



Proposed Southland Water and Land Plan

**Officer's Reply
For Council Reply Hearing**

03 November 2017

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1. Introduction

- 1.1. This report ('Reply Report') has been written to sit alongside and explain the "marked up" version of the final recommendations on the proposed Southland Water and Land Regional Plan (pSWLP). It responds to matters that have been raised in legal submissions and evidence at the hearing, and where the matter either needs a direct response from Council Officers ('Officers'), or results in a recommended change to the Officers' position.
- 1.2. The associated "tracked changes" version of the pSWLP shows the final recommendations, as a complete whole. Where there is any discrepancy between that version and the recommendations in this Reply Report, the tracked changes version should be treated as the 'correct' version of any provision.
- 1.3. Where a matter has been raised in legal submissions or evidence, and the submitter takes a different point of view to the Officers, but it does not result in an altered recommendation from Officers, these matters are often not specifically addressed. The original Section 42A Report and the various written responses to questions from the Hearing Commissioners address a majority of the issues raised by submitters at the hearing, and those assessments are not repeated here. On this basis, if there is no further assessment in this Reply Report, it is not an indication that Officers have not carefully considered the matters raised in evidence, but rather that Officers have concluded that their assessment and conclusion in the original Section 42A Report, as modified by the responses to the Hearing Commissioners' questions, provide adequate analysis of the issue and continue to be the Officers' analysis and recommendation.

2. Commentary on Submissions and Evidence

- 2.1. The analysis and commentary on the legal submissions and evidence filed and questions put to submitters during the course of the hearing is addressed within each of the topics of the following sections. It is acknowledged that many submitters appeared and discussed many of the same issues – for example intensive winter grazing thresholds or appropriate slopes for cultivation. Not every submitter that appeared is mentioned, but some of the key matters raised are highlighted.

3. Outstanding Legal Issues

- 3.1 During the course of the hearing of submissions on the pSWLP, a small number of legal issues have arisen. This part of the Reply Report addresses those legal issues. It has been prepared by Philip Maw and Kirstie Wyss, counsel for the Council. There are also a range of matters that have specific legal comment in the body of this report – these legal comments are identified with a footnote.

Clause 16(2) amendments

- 3.2 The Council Officers have also recommended a number of changes to clarify or correct minor errors.
- 3.3 Clause 16(2) of Schedule 1 of the RMA provides:

"16 *Amendment of proposed policy statement or plan*

...

(2) *A local authority may make an amendment, without using the process in this Schedule, to its proposed policy statement or plan to alter any information, where such an alteration is of minor effect, or may correct any minor errors."*

- 3.4 Any amendment under Clause 16(2) occurs without further formality or particular proceedings being required. A local authority has the discretion to determine whether an alteration is of minor effect, or whether the correction of minor effects is required. What amounts to “minor” will be a question of fact, and the likely effects of altering a public document without public input will need to be examined.
- 3.5 The test for "minor effect" is whether the amendment affects the rights of some members of the public, or whether it is merely neutral. Only if it is neutral may such an amendment be made under Clause 16. The same test applies, as to whether the effect of a correction will be neutral.¹ In *Re an Application by Christchurch City Council* the Court stated:

"An error is simply a mistake or inaccuracy which has crept into the plan. The obvious example is a spelling mistake or reference to a wrong paragraph number where there can be no doubt what number is intended.

By definition slips in spelling and punctuation, cross referencing and the like will be minor in nature because their correction will not cause prejudice to any person or give rise to misunderstanding. Providing the draftsman seeks only to clarify what is clearly intended by the document and does not in any way make a change to it which alters its meaning then the correction will be within Clause 16. Anything which makes alterations to the content of the document cannot be achieved "without further formality" by reliance on Clause 16."

- 3.6 The amendments to the pSWLP that are recommended to be made under clause 16(2) are summarised below.

Improving the drafting of conditions

- 3.7 To make it explicit how the conditions are interpreted, “and”, “or”, or “either” has been added to the end of each condition. Consequential changes to formatting have also been made to improve readability, namely replacing semi-colons with either commas or full stops where appropriate.

General amendments to improve clarity of language

- 3.8 A number of grammatical errors have been corrected, such as adding “s” to plural terms, replacing “was” with “is”, capitalising proper nouns, and replacing forward slashes with either “and” or “or” as appropriate. To modernise the drafting language, “shall” has been replaced with “is”, “does” or “must” as appropriate. Minor amendments to formatting have also been made to remove or replace unnecessary or incorrect punctuation.

Clarifications relating to rivers

- 3.9 References to “stream” and “streams” in the pSWLP have been replaced with “river” and “rivers” to reflect that streams are included within the definition of “river” in the Act.

Correcting an error

- 3.10 A number of provisions refer to dates, particularly January. The Section 42A Report recommended these be amended to June however some references were missed when the Report was submitted. These have now been corrected to align with the Section 42A recommendation.

¹ *Re an Application by Christchurch City Council* (1996) 2 ELRNZ 431 (EnvC) at 9-12.

Consequential changes

- 3.11 Where a recommendation accepts a decision sought by a submitter, clause 10(2)(b) of Schedule 1 of the RMA allows consequential alterations to the plan to be made in order to apply this amendment throughout the rest of the plan.

Weighing competing expert evidence

- 3.12 Throughout this hearing, the Panel has heard a range of evidence, from a range of experts. This raises the issue of how the Panel should weigh that competing expert evidence. In considering the evidence in its entirety, the Panel required to give due weight to evidence produced by independent, experienced experts. For example, in matters such as water quality, a high degree of evaluative judgment is required and an expert's experience and training plays an important role in informing that judgment.
- 3.13 It is the Panel's role to "*effectively sift the wheat from the chaff and determine what weight should be given to the evidence in contention on a particular topic*".² While the Panel must ultimately form its own views on these matters, independent expertise is deserving of considerable weight.³
- 3.14 It is submitted that the Panel bear in mind the following principles, distilled from various Environment Court decisions,⁴ which may be used to help weigh competing evidence:
- (a) The expert's experience and qualifications.
 - (b) Simplicity and ease of understanding of the evidence.
 - (c) The way in which the expert has applied their professional judgment to the facts available, including whether there has been a selective recitation of relevant matters.
 - (d) The extent of any of their own analysis or fieldwork undertaken.
 - (e) Whether the witness has been partisan in their criticism of other witnesses or there has been an underlying degree of advocacy.
- 3.15 Essentially, the judgments suggest that the decision maker make a value judgment as to whose evidence is preferred. One way to look at this issue is, after hearing competing expert evidence, who does the decision maker feel persuaded is correct?
- 3.16 The High Court has found that in considering competing expert evidence, where one expert gave opinion evidence based on specialist knowledge and training, there were no grounds on which to prefer a different expert's evidence, who did not have any specialist expertise in the matter at hand.⁵

Does Section 67(3)(a) of the RMA require giving effect to the NPSFM 2014 or the NPSFM 2017?

