14.2 values (and in many cases at the CNLM) while, at the same time, balancing the water quality gains that could be made. As I have explained previously, there was a point where further reductions of nitrogen leaching became very difficult for a multitude of reasons, with no corresponding improvement in water quality.⁸

[24] The Court has asked how many farms could meet the specified reduction of 20%. The analysis I have undertaken did not result in an overall number of

⁸ Statement of Evidence of David Horne (6 October 2023) at [56].

farms that would be able to make the 20% reduction. My analysis did not interrogate every Overseer file (of which there are hundreds) to see whether every farm could make a 20% reduction. Instead I reviewed a large representative number of IFLU with a particular focus on higher nitrogen leaching farms with more challenging biophysical conditions. In doing so, I was able to conclude to my satisfaction that a 20% reduction was achievable by farmers adopting a range of extensive GMP/BMP. In a number of cases this was very onerous, which is why the discretionary pathway remains necessary for those IFLU. As I discuss below, however, the exact number will depend on a range of considerations relating to the specific farm at the time.

[25] What I have considered is how many farms would have met their CNLM based on 2012 actual data, if N leaching losses were reduced by 20% (i.e. the number of farmers who would have met the recalibrated Table 14.2 CNLM under the specified reduction pathway). This is explained in Table 5.

Table 5: The number of farms who would have met recalibrated Table 14.2 CNLM based on 2012 actual data under the specified reduction pathway.

	Year 1	Year 10	Year 20
Horowhenua	89	79	68
Rangitikei	98	94	92
Mangatainoka	49	34	23
Upper Manawatu	81	58	43

[26] Table 6 below show the above analysis as an aggregate percentage across all of the priority catchments.

Table 6: The number of farms who would have met recalibrated Table 14.2 CNLM based on actual 2012 data under the specified reduction pathway.

Year 1	Year 10	Year 20
78%	65%	53%

[27] I have also considered the number of farms that would have met their CNLM based on actual 2019 data, if the farms reduced N leaching losses by 20% (i.e. the number of farms who would have met the recalibrated Table 14.2

value under the specified reduction pathway). There was again insufficient 2019 Overseer data for the Upper Manawatu to give meaningful analysis of this sub-catchment.

Table 7: The number of farms who would have met the recalibrated Table 14.2 CNLM in 2019 under the specified reduction pathway.

	Year 1	Year 10	Year 20
Horowhenua	100	94	88
Rangitikei	100	96	92
Mangatainoka	44	29	18

[28] For the same reasons I set out at paragraph [20] I have not provided an aggregate percentage for the 2019 data given the absence of the Upper Manawatu from the breakdown in Table 7.

[29] My analysis, the results of which were presented to the Council level hearing, in which I proposed the adoption of GMP/BMPs for a 20% reduction (given that further decrease would make no material difference to water quality) was based on the baseline (2012) situation and so most closely responds to Table 5 and Table 6.⁹ I remain of the view that the 2012 baseline is the most appropriate for the reasons I have set above and in my Evidence.

F. NUMBER OF FARMS THAT NEED TO APPLY FOR DISCRETIONARY CONSENT

[30] The Court inquires as to how many farmers are likely to need to apply for consent as a discretionary activity. It is difficult to identify the number of farmers who will fall within this category. For example, a well-established farmer may have the financial resources and skill level to make very significant reductions to N leaching rates in order to meet the recalibrated Table 14.2 or use the specified reduction pathway. Alternatively, another farmer may not have the same flexibility to affect large reductions in leaching losses and so may have to apply for a discretionary consent.

[31] In an effort to be more helpful, I have attempted to identify a potential number (%) of farmers who might apply for a discretionary activity consent

⁹ Referred to in Statement of Evidence of David Horne (6 October 2023) at [49]–[54].

under DV-PC2. If we consider the farms with the greater leaching losses (being predominantly in the Upper Manawatu), say for example, 60 kg N/ha/yr (which would require a reduction of 12 kg N/ha/yr) then approximately 7% of farmers might be seeking a discretionary activity consent under DV-PC2. As noted above, this assumes that such farmers will be in a position to make a 12 kg N/ha/yr reduction, and if not, then, there will be a greater number falling as discretionary activities.

- [32] By way of contrast, if we apply the same criteria (a reduction of more than 12 kg N/ha/yr as the likely trigger for farmers to apply for discretionary consent) to the situation where only Table 14.2 was available (i.e. meet the recalibrated Table 14.2) then approximately 20% of farmers might be seeking to avail themselves of the discretionary activity consent pathway.

17 January 2024

Professor David John Horne