IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER appeals under clause 14(1) of Schedule 1 of the Act in respect of Proposed Southland Water and Land Plan

between:

TRANSPOWER NEW ZEALAND LIMITED
(ENV-2018-CHC-26)

FONTERRA CO-OPERATIVE GROUP
(ENV-2018-CHC-27)

HORTICULTURE NEW ZEALAND
(ENV-2018-CHC-28)

ARATIATIA LIVESTOCK LIMITED
(ENV-2018-CHC-29)

WILKINS FARMING CO
(ENV-2018-CHC-30)

(Continued on next page)

STATEMENT OF SUPPLEMENTARY EVIDENCE OF GERARD MATTHEW WILLIS FOR FONTERRA COOPERATIVE GROUP LTD AND DAIRYNZ LTD

(PLANNING – DEPOSITED SEDIMENT)

20 MAY 2022

GORE DISTRICT COUNCIL, SOUTHLAND DISTRICT COUNCIL & INVERCARGILL DISTRICT COUNCIL (ENV-2018-CHC-31)

DAIRYNZ LIMITED
(ENV-2018-CHC-32)

H W RICHARDSON GROUP
(ENV-2018-CHC-33)

BEEF + LAMB NEW ZEALAND
(ENV-2018-CHC-34 & 35)

DIRECTOR-GENERAL OF CONSERVATION
(ENV-2018-CHC-36)

SOUTHLAND FISH AND GAME COUNCIL
(ENV-2018-CHC-37)

MERIDIAN ENERGY LIMITED Act 1991
(ENV-2018-CHC-38)

ALLIANCE GROUP LIMITED
(ENV-2018-CHC-39)

FEDERATED FARMERS OF NEW ZEALAND
(ENV-2018-CHC-40)

HERITAGE NEW ZEALAND POUHERE TAONGA
(ENV-2018-CHC-41)

STONEY CREEK STATION LIMITED
(ENV-2018-CHC-42)

THE TERRACES LIMITED
(ENV-2018-CHC-43)

CAMPBELL'S BLOCK LIMITED
(ENV-2018-CHC-44)

ROBERT GRANT
(ENV-2018-CHC-45)

SOUTHWOOD EXPORT LIMITED, SOUTHLAND PLANTATION FOREST COMPANY OF NZ, SOUTHWOOD EXPORT LIMITED (ENV-2018-CHC-46)

TE RUNANGA O NGAI TAHU, HOKONUI RUNAKA, WAIHOPAI RUNAKA, TE RUNANGA O AWARUA & TE RUNANGA O

ORAKA APARIMA
(ENV-2018-CHC-47)

PETER CHARTRES
(ENV-2018-CHC-48)

RAYONIER NEW ZEALAND LIMITED
(ENV-2018-CHC-49)

ROYAL FOREST AND BIRD PROTECTION SOCIETY OF NEW ZEALAND
(ENV-2018-CHC-50)

Appellants

and:

SOUTHLAND REGIONAL COUNCIL
Respondent

1. INTRODUCTION

1.1 My full name is Gerard Matthew Willis. I have the qualifications and experience and agree to comply with the Code of Conduct as set out in my primary evidence dated 20 December 2021 (**my 20 December 2021 evidence**).

2. BACKGROUND

Scope of evidence

2.1 I have been asked to prepare this supplementary evidence for Fonterra Co-operative Group Ltd (**Fonterra**) and DairyNZ Ltd (**DairyNZ**), collectively referred to as the 'dairy interests'. My evidence responds to Forest and Bird and Fish and Game (**F&B/F&G**) proposed for an amendment to Rule 13 to introduce an absolute deposited fine sediment coverage standard.