- 3.17 As at 7 September 2017, amendments to the NPSFM 2014 came into force.
- 3.18 We note that the NPSFM 2014 has been updated to incorporate the amendments from the National Policy Statement for Freshwater Amendment Order 2017. However, the reference is still to the

² *Re Meridian Energy Limited* [2013] NZEnvC 59 at [60].

³ *Scurr v Queenstown Lakes District Council* EnvC Christchurch C060/05, 29 April 2005 at [45] - [52].

⁴ *Shirley Primary School v Christchurch City Council* [1999] NZRMA 66 (EnvC) at [144]-[145]; *Stokes v Christchurch City Council* [1999] NZRMA 409 (EnvC) at [47],[52], [84]; *Scurr v Queenstown Lakes District Council* EnvC Christchurch C060/05, 29 April 2005 at [52]; *Briggs v Christchurch City Council* C45/2008, 2 May 2008 at [120], [238]-[249];

⁵ *URS New Zealand Ltd v Auckland Regional Council* [2012] NZHC 723 at [112]-[113].

NPSFM 2014 (i.e. the name has not been amended). For clarity in this document, we will refer to the "NPSFM 2014 (amended 2017)".

- 3.19 Section 67(3)(a) of the RMA requires that a regional plan must give effect to any national policy statement. As the NPSFM 2014 (amended 2017) is now in force, and there are no transitional provisions contained within it, the Council must give effect to the NPSFM 2014 (amended 2017).
- 3.20 Section 55 of the RMA also provides that the Council must amend a proposed plan, if a national policy statement directs so, to include specific objectives and policies set out in the NPS; or so that the objectives and policies specified in the proposed plan give effect to the objectives and policies specified in the NPS; or to make the proposed plan consistent with any constraint or limit set out in the NPS. These changes can be made without using the process in Schedule 1 (but public notice must be given 5 working days after making the amendments).
- 3.21 The Council must also make all other amendments to a proposed plan that are required to give effect to any provisions in a NPS that affects the proposed plan. These types of changes must be made using the process in Schedule 1. Accordingly, any changes required to the pSWLP must be within the scope of submissions (aside from the changes that must be made under section 55(2) without using the Schedule 1 process)

Implications of the NPSFM 2017

Advise, with regard to Environment Southland's Progressive Implementation Programme for Implementing the Policies of the National Policy Statement for Freshwater Management 2014, whether we must give effect to the Objectives only or to the Objectives and Policies of the NPSFM 2017;

- 3.22 The NPSFM 2014 (amended 2017) requires that every regional council fully implements the policies in the NPSFM 2014 (amended 2017) by no later than 31 December 2025 (or 31 December 2030 if the requirements are met). If any policy in the NPSFM 2014 (amended 2017) is not already fully implemented by the current plans, the Council may establish a progressive implementation policy (PIP) to achieve full implementation of the policy by the required date (2025 or 2030).
- 3.23 As set out in the Section 42A Report at paragraphs 2.22-2.27, Environment Southland adopted a PIP in November 2015. Environment Southland is implementing Policies A1, A2, A3, B1, B2, B5, B6, CA1, CA2, CA3 and CA4 of the NPSFM through a time-staged implementation process. The Council has resolved to fully implement the NPSFM 2014 by December 2025.
- 3.24 Accordingly, the Council is only required to give effect to the Objectives and Policies of the NPSFM 2014 (amended 2017) aside from those policies listed in the PIP (being Policies A1, A2, A3, B1, B2, B5, B6, CA1, CA2, CA3 and CA4). However, we note that some of the provisions of the NPSFM are not relevant to the pSWLP.
- 3.25 We have addressed below the relevance of the NPSFM (amended 2017) provisions to the pSWLP, whether any amendments have been made in the NPSFM 2014 (amended 2017), and whether any changes are required to the pSWLP provisions.
- 3.26 We note that the NPSFM 2014 (amended 2017) requires that the Council's PIP be reviewed, revised if necessary, and formally adopted by the Council by 31 December 2018, and publicly notified.

Provide a report to the Panel regarding any amendments to the provisions in the notified pSWLP that are now necessary and if any such amendments need to be within the scope of submissions lodged.

3.27 The table below sets out the relevance of particular parts of the NPSFM to the pSWLP (in light of the PIP) and whether in light of any amendments to the NPSFM (as amended 2017), changes are required to the pSWLP.

Provision	Relevance to pSWLP provisions	2017 Amendments to NPSFM	Assessment of whether changes are required to pSWLP in light of amendments
Part A – Water Quality	Due to PIP only need to give effect to Objectives A1 to A4, and Policies A4 to A7	Amendment to Objectives A1 and A2, new Objective A3 and A4. Amendment to Policy A4 New Policies A5 to A7	Policy A4 is inserted into pSWLP as required by the NPSFM. Amendments to Policy A4 in NPSFM 2014 (amended 2017) should be incorporated into the pSWLP, for completeness. The Schedule 1 process is not required in respect of the amendments to Policy A4. The amendments made by the NPSFM (amended 2017) are set out in the tracked changes version of the pSWLP. In accordance with s55 of the RMA, the Council is intending to give public notice of the amendment to Policy A4 at the same time as publicly notifying the decisions on submissions on the pSWLP. In respect of the other amendments, it is considered that the provisions in the pSWLP give effect to the relevant provisions of the NPSFM (amended 2017). Therefore, no further amendments are required to give effect to the NPSFM.
Part B – Water Quantity	Due to PIP only Objectives B1 to B5, and Policies B3, B4, B7 and B8 relevant	New Objective B5 and Policy B8	It is considered that the provisions in the pSWLP give effect to the relevant provisions of the NPSFM (amended 2017). Therefore, no further amendments are required to give effect to the NPSFM.
Part C - Integrated Management	Relevant	Amendments to Policy C1	The amendments introduce policy recognition of ki uta ki tai (from the mountains to the sea). The principle of ki uta ki tai is already provided for in an integrated management approach and the pSWLP provisions. Therefore, no further amendments are required to give effect to the NPSFM.
Part CA - NOF	Due to PIP only need to give effect to Objective CA1	No amendments to Objective CA1 (amendments to policies only)	No changes to pSWLP required
Part CB – Monitoring plans	not relevant	Amendments	No changes to pSWLP required
Part CC – Accounting	not relevant	No amendments	No changes to pSWLP required

Part D – Tanagata whenua roles and interests	relevant	No amendments	No changes to pSWLP required
Part E – Progressive Implementation on Programme	relevant	Amendments to review and revise PIP	No changes to pSWLP required

Management of effects on historic heritage

- 3.28 In its submission KiwiRail sought that the pSWLP be amended to remove reference to 'historic heritage' from the objectives, policies and rules on the basis that the management of effects on historic heritage is the function of the relevant territorial authority under section 31 of the RMA. The legal submissions on behalf of KiwiRail and a Memorandum of Counsel in response to questions raised by the Hearing Panel both addressed this issue.⁶
- 3.29 The Section 42A Report recommended deletion of the references to historic heritage sites and structures listed on the Heritage List or constructed before 1920 from the pSWLP provisions, due to the potential for duplication with both the relevant district plan and the obligations under the Heritage New Zealand Pouhere Taonga Act 2014. Instead, the Officers recommended that an advice note be included in the pSWLP alerting plan users to the obligations of the Heritage New Zealand Pouhere Taonga Act 2014.⁷
- 3.30 Counsel largely agrees with the legal submissions and Memorandum of Counsel on behalf of KiwiRail in respect of the management of effects on historic heritage under a regional plan. In summary, the authority of Environment Southland in respect of the use of land extends to the setting of objectives and policies, but not making rules, for the recognition and protection of heritage values of sites, buildings, places or areas. It is noted that the Council may consider adverse effects on matters that are not directly within its land use functions under section 30(1)(c) when considering an application for resource consent, including adverse effects related to historic heritage.

