

**IN THE MATTER
AND
IN THE MATTER OF**

Of the Resource Management Act 1991

A Resource Consent Application to discharge agricultural effluent to land from up to 840 cows, to take 85,800L/day of groundwater and to use land for two winter barns, a new agricultural effluent storage facility, and to establish a new dairy farm at 444 Springhills-Tussock Creek Road

BY

Capil Grove Limited

REF

APP-20222055

JOINT STATEMENT OF OVERSEER MODELLING EXPERTS

29 June 2023

1. INTRODUCTION

- 1.1 This joint statement relates to expert conferencing on the topic of Overseer modelling.
- 1.2 An initial conference was held on 7 June 2023.
- 1.3 Attendees at the conference were:
 - (a) Reuben Edkins (RE) - (Overseer Reviewer) for Environment Southland;
 - (b) Hamish Lowe (HL) - (Project Advisor and Overseer modeller) for Capil Grove Limited.
- 1.4 A second conference was held on 21 June 2023 with the same attendees.
- 1.5 This joint statement is prepared in accordance with Appendix 3 of the Environment Court Practice Note 2023.

2. KEY FACTS AND ASSUMPTIONS

- 2.1 N/A

3. METHODOLOGIES AND STANDARDS

- 3.1 The conferencing discussed issues raised in RE's evidence supporting the s42A report and a supplementary document provided by RE.
- 3.2 In response to initial conferencing a memo was put together by HL summarising the farm system and an updated model was published for RE to review.
- 3.3 In the process of these discussions RE created his own version of the Stage 4 farm system. The result of this exercise was a remarkably similar result, being a nitrogen loss of 10,968 kg N/yr (32 kg N/ha) which compared to HL's 10,730 kg N/yr (32 kg N/ha).
- 3.4 There were further discussions, and a second summary was provided along with updated models.
- 3.5 Based on the alignment of the models, revisions were made to refine the proposed farming system by HL. This resulted in changes made to both the original farming model (Stage 0) and the proposed farming model (Stage 4) – now version 3. Changes include:
 - (a) Partitioning of the milking herd;
 - (b) Clarifying rainfall data;
 - (c) Re-blocking and reducing the size of the barley crop;
 - (d) Ensuring consistent fertiliser application across the barley split crops; and
 - (e) Changing the number of years of permanent pasture prior to cultivation.

4. AGREED ISSUES AND ACTIONS

4.1 We agreed that:

- (a) models described as Stage 0 (conf rev) and Stage 4 (v3), reflect the current and proposed farming systems.
- (b) the two models (Stage 0 and Stage 4) can be meaningfully compared and with the changes made provide for greater accuracy.
- (c) the important aspect of the relative difference in leaching between Stage 0 and Stage 4 still remain when compared to the original consent application.

4.2 Specifically we note that the refined models have following losses:

- (a) Stage 0 (conf rev): 33 kg N/ha/y (11,112 kg N/y) and 1.9 kg P/ha/yr (639 kg P/y)
- (b) Stage 4 (v3): 28 kg N/ha/y (9,450 kg N/y) and 1.9 kg P/ha/yr (637 kg P/y)

4.3 We agree that the proposed farm system does not fit neatly within the existing modelling guidance and another party could chose to model this system differently.

4.4 We agree that the sensitivity testing conducted as part of the caucusing process showed that the modelled outcomes were quite consistent when some of these other approaches were tested.

5. OUTSTANDING DISAGREEMENT AND REASONS

5.1 There are no outstanding issues.

6. RESERVATIONS/ISSUES NOT ADEQUATELY COVERED BY EVIDENCE

6.1 N/A.

7. CODE OF CONDUCT

7.1 We have all complied with the Code of Conduct for Expert Witnesses.

Date: 29 June 2023



[Reuben Edkins]



[Hamish Lowe]