3. RULE 13 AND DEPOSITED FINE SEDIMENT

3.1 The version of Rule 13 attached to the legal submissions of Ms Gepp for Fish and Game and Forest and Bird (24 March 2022), amends condition (a) (i) (1) of that rule so that a permitted discharge from a sub-surface drain may not cause:

> more than a 10% change in the sediment cover of the bed of receiving waters beyond 20 metres from the point of discharge or an exceedance of the percentage bed cover for fine sediment specified in Appendix E (beyond the zone of reasonable mixing); or

3.2 The wording shown in red font is a departure from the wording agreed in mediation, and relies on a new deposited sediment standard being included (for each surface waterbody class) in Appendix E of the pSWLP.

3.3 I understand that the F&B/F&G proposal responds to concerns expressed by the Court in the 'all parties' hearing that the 10% change standard could be cumulative over time such that eventually there could be 100% coverage of the bed caused by multiple, lawful discharges.

Nature of sediment deposition risk

3.4 I understand that fine sediment deposition is a dynamic process. While it can be cumulative over time, it is generally highly variable over short timeframes (due to, for example, weather/flows and seasonal/intermittent land use practices). As Dr Depree

notes, suspended sediment can deposit (drop out of suspension) in 'low energy' parts of river systems (e.g., low gradient reaches and 'pools') and during low flow conditions, but can be resuspended under certain (high flow) conditions such that it flushes down the system before finally accumulating in low energy terminal receiving environments (i.e., lakes and coastal estuaries).

3.5 Although this variability can occur against a background of slowly accumulating average coverage, each deposition event does not necessarily accumulate such that 10 events, each causing a further 10% in coverage, will mean that the river bed is 100% covered[1]. That is because there will likely be resuspension and flushing between the 10 deposition events. Assuming land use and land use practices remain the same, there need not be significant accumulation over time – even though there may be short term accumulation. (See Figure A2 Appendix 1 of Dr Depree's supplementary evidence).

3.6 I understand this to mean, that although the Court's concern raises a valid issue, the risk needs to be understood in these dynamic terms. That is, the annual *load* of sediment flow down a river may stay the same over time but there may still be periods when sediment deposits and increases bed coverage 10%. There may also be rivers where the load of sediment increases over a period of time due to ongoing land use change and/or 'natural' processes. However, over any given time period sediment coverage is likely to fluctuate (up and down) significantly.

How the 10% change condition would work

3.7 The 10% change in cover standard could, theoretically, work in two different ways. It could seek to manage and restrict discharges on the basis of long-term average/median change in sediment cover (where all sub surface drainage discharges in a catchment would require consent once a coverage standard is breached). Or, it could seek to manage the shorter-term risk associated with specific farms and specific practices (i.e., more 'event-specific' risk). In my opinion, the condition is intended to, and is best focused on, managing that short term, discharge and event-specific risk.

3.8 The fact that the rule specifically focuses on compliance assessment 20 metres from the point of discharge, suggests to me that the intention is that the standard applies as an individual discharge compliance metric. That is, it would be used to determine whether a specific activity at a point in time of high risk was having an acceptable or unacceptable effect in terms of sediment loss. For example, it could be used to determine whether a

[1] I note that Figure A2 in Appendix 1 of Dr Depree's Supplementary evidence shows high short term variability and indicates a possible decrease in sediment cover over the long-term.

paddock used for intensive winter grazing is discharging an unacceptable amount of sediment. In that case, and in a practical sense, I would see the 10% increase in sediment coverage standard applied after compliance monitoring or public complaint to determine whether a discharge was lawful[2]. Failure to comply, would have consequences only for the single responsible discharger.

Assessment of cumulative sediment risk

3.9 Due to technical monitoring and assessment issues noted by Dr Depree (paragraphs 5.1-5.4), applying the 10% increase in coverage standard will be challenging but viable in my opinion. Assessment of cumulative sediment, by applying an absolute maximum bed cover standard (as proposed by F&G/F&B), on the other hand, presents more significant difficulties.