⁶ Legal Submissions on behalf of KiwiRail Holdings Ltd dated 22 September 2017; Memorandum of Counsel on behalf of KiwiRail Holdings Ltd dated 2 October 2017.

⁷ Section 42A Report at 10.37.

4. Final Recommendations

- 4.1 The discussion in this Reply Report follows the structure of the pSWLP. Inherently related issues, such as a policy, rule and definition, are discussed in one location. Each recommendation is followed by a tracked changes version of the notified pSWLP provision. The tracking shows changes from the notified provision, and supersedes any previous recommendations made. Only a proportion of the recommended changes are shown within this Reply Report, as a significant number of changes made under Clause 16(2) are shown only in the complete, tracked changes version of the pSWLP, that sits alongside this report.
- 4.2 Any clause 16(2) amendments are not further discussed in the analysis of individual provisions. This means that if a recommendation on a particular provision is for 'no further change', there may be clause 16(2) amendments shown in the tracked changes for that provision.

Preamble and Introduction

- 4.3 There are relatively few changes recommended to the preamble and introduction sections of the pSWLP. Some significant changes are recommended with respect to the use of te reo and with respect to the national direction provided by national policy statements and national environmental standards.
- 4.4 A range of minor changes are recommended, primarily to acknowledge the limited implementation of the NPSFM in the pSWLP, particularly in relation to its objectives, and to signal further implementation stages to come. A range of minor adjustments to objectives and policies continue this theme, making the staged implementation approach to the NPSFM more explicit.

Use of Te Reo

- 4.5 At the commencement of the hearing, Panel members requested clarification on the use of te reo in the pSWLP and a complete translation, or glossary, for all terms used. Officers made some attempts at this at the time. In evidence⁸, Ngāi Tahu helpfully provided a table of adjustments to the pSWLP that would show the meaning of the te reo used, in the most appropriate manner. This has been accommodated in the tracked changes version of the pSWLP, in line with the table provided by Ngāi Tahu.

National Direction

- 4.6 Transpower raised the issue that the pSWLP does not include a summary of the National Policy Statement on Electricity Transmission 2008 or the National Environmental Standards for Electricity Transmission Activities 2009 and the pSWLP must give effect to the former, and not conflict with or duplicate the latter.
- 4.7 The pSWLP includes a summary of those National Policy Statements and National Environmental Standards that are considered particularly relevant to the pSWLP. There are a range of other National Policy Statements and National Environmental Standards that are not referenced in the pSWLP. If the Hearing Panel decide to include a summary of all National Policy Statements and National Environmental Standards, rather than those particularly relevant to the pSWLP, amendments are shown below that may be adopted. The Officers however note that the list will become out of date

⁸ Ngāi Tahu memorandum of counsel dated 06 October 2017

as new National Policy Statements and National Environmental Standards are released. If reference is made to all National Policy Statements and National Environmental Standards that are currently operative, it is recommended that the pSWLP includes a note that the summary is accurate at the time the plan decisions were released and that plan users should contact the Ministry for the Environment for all documents that apply.

4.8 The recommended additions are:

National Policy Statement on Urban Development Capacity 2016

This National Policy Statement sets out objectives and policies to provide direction on planning for urban environments. It recognises the national significance of well functioning urban environments, with particular focus on ensuring local authorities enable growth and change in response to the changing needs of communities and provide sufficient space for housing and business.

National Policy Statement on Electricity Transmission 2008

This National Policy Statement sets out the objective and policies that confirm the national significance of, and benefits of, the National Grid. It establishes a consistent approach to operation, maintenance, upgrade and development of the National Grid, and the management of adverse effects of, and on, the National Grid. This National Policy Statement includes a requirement for regional councils to include objectives, policies and methods to facilitate long-term planning for investment in transmission infrastructure and its integrations with land uses.

National Environmental Standards for Air Quality 2004

The purpose of the National Environmental Standards for Air Quality is to set a guaranteed minimum level of health protection for all New Zealanders. The regulations include standards for banning specified activities, ambient outdoor air quality standards, a design standard for new wood burners in urban areas and a requirement for large landfills to collect greenhouse gas emissions.

National Environmental Standards for Telecommunication Facilities 2016

The purpose of the National Environmental Standards for Telecommunication Facilities is to provide consistent planning requirements for the deployment of telecommunications infrastructure across New Zealand while ensuring that the effects on the environment are minimised and managed appropriately.

National Environmental Standards for Electricity Transmission Activities 2009

The purpose of the National Environmental Standards for Electricity Transmission Activities is to provide a nationally consistent regulatory framework for existing National Grid transmission lines, including regulations that establish consenting requirements for their operation, maintenance and upgrading.

National Environmental Standards for Plantation Forestry 2017

The purpose of the National Environmental Standards for Plantation Forestry is to maintain or improve the environmental outcomes associated with plantation forestry activities and to increase the certainty and efficiency in the management of those activities. The regulations permit core forestry activities including afforestation, earthworks and harvesting provided there are no significant adverse environmental effects.

Note: This list of applicable National Policy Statements and National Environmental Standards is current at November 2017. Please see the Ministry for the Environment's website for any updates.⁹

⁹ Clause 16(2) – based on evidence from Transpower

National Environmental Standard for Plantation Forestry

4.9 Part way through the hearing process, the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017 (NES-PF) were promulgated. This is a comparatively complex NES, and Officers considered how best to incorporate the provisions into the pSWLP. The NES-PF is intended to be a near-complete code for forestry activities, except where, in certain circumstances, a plan sets a more restrictive regime. Complexity is increased by the use of a number of definitions that are specific to forestry activities, and which overlap with some activities covered in the pSWLP, and a comparatively permissive regime under the NES-PF for some forestry activities. Specific comments and recommendations, in response to questions from the Hearing Panel, are:¹⁰

With regard to section 66(1)(f) of the RMA, would it be appropriate to insert a new rule into the pSWLP which reads "After 1 May 2018 nothing in this Regional Plan controls any activity specifically regulated by the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017."

