

**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

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

FARM SYSTEMS

Dated: 5 February 2024



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

- [1] My full name is David John Horne.
- [2] My experience and qualifications are set out in my statement of evidence dated 6 October 2023 (Evidence).
- [3] 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

- [4] This supplementary statement addresses two discrete questions posed by the Court in their 25 January 2024 Minute, relating to the specified reduction pathway.
- [5] I only address matters relating to pastoral farming. I understand Dr Jolly has addressed commercial vegetable growing in a separate statement.

C. SPECIFIED REDUCTION PATHWAY*Recognised management models*

- [6] At paragraph [11] of the 25 January Minute, the Court has queried whether, in practical terms, Overseer is the only model that would meet the definition of “*recognised management model*” for short duration consent applications under the specified reduction pathway contained in the PC2 provisions.
- [7] In my original s 42A report, I stated the following, which I consider addresses the point:¹

There are other models that can be used to simulate nutrient losses from farms (e.g. APSIM). However, many of these models might best be described as ‘research grade’ which is to say that

¹ Section 42A Technical Report of David Horne (4 September 2020) at 40–41.

only trained specialists can use them. In addition, some of them are not systems level models (they are single paddock representations) and/or they often have input parameters for which values are not readily available and may be difficult to obtain. ... Having said this, where and when these alternate models can be applied to predict nutrient losses from farms, I see no problem with their use. PC2 itself suggests that other models could be utilised for the purpose of a NMP, with the onus on the applicant to show that the model has effectively predicted nitrogen loss from their farm and, as appropriate, is capable of illustrating ongoing compliance with their resource consent.

- [8] As noted, I wrote paragraph 7 in 2020. Very little, if anything, has changed in this regard since then. One might have thought that given the questioning of Overseer during this period, that it would have been an ideal opportunity for the development and propagation of an alternative model. No such alternative model has emerged, neither did any of the existing models increase in use. I expect that there was, and is, a widespread recognition that if a model is to be used in the future, it will be an improved version of Overseer.
- [9] Failing the reemergence of Overseer, it is my opinion that it will be replaced by risk frameworks. The combined efforts of the experts involved in designing the NRAT, with an Overseer approach front of mind, is an example of this. One might also view the development of the Risk Index Tool by the Ministry for the Environment as a step in this direction.
- [10] To the best of my knowledge, APSIM is the only other credible alternative to Overseer for pastoral IFLUs. As I noted in 2020 (paragraph 7 above), APSIM is a tool used almost exclusively by researchers. APSIM is an excellent model, due in no small part to its complexity and the very large and detailed number of inputs, many of which would not be readily available for the soils and farms in the Horizons region.
- [11] I do not know the exact number of proficient APSIM users in the Horizons region. However, I am very confident that this is a very small number. At Massey University, there are no more than 2 or 3 regular users of APSIM. If

we take this as a typical number of APSIM users for research institutes in the region then there might be, at most, a dozen expert users of APSIM in the region. However, these people have 'day jobs' and so are unlikely to have the time to model hundreds of pastoral farms in the region.

- [12] For many years, Massey University has been training rural professionals in the use of Overseer, and only Overseer. There is no similar training program for any other model.
- [13] Massey offers two training courses, one at the intermediate and one at the advanced level. We have trained approximately 1215 people in the use of Overseer and nutrient management. These courses are pre-requisites for certification as a Sustainable Nutrient Management Advisor.
- [14] I cannot envisage how parallel training and certification pathways could be established for alternative models, at least not without 3 to 5 years lead-in time and an investment of approximately \$200,000.
- [15] As such, in practical terms, Overseer is likely to be the management model used by the majority of (if not all) applicants. However, theoretically, an applicant could use other models should they be able to access the expertise and data to do so.
- [16] I have attempted to be consistent in my position on the role of models in PC2 during and since the Council level hearing. At that time of the Council level hearing, I itemised the reasons that Overseer is the best model for estimating N leaching rates in the Horizons region. As a tool, it supports farms in assessing the risk of nitrogen leaching on farms. In my view this is still the case, particularly noting the improvements made to, and planned for, the model. Importantly, however, my confidence in Overseer does not lie in its ability to accurately predict the N leaching rate but rather its ability to help farmers identify the most appropriate GMPs to implement in order to decrease their impact on water quality in the region.
- [17] If other models emerge that are capable of acting as decision support tools in this manner, then they also may have a role. I know of no such other model

that can presently be used in a practicable manner but I am of the opinion that the proposed NRAT is fit for this purpose.

Absence of data

- [18] The Court has also asked whether the required modelling for the period 1 July 2012 to 30 June 2013 is available for all farms and CVG that require controlled activity consent under the specified reduction pathway (or is there data available to undertake such modelling)? Further, the Court is interested to know whether a specified reduction pathway in DV-PC2 would be available to an applicant if they lacked the data to model their nitrogen leaching from the root zone for that period.
- [19] The most important drivers of Overseer predictions on N leaching are climate and soil(s) type – these are obviously constant across the 11 year period under consideration here and well known.
- [20] Most farmers provide their accountant with information on the following parameters on an annual basis: classes and numbers, stock sales and movements, milk production, fertiliser use, supplements made and purchases and expenditure on cropping. From these records, many of the other key Overseer input values can be identified or derived.
- [21] In summary, I am of the view that a certified Sustainable Nutrient Management Advisor will be able to compile and audit an Overseer file that represents the farm situation in 2012–2013.
- [22] I note that one of the advantages of the proposed risk matrix is that it assesses the current farm situation and constrains the farm to pose a 'low risk' to water quality. As such, historic information is not required.
- [23] Ultimately, however, if a farmer were not to have a suitable level of information for the 2012/13 season, they would either have to meet Table 14.2 or default to the discretionary pathway.

D. ERRATUM

[24] In my 17 January 2024 supplementary evidence, I included several tables showing the proportion of pastoral farms in the region that could meet two of the proposed controlled activity pathways (recalibrated Table 14.2 and the specified reduction pathway). Reviewing that evidence, it appears that some of the percentage signs (%) which should have been attached to the values in those tables have been omitted.

[25] For the avoidance of doubt, all the figures in the tables in my 17 January 2024 evidence are percentages (proportions of farms), not absolute numbers of farms.

5 February 2024

Professor David Horne