3.10 While it seems possible to me, to attribute at least some short term or episodic increases in sediment cover to specific sub-surface drain discharges, I do not understand that it is feasible to consider the cumulative, long-term increase in sediment cover with a single discharge. That is because:

(a) Where sediment deposits and where sediment is initially mobilised can be a great distance apart and bear no relationship (necessarily) to property boundaries or the location of a specific sub surface drain discharge point. Similarly, sub surface drains are only one source of sediment (as discussed by Dr Depree paragraph 6.9). Hence, attributing responsibility for (i.e., determining who 'caused') an exceedance of an absolute standard is unlikely to be feasible.

(b) Many sub surface drains discharge to small streams for which the deposited sediment state will not be known. Implementing and enforcing this rule would require significant monitoring. Dr Depree discusses this point in detail at paragraph 3.2.

3.11 In addition, in lowland streams, sediment coverage already exceeds the absolute standards proposed by F&G/F&B meaning that consent will be required for (potentially) large numbers of existing sub surface drain discharges. As Dr Depree notes (paragraph 4.3), soft bed streams, by definition already have a sediment cover of greater than 50%. Accordingly, any sub surface drains discharge to soft beds streams will require consent. I do not consider this to be the intention of the rule or the F&B/F&G proposal here.

3.12 For the reasons set out above, I do not support the inclusion of an absolute deposited fine sediment coverage standard in Rule 13 (or in the Appendix E more generally).

Additional points of wording clarification

3.13 When considering this issue, some matters of drafting detail have become apparent to me and I recommend they be addressed by minor amendment to improve clarity of Rule 13. I address these briefly as follows:

Change from what?

3.14 Both Rule 13 and Appendix E refer to a percentage change (e.g., 10%) in coverage. This is capable to being read in three ways. It could be read to mean:

(a) a 10% change from a baseline level of coverage (e.g., if a bed 20m below a discharge point was 20% covered, a 10% increase would mean a maximum 22% cover is allowed); or

(b) a 10% change relative to an upstream reference point (that is, immediately above the discharge point). As above, if the coverage immediately upstream was 20%, the rule would allow that to increase to 22%); or

(c) allowing for up to further 10% of the bed being covered (e.g., if a bed was already 20% covered, it would allow up to 30% coverage)[3].

3.15 I have reviewed the technical evidence of Mr Hodson, but it remains unclear to me quite what is intended. Based on the evidence of Dr Depree (paragraph 5.3), I understand that option (c) above is the only workable approach.

Change or increase?

3.16 I note also that the standard refers to a 10% *change* when, presumably, what is meant is a 10% *increase* in coverage since it would be perverse to require consent when sediment coverage *reduces* by 10%.

Coverage of what?

3.17 Ms Gepp's draft proposal suggests including reference to the coverage being of the "bed of" receiving waters, in order to clarify that it is not the receiving waters themselves that are "covered" by deposited fine sediment. My initial reaction to that suggestion was that it was a useful clarification. However, I do note that the term "bed" includes the banks of

[3] Note that this could also be assessed by considering the coverage up-stream of the discharge point as the baseline against which the additional 10% 'allowance' is assessed.

a river which are themselves often comprised of deposited sediment. I understand that monitoring deposited sediment only occurs in the 'wetted' part of the river bed and not the banks. Accordingly, I consider that if "beds of" is to be included, then the words "excluding banks" should also be added.

3.18 For all those reasons, I consider that Rule 13 (i) should read as follows (my proposed amendment shown in blue font, Ms Gepp's wording that I support in red font):

> the discharge does not cause:
>
> (1) a conspicuous change to the colour or clarity of the receiving waters beyond 20 metres from the point of discharge that exceeds the maximum percentage change specified for the relevant water body class in Appendix E; or
>
> (2) ~~more than a 10% change~~ an absolute increase in the sediment cover of the bed (excluding banks) of receiving waters beyond 20 metres from the point of discharge of more than 10%; or
>
> (2) conspicuous oil or grease films, scrums or foams, or floatable or suspended materials beyond 20 metres from the point of discharge;

Gerard Matthew Willis

22 February 2022