4.10 Yes, it would be appropriate to insert reference to the NES-PF in the pSWLP. It is considered that this should be by way of an advice note that alerts plan users to the existence of the NES- PF, rather than a rule in the Plan.

4.11 The NES-PF seeks to provide nationally consistent regulations for plantation forestry. The NES-PF will generally prevail over regional (and district) plan rules that apply to plantation forestry activities. Plan rules may not be more lenient than a national environmental standard.¹¹

4.12 However, regulation 6 of the NES-PF allows more stringent rules¹² to prevail over the regulations to manage nationally and locally significant resource management issues and receiving environments. Regulation 6 provides as follows:

6 Plan rules may be more stringent than these regulations

National instruments

- (1) *A rule in a plan may be more stringent than these regulations if the rule gives effect to—*
- (a) *a freshwater objective developed to give effect to the National Policy Statement for Freshwater Management;*
 - (b) *any of policies 11, 13, 15, and 22 of the New Zealand Coastal Policy Statement 2010.*

Matters of national importance

- (2) *A rule in a plan may be more stringent than these regulations if the rule recognises and provides for the protection of—*
- (a) *outstanding natural features and landscapes from inappropriate use and development;*
or
 - (b) *significant natural areas.*

Unique and sensitive environments

- (3) *A rule in a plan may be more stringent than these regulations if the rule manages any—*
- (a) *activities in any green, yellow, or orange zone containing separation point granite soils areas that are identified in a regional policy statement, regional plan, or district plan;*
 - (b) *activities in any geothermal area or any karst geology that are identified in a regional policy statement, regional plan, or district plan;*
 - (c) *activities conducted within 1 km upstream of the abstraction point of a drinking water supply for more than 25 people where the water take is from a water body;*

¹⁰ The following issues and responses have been prepared by counsel.

¹¹ More lenient means that a rule permits or authorises an activity that the NES-PF prohibits or restricts (RMA s43B(4)).

¹² A rule is more stringent if it prohibits or restricts an activity that the standard permits or authorises (RMA, s43B(2)(a)).

- (d) *forestry quarrying activities conducted over a shallow water table (less than 30 m below ground level) that is above an aquifer used for a human drinking water supply.*
- (4) *The areas and geology referred to in subclause (3)(b)—*
 - (a) *may be identified in a policy statement or plan by any form of description; and*
 - (b) *include only areas and geology where the location is identified in the policy statement or plan by a map, a schedule, or a description of the area or geology.*
- (5) *In this regulation,—*
 - geothermal area** *means an area that has surface expressions of geothermal processes or discharges, including steam-fed features and geothermal water-fed features*
 - karst geology** *means a naturally occurring landform that is formed by the dissolution by fresh water of rock containing calcium carbonate, calcium-magnesium carbonate, or magnesium carbonate (such as limestone, marble, dolomite, or magnesite), and having 1 or more of the following features:*
 - (a) *sinkholes:*
 - (b) *fissured or fluted rock outcrops:*
 - (c) *areas of discontinuous surface drainage that includes stream sinks or resurgence:*
 - (d) *underground caves*
 - upstream**, *in relation to an abstraction point, means,—*
 - (a) *in the case of water (other than a lake), upstream of the abstraction point:*
 - (b) *in the case of groundwater, up-gradient of the abstraction point:*
 - (c) *in the case of a lake,—*
 - (i) *anywhere within the lake that could affect the water quality at the abstraction point (in the lake):*
 - (ii) *upstream of any river that could affect the water quality at the abstraction point (in the lake):*
 - (iii) *up-gradient of any groundwater that could affect the water quality at the abstraction point (in the lake).*

4.13 Various options exist for the NES-PF to be incorporated in regional (or district) plans. Councils may choose to amend their district or regional plan to include reference to the NES-PF for the benefit of users of the plan. Councils can simply amend a plan to remove duplication or conflict, or to include reference to the NES-PF. Where such amendments are made, Councils do not need to follow the plan change process in Schedule 1 of the RMA, or undertake consultation.¹³ Where there is no duplication or conflict with the NES-PF, Councils do not need to take direct action (the NES-PF will apply regardless).

4.14 In evidence, Transpower raised a similar issue with respect to the National Environmental Standards for Electricity Transmission Activities 2009 (NES-ET). While Transpower sought additional rules to address potential conflicts between the pSWLP and the NES-ET, similar treatment to the NES-PF is considered preferable by Officers.

4.15 Accordingly, it is considered that an advice note should be inserted into the pSWLP which recognises the existence of the NES-PF and the NES-ET, and the power in clause 6 of the NES-PF to have more stringent rules in a plan. Recommended wording is as follows:

After 1 May 2018 the rules of this Regional Plan do not apply to any activity specifically regulated by the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017, unless regulation 6 of those regulations applies.

The rules of this Regional Plan do not apply to any activity specifically regulated by the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009.

¹³ RMA, s 44A.

Are there any definitions in the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017 that can now usefully be included in the pSWLP (either directly or by way of cross-reference), including but limited to definitions of:

- *Aquifer*
- *Culvert*
- *Earthworks*
- *Ford*
- *Perennial river*
- *Sediment*
- *Sediment control measures*
- *Setback*
- *Stormwater control measures*
- *Upstream*

4.16 Many of the definitions in the NES-PF only apply to the NES, are uncertain, or are not otherwise used in the pSWLP, so Officers do not consider there is value in incorporating them.

4.17 Each of the above definitions in the NES-PF is addressed below:

Aquifer means a water-saturated zone of the ground that will yield groundwater to bores or springs at a sufficient rate to serve as an adequate source of water

The pSWLP definition is:

Saturated rock or soil material capable of transmitting and yielding water in sufficient quantities for abstraction

There is a single submission seeking to retain this definition. The definitions are similar and the effect of the change on the pSWLP rules is expected to be negligible. There is some doubt in the NES-PF definition, as to what “at a sufficient rate to serve as an adequate source of water” may be.

Addition/amendments are not recommended.

Culvert means—

- (a) *a pipe or box structure that conveys a stormwater flow under a forestry road or forestry track; or*
- (b) *the entire structure used to channel a water body under a forestry road or forestry track*

This definition solely relates to forestry activities, and inclusion would cause issues for the remainder of the pSWLP, in that there are rules that refer to culverts that are not under a forestry road or forestry track.

Addition is not recommended.

Earthworks

- (a) *means disturbance of the surface of the land by the movement, deposition, or removal of earth (or any other matter constituting the land, such as soil, clay, sand, or rock) in relation to plantation forestry; and*
- (b) *includes the construction of forestry roads, forestry tracks, landings and river crossing approaches, cut and fill operations, maintenance and upgrade of existing earthworks, and forestry road widening and realignment; but*

- (c) *does not include soil disturbance by machinery passes, forestry quarrying, or mechanical land preparation*

This definition solely relates to forestry activities, and inclusion would cause issues for the remainder of the pSWLP, in that there are rules that refer to earthworks that are not undertaken in relation to plantation forestry or associated tracking.

Addition is not recommended.

Ford means *a hard surface on the bed of a river (that is permanently or frequently overtopped by water) that allows the crossing of a river by machinery or vehicles*

The pSWLP definition is:

Any modification of the bed to establish a crossing by which any vehicle, livestock, or persons may traverse through any waterbody

There is a single submission seeking to retain this definition. The definitions are similar and the effect of the change on the pSWLP rules is expected to be negligible. However, there is some doubt in the NES-PF definition, as to what “hard surface” may be.

Addition/amendments are not recommended.

Perennial river means *a river that is a continually or intermittently flowing body of freshwater, if the intermittent flows provide habitats for the continuation of the aquatic ecosystem*

This term is not used elsewhere in the pSWLP, and there is uncertainty as to what would be included in the second part of the definition: “*if the intermittent flows provide habitats for the continuation of the aquatic ecosystem*”. In addition, there may be some intermittent rivers that have important flows or capacity that arguably do not provide habitat for ecosystems.

Addition is not recommended.

Sediment means *solid material that—*

- (a) *is mineral or is mineral and organic; and*
(b) *is in suspension, is being transported, or has been moved from the site of origin by air, water, gravity, or ice and has come to rest on the earth’s surface, either above or below water*

This definition is essentially a dictionary definition and adds little clarity.

Addition is not recommended.

Sediment control measures means *structures or measures to slow or stop water with sediment in it, so that the sediment will drop out of suspension before the water from the site reaches a water body*

This term is not used elsewhere in the pSWLP.

Addition is not recommended.

Setback means *the distance measured horizontally from a feature or boundary that creates a buffer within which certain activities cannot take place*

While there is likely scope, as a consequential change to one of the many submissions on setback rules, the definition relates to ‘horizontal’ distances. This will require many farmers to use some form of slope measurement and trigonometry to calculate setbacks on sloping ground.

Addition is not recommended.

Stormwater control measures means structures or measures to manage stormwater on formed surfaces, to reduce the volume or velocity of water run-off so as to reduce its power to entrain sediment

This term is not used elsewhere in the pSWLP.

Addition is not recommended.

Upstream in relation to an abstraction point, means,—

- (a) *in the case of water (other than a lake), upstream of the abstraction point:*
- (b) *in the case of groundwater, up-gradient of the abstraction point:*
- (c) *in the case of a lake,—*
 - (i) *anywhere within the lake that could affect the water quality at the abstraction point (in the lake):*
 - (ii) *upstream of any river that could affect the water quality at the abstraction point (in the lake):*
 - (iii) *up-gradient of any groundwater that could affect the water quality at the abstraction point (in the lake).*

This could be a useful addition. However, there is considerable uncertainty in the lake aspects of the definition.

Addition is not recommended.

Issues

- 4.18 In general, there are very few changes recommended to the discussion of issues, beyond that recommended in the Section 42A Report. For the avoidance of doubt, Mr Hodson, of Council’s science team, has confirmed his views with respect to water quality, as set out in Appendix A to this Reply Report.

Physiographic zones

- 4.19 The physiographic zones have been described in significant detail in the Section 32 Report¹⁴, Section 42A Report¹⁵ and in a detailed presentation at the commencement of the hearing. Officers continue to maintain the view that physiographic zones are a useful tool to assist with managing diffuse discharges, and clearly identify geographic areas where different responses are appropriate.
- 4.20 While the information in the introductory section of the pSWLP is recommended to be relatively unchanged, this is an appropriate place to discuss the recommended changes to the management of physiographic zones in the pSWLP, which are then touched on in more detail later in this Reply Report.

¹⁴ Page 20, Paragraph 3.4

¹⁵ Page 74, Paragraph 4.101

- 4.21 At the core of the issue is concerns expressed by a number of submitters about the physiographic zones being included in the pSWLP, who consider them to be better suited sitting outside of the pSWLP framework. This is for a variety of reasons, including the maturity of the science, debate as to how the zones are best applied, land value implications, and complexity of implementation. As noted in response to question 7 of the answers to supplementary questions, it is the Officers' opinion that the physiographic zoning concept is a useful tool to manage diffuse discharges of contaminants, and enables targeted, rather than 'blanket', solutions.
- 4.22 Advice¹⁶ has previously been provided to the Hearing Panel in respect of the inclusion of the physiographic zone rules and maps in the pSWLP.¹⁷ This advice was provided in the context of the policy and rule framework of the pSWLP as notified (and as recommended to be amended by the Council Officers in the Section 42A Report), which utilised the physiographic zones to determine the activity status of particular farming activities. Based on the (as notified) way in which the physiographic zones were being used in the rule framework, a high degree of certainty was required in relation to the delineation between different physiographic zones. On this basis, the previous advice was that the physiographic zone maps should be included in, and form part of the pSWLP.
- 4.23 In light of the issues raised by submitters, it has become apparent that the physiographic zones are not a suitable tool in and of themselves that are able to dictate the appropriate activity status in respect of farming land use activities at a property specific level, in particular parts of the Region. Therefore, the Council Officers are recommending changes to the rule framework so that the physiographic zones are not the basis to distinguish between the activity status of particular land uses across the region. Rather, the Officers are recommending that the physiographic zones be used as part of the material available to inform the resource consent process on a case-by-case basis.
- 4.24 Accordingly, the maps delineating between different physiographic zones need not be inserted in the pSWLP. Rather it is recommended that the physiographic zones are depicted (in accordance with their narrative description that is included in the Plan) in the GIS on Environment Southland's website. If an applicant disagrees with the particular zoning of their property, they can include information about that in any application for resource consent, in line with recommended Policy 12A.
- 4.25 A number of submitters raised issues with respect to the complexity of managing several physiographic zones on their property. Submitters also gave evidence regarding the accuracy of the zones on their property. As is discussed below, a number of these submitters misinterpreted the characteristics of the zones, which was not assisted by the naming of some zones or oversimplification of the physiographic zones to be merely soil types.
- 4.26 Council's science team has assessed a number of the challenges to the physiographic zones at a farm scale, and have identified that: there was inadequate evidence to come to the conclusion reached by the submitter for the majority of the challenges; several were without evidential basis; and a small number showed that there could be an inaccuracy. A copy of this analysis is included as Appendix B to this Reply Report. Council is continuing to invest in a science programme to further refine the physiographic zone mapping.
- 4.27 As noted by a number of submitters, this mapping is likely to mature over time, and submitters consider that should a landowner wish to challenge the site-specific mapping, they should be able to, without the need to go through a resource consent process.

¹⁶ This paragraph and the following two prepared by counsel.

¹⁷ Response by Philip Maw to Question of Chairperson Rob van Voorthuysen for s42A authors in relation to Physiographic Zone maps.

- 4.28 Officers have had many discussions and considered this issue at length. Officers are of the opinion that the physiographic zones are a useful tool for the management of water quality in the region, both by the Council and by individual landowners. That said, significant concerns about the accuracy and implementation of the physiographic zones at a farm scale, whether correct or not, risk detracting from the long-term usefulness of this tool. Officers are therefore recommending that: the map series be deleted from, and sit outside of, the pSWLP; in general, the discussion and policy framework remain in the pSWLP; and the rule framework be significantly less oriented towards physiographic zones. Each of these matters is discussed in more detail further in this Reply Report, particularly in the discussion on the policies and rules relating to farming activities.
- 4.29 Some submitters consider that the names of the physiographic zones could be amended to make things clearer and remove any 'stigma' attached to the zones. In particular, there was misunderstanding about Peat Wetlands, where several farmers noted that there was no "wetland" on their property, or Bedrock/Hill country, where farmers showed photographs of holes dug on their farms with no bedrock. In the Officers' opinion, this would be a helpful change, to improve the acceptability and simplicity of the pSWLP, and to indicate to farmers and other interested parties that the physiographic zones are not just surface or soil properties. However, the existing naming convention is being utilised outside of the pSWLP framework in a number of different ways, and while beneficial to rename some of these zones in the pSWLP, the implications for other processes and documentation are significant. Therefore, no changes to the names of the physiographic zones are recommended.

Regionwide Objectives¹⁸

- 4.30 No further substantial changes to Objectives 1-5, 7, and 9-17 are recommended. The Officers have considered the evidence presented by submitters on these provisions and consider the matters raised have been addressed adequately within the Section 32 Report, Section 42A Report and the written responses to the Hearing Commissioners' questions.
- 4.31 A small number of submitters, primarily Fonterra, sought clarification as to the status of the regionwide objectives, particularly querying whether they form "freshwater objectives" as anticipated by the NPSFM.
- 4.32 While Objectives 1 to 18 are objectives relating to the management of freshwater, they are not "freshwater objectives" established in accordance with Section CA2 of the National Policy Statement for Freshwater Management.
- 4.33 Under the NPSFM "freshwater objective describes an intended environmental outcome in a freshwater management unit." The definition of freshwater objective in the NPSFM is unfortunate, and potentially confusing, in that it does not refer to Section CA of the NPSFM.
- 4.34 Section CA of the NPSFM goes on to set out the framework for establishing freshwater objectives. In particular Policy CA2 sets out the process by which a regional council must develop freshwater objectives for all freshwater management units. This includes identifying the values, attributes and assigning an attribute state to formulate a freshwater objective. That process has not yet been followed (and not yet required to be followed due to the Progressive Implementation Programme) for Objectives 1 to 18 of the pSWLP (in accordance with the Council's Progressive Implementation Programme) and those objectives are not "freshwater objectives" as defined by the NPSFM. Freshwater objectives (as that term is used in the NPSFM) will be set in the subsequent FMU limit setting process.

¹⁸ This section prepared by counsel.

- 4.35 A simple statement to that effect is recommended to be added at the beginning of the regionwide objectives section:

Note: While Objectives 1 to 18 are objectives relating to the management of freshwater, they are not freshwater objectives established in accordance with Section CA2 of the National Policy Statement for Freshwater Management. Freshwater objectives established in accordance with Section CA2 of the National Policy Statement for Freshwater Management will be developed under Environment Southland's Freshwater Management Unit process, in time, in accordance with Environment Southland's Progressive Implementation Programme.¹⁹

Explanations to objectives²⁰

- 4.36 During the hearing, the Hearing Panel asked the Council Officers to consider whether there was any scope to add explanations to the objectives, from a legal and planning perspective, as no wording had been provided to the Panel and there may be a risk of procedural unfairness.

Principles of scope

- 4.37 In order for a change to be made to a proposed plan, case law has established that:²¹
A submitter must have raised a relevant "resource management issue" in a submission:
Any change contemplated must be fairly and reasonably within the general scope of:
 An original submission; or
 The proposed Water and Land Plan as notified; or
 Somewhere in between:
The summary of the relevant submissions was fair and accurate and not misleading.
- 4.38 Whether an amendment goes beyond what is reasonably and fairly raised in submissions will usually be a question of degree to be judged by the terms of the proposed plan and the content of submissions. This should be approached in a realistic workable fashion rather than from the perspective of legal nicety, and requires that the whole relief package detailed in submissions be considered.²² The approach also requires that the whole relief package detailed in submissions be considered when determining whether or not the relief sought is reasonably and fairly raised in the submissions.²³
- 4.39 The Environment Court in *Campbell v Christchurch City Council*²⁴ addressed the issue as to whether a council may make changes not sought in any submission. The Court stated that an amendment can be anywhere on the line between the proposed plan and the submission. Secondly, consequential changes can flow downwards from whatever point on that line.²⁵ On this basis, any amendment that can be attributed to a point somewhere between what was raised in a submission, and the notified version of the pSWLP, would be within the jurisdiction of the Council.

¹⁹ 277.1 Fonterra

²⁰ This section prepared by counsel.

²¹ *Well Smart Holding (NZQN) Limited v Queenstown Lakes District Council* [2015] NZEnvC 214 at [16] citing *Palmerston North City Council v Motor Machinists Ltd* [2013] NZHC 1290 and *Clearwater Resort Ltd v Christchurch City Council* HC Christchurch AP34/02, 14 March 2003.

²² *General Distributors Ltd v Waipa District Council* (2008) 15 ELRNZ 59 at [58]-[60].

²³ *Shaw v Selwyn District Council* [2001] 2 NZLR 277 at [44]; *General Distributors Ltd v Waipa District Council* (2008) 15 ELRNZ 59 at [60].

²⁴ *Campbell v Christchurch City Council* [2002] NZRMA 352.

²⁵ *Campbell v Christchurch City Council* [2002] NZRMA 352 at [20].

4.40 The principles of scope were recently addressed by Whata J in the context of a number of appeals arising from the Auckland Unitary Plan hearings.²⁶ Commenting on the requirement for amendments to be consequential to submissions received, Whata J upheld the position articulated in *Countdown Properties (Northlands) Ltd v Dunedin City Council*, namely that councils need scope to deal with the realities of the situation and a legalistic interpretation that a council can only accept or reject the relief sought in any given submission is unrealistic.²⁷ Justice Whata referred to the test for scope as "the reasonably foreseen logical consequence test" and held that, in that case, the Independent Hearing Panel's assessment of scope was correct.²⁸

In accordance with relevant statutory obligations, the IHP correctly adopted a multi-layered approach to assessing scope, having regard to numerous considerations, including context and scale (a 30 year plan review for the entire Auckland region), preceding statutory instruments (including the Auckland Plan), the s 32 reportage, the PAUP, the full gamut of submissions, the participatory scheme of the RMA and Part 4, the statutory requirement to achieve integrated management and case law as it relates to scope. This culminated in an approach to consequential changes premised on a reasonably foreseen logical consequence test which accords with the longstanding *Countdown* "reasonably and fairly raised" orthodoxy and adequately responds to the natural justice concerns raised by William Young J in *Clearwater* and Kós J in *Motor Machinists*.

4.41 We also note that the Courts have endorsed a precautionary approach to the jurisdiction of amendments on the basis of people being denied an opportunity to effectively respond to additional changes in the plan change process.²⁹

4.42 Alterations to a proposed plan that would not broaden the plan beyond the limits of what was originally requested, nor extend it beyond what was reasonably and fairly to be understood from the content of submissions, or prejudice anyone who failed to lodge a submission on the original request, are within jurisdiction. Amendments required for clarity and refinement of detail are allowed on the basis that such alterations are considered to be minor and un-prejudicial.³⁰

4.43 With that legal framework in mind, we now consider the various submissions on the pSWLP.

Application

4.44 A number of submitters sought amendments to the objectives and suggested wording accordingly.³¹

4.45 No wording has been put forward for specific explanations to objectives in any submission. A number of submitters broadly sought greater clarification to the objectives without providing specific amendments to the objectives, including:

Objective 6

Grant & Rachel Cockburn (156.1) - Explain what a 'significant' and significant meaningful' degradation means in terms of percentage change. Water quality trends need to be clear and kept in context.

²⁶ *Albany North Landowners v Auckland Council* [2016] NZHC 138.

²⁷ *Albany North Landowners v Auckland Council* [2016] NZHC 138 at [107], citing *Countdown Properties (Northlands) Ltd v Dunedin City Council* [1994] NZRMA 145 (HC) at 170.

²⁸ *Albany North Landowners v Auckland Council* [2016] NZHC 138 at [135].

²⁹ *General Distributors Ltd v Waipa District Council* (2008) 15 ELRNZ 59 at [58]-[60]; *Palmerston North City Council v Motor Machinists Ltd* [2013] NZHC 1290 at [82].

³⁰ *Oyster Bay Developments Limited v Marlborough District Council* EnvC Blenheim C081/2009, 22 September 2009 at [22]-[23] and [46]; *General Distributors Ltd v Waipa District Council* (2008) 15 ELRNA 59 (HC).

³¹ For example, Southland Fish & Game Council (752.18) (752.25); Federated Farmers of NZ (Southland Province) (265.16) (265.21) (265.23); Ravensdown Ltd (661.5); Director-General of Conservation (210.27) (210.31); Southland District Council (750.2).

Need clarification on the 'trends' of water quality in the Waiau Catchment. Explore any tools that Meridian could use to help manage N levels in our waterways, via the Mararoa Weir. Establish a level of N (annual average) in the main rivers that allows some increase on the existing levels and is still well within 'clean' levels. We can fix P & e coli in the water and improve those levels.

Foveaux Investments Ltd (283.1); Longwood Properties Ltd (477.3); Southwest Properties Ltd (757.3; Tihaka Farms (813.3)); Waihoaka Holdings Ltd (842.3) - Objectives are further defined in a completely objective manner. For example, outlining what constitutes a genuine improvement in the quality of water be incorporated as a measurable (or measurable). This would enable both historic and present day levels of water quality to be assessed to evaluate performance. Timeframes for any measurables should be set such that they are genuinely achievable for the industry.

Objective 8

Fonterra Co-operative Group Ltd (277.11) - Amend Objective 8, to clarify what the term "degraded" means in the context used and, in particular: (a) Whether it means "does not meet the Drinking Water Standards for New Zealand 2005 (revised 2008)"; and (b) What freshwater objectives are being referred to?

Objective 18

Aratiatia Livestock Ltd (24.18) - Reword the objective to clarify exactly what the Council is hoping to achieve.

- 4.46 Foveaux Investments Ltd, Longwood Properties Ltd, Southwest Properties Ltd, Tihaka Farms and Waihoaka Holdings Ltd repeated their submissions on a number of other objectives and a number of submitters also sought new objectives.
- 4.47 In light of the submissions received and the lack of proposed wording regarding any explanations to the objectives, we consider that the inclusion of explanations to the objectives broadens the plan beyond the limits of what was originally requested.
- 4.48 The Environment Court has confirmed that the expression "any relevant provisions" in section 104(1)(b) goes beyond simply the objectives, policies, and rules, and incorporates other provisions such as the identification of issues, explanations, and methods contained in a plan.³² The Court reasoned that "such provisions provide the context in which the Objectives, Policies and Rules are set and explain what this Council is endeavouring to achieve through its District Plan."³³ Accordingly, once the pSWLP becomes operative, any explanations included in the plan will inform resource management decisions in the future. Given that such explanations were not notified, nor did any submitter provide wording or specifically request that the Council add an explanation to each objective, including explanations at this late stage in the hearing process would deprive submitters of the opportunity to comment and is beyond the scope of what was reasonably raised in submissions.

Objective 6

- 4.49 Fonterra presented evidence requesting that the purpose of the pSWLP objectives are clearly defined and that Objective 6 is amended to ensure it is consistent with Objective 8, in that it applies only to those freshwater objectives established under the Freshwater Management Unit process.
- 4.50 The purpose of Objective 6 is to give effect to both the NPSFM and the SRPS. The objective serves as a guide to the FMU limit setting processes and defines the outcomes for water quality prior to

³² *Rawlings v Timaru District Court* [2013] NZEnvC 67.

³³ *Rawlings v Timaru District Court* [2013] NZEnvC 67 at [45].

freshwater objectives and limits being set. The amendments proposed by Fonterra do not achieve this purpose, as the whole objective would only apply once the FMU process had been undertaken. This would leave no guidance for the period of time until the FMU limit setting process occurs, in particular for the region-wide rules or for the assessment of resource consents prior to this occurring.

4.51 Officers recommend amendments to Objective 6 to increase the clarity of the objective and its relationship to the FMU limit setting process. In particular, the changes are intended to make the distinction between maintenance and improvement clearer, through requiring maintenance in the interim, and then improvement once the freshwater objectives and limits have been established (and it has been identified where improvements are required to meet these). This reflects the direction in Objectives WQUAL.1 and WQUAL.2 of the SRPS and Objective A2 of the NPSFM to maintain (or halt the decline of) water quality, and to improve it, where that is required in order to meet freshwater objectives. It reflects that until the completion of the FMU limit setting process, what is over-allocated (and therefore needs improvement) has not been determined; but that until the completion of the process, water quality should not be allowed to worsen.

4.52 The recommended revision to Objective 6 is shown below:

Objective 6

There is no reduction in the quality of freshwater, and water in estuaries and coastal lagoons, by:

- (a) maintaining the quality of water in waterbodies, estuaries and coastal lagoons, where the water quality is not degraded and until Freshwater Management Unit processes establish water quality limits; and*
- (b) improving the quality of water in waterbodies, estuaries and coastal lagoons, that have been degraded by human activities to the point where freshwater objectives established under Freshwater Management Unit processes are not met³⁴.*

Objective 8

4.53 A number of adjustments are recommended to Objective 8. The adjustments are intended to improve certainty and clarity of the objective. The Officers do not consider that the adjustments make any significant changes to the intended outcome.

4.54 The recommended revision to Objective 8 is shown below:

Objective 8

- (a) The quality of groundwater in aquifers that meet both the Drinking-Water Standards for New Zealand 2005 (revised 2008) and any freshwater objectives, including for connected surface waterbodies, established under Freshwater Management Unit processes is maintained; and*
- (b) The quality of groundwater in aquifers that have been degraded by does not meet Objective 8(a) because of the effects of land use and or discharge activities (with the exception of those aquifers where ambient water quality is naturally less than the Drinking-Water Standards for New Zealand 2005 (revised 2008)) is progressively improved so that:*
 - (1) groundwater (excluding aquifers where the ambient water quality is naturally less than the Drinking-Water Standards for New Zealand 2005 (revised 2008)) meets the Drinking-Water Standards for New Zealand 2005 (revised 2008);³⁵ and*
 - (2) groundwater meets any freshwater objectives and freshwater quality limits established under Freshwater Management Unit processes.³⁶*

³⁴ 277.10 Fonterra

³⁵ 752.24 Fish and Game

³⁶ 277.11 Fonterra

Significant Infrastructure

- 4.55 It has been identified by a number of submitters that the pSWLP does not include any objectives or policies that recognise the importance of critical or nationally significant infrastructure. SDC, GDC, ICC, Transpower, Meridian and NZTA in their submissions and evidence request the insertion or amendment of objectives and policies to address this. The submitters consider that it is important for this infrastructure to be provided for to support the continued operation and maintenance of existing infrastructure and to enable the development of new infrastructure to support the well-being of Southland communities.
- 4.56 Officers agree that there is existing infrastructure that is vital to the continued effective functioning of communities, but the operation and development of that infrastructure can cause adverse effects. Some existing infrastructure has been in operation for many decades and it can be challenging, both financially and practically, to upgrade that infrastructure to meet current standards. New infrastructure does not face these impediments and therefore can be constructed to meet current best practice.
- 4.57 The SRPS acknowledges the importance of providing for the development, maintenance, upgrade and on-going operation of infrastructure to contribute to the social, economic and cultural wellbeing of people and communities while ensuring that adverse effects may be avoided, remedied or mitigated³⁷.
- 4.58 The pSWLP is required to give effect to the SRPS.³⁸ Therefore, upon hearing the evidence presented, and to give effect to the SRPS, the Officers recommend that a new objective, policy and definitions are included in the pSWLP.
- 4.59 Some additional minor amendments to rules are required to implement this new policy, and these amendments have been incorporated into the revised recommended version of the pSWLP.

New Objective 9B

The effective development, operation, maintenance and upgrade of Southland's regionally and nationally significant infrastructure is enabled.³⁹

New Policy 26A

Recognise and provide for the effective development, operation, maintenance and upgrade of regionally significant, nationally significant and critical infrastructure in a way that avoids where practicable, or otherwise remedies or mitigates adverse effects on the environment.⁴⁰

New Definitions:

Critical infrastructure means infrastructure that provides services which, if interrupted, would have a significant effect on the wellbeing and health and safety of people and communities and would require reinstatement, and includes all strategic facilities.⁴¹

³⁷ Objective INF.1, Policy INF.1, Policy INF.2, Policy INF.3.

³⁸ Section 67(3)(c) RMA

³⁹ 330.2 GDC, ICC and SDC; 614.2 New Zealand Transport Agency

⁴⁰ 330.10 GDC, ICC, SDC

⁴¹ Consequential change to insertion of infrastructure objective and policy, copied from SRPS.

Nationally significant infrastructure means infrastructure which contributes to the development and wellbeing and health and safety of people and communities extending beyond the region.⁴²

Regionally significant infrastructure means infrastructure in the region which contributes to the wellbeing and health and safety of the people and communities of the region, and includes all critical infrastructure.⁴³

Objective 9/9A

- 4.60 Commissioner van Voorthuysen asked whether Objective 9 and 9A should be separate, and asked the Officers to consider the Board of Inquiry decision for the Hawkes Bay Tukituki catchment when coming to a conclusion.
- 4.61 The Officers have reviewed the decision and transcript for the Board of Inquiry process. While strongly based on the particular provisions relevant to that case, it is noted that the Board of Inquiry came to a similar conclusion, that no priority should be given within the objective. On this basis, no further change to the Objective is recommended.

Objective 18

- 4.62 Objective 18 was commented on by a number of submitters, many of whom considered this high-level concept to be challenging. Some sought a definition of “good environmental management practice”, while others, particularly those with industrial discharges, sought alignment with the RMA concept of best practicable option.
- 4.63 These issues were addressed in some detail in the Section 42A Report. Officers maintain their general view that this policy is a high-level statement of intent – an aspirational outcome for the region. On that basis, the simple and clear concept of “good management practice” continues to be supported by the Officers and continues to be the core of the recommended objective.
- 4.64 Officers do recommend the addition of the concept of “life supporting capacity” as it is a core element of both Section 5 of the RMA and the SRPS. Officers do not support the addition of “best practicable option”, as this potentially confuses the objective and sets a different expectation for different industries. However, it is acknowledged that best practicable option is a relevant concept. As discussed below, it is recommended to be included at a policy level.
- 4.65 The recommended revision to Objective 18 is shown below:

Objective 18

All activities operate in accordance with ~~at~~ “good ~~(environmental)~~ management practice” or better to optimise efficient resource use, safeguard the life supporting capacity of ~~and protect~~ the region’s land, and soils, and maintain or improve the ~~water from~~ quality and quantity of the region’s water resources. ~~degradation.~~⁴⁴

⁴² Consequential change to insertion of infrastructure objective and policy, copied from SRPS.

⁴³ Consequential change to insertion of infrastructure objective and policy, copied from SRPS.

⁴⁴ 277.16 Fonterra

Regionwide Policies

- 4.66 The majority of the Regionwide policies, for which further changes are recommended, are discussed alongside the rules for that topic. For a small number of policies there is discussion below, as the policies are either stand alone, or relate to a wide range of different rules.

Physiographic Zone Policies

- 4.67 At a broad scale, the conclusions reached by the Officers with respect to physiographic zones has been set out above, and is discussed in more detail with respect to the farming policies and rules in the rules section below.
- 4.68 Some minor changes to the policies are recommended, primarily to provide clarity and reduce duplication. It is identified that three of the policies are essentially the same, and it is recommended that the policies for the Gleyed, Bedrock/Hill country and Lignite-Marine Terraces physiographic zones be amalgamated into a single policy.
- 4.69 Commissioner van Voorthuysen requested that the wording suggested on page 12 of the answers to pre-circulated questions (paragraph 6.47) be reconsidered. It was suggested the wording “decision makers should generally not grant” be used in replace of “strongly discourage”. Given the adjustments, further discussed below, with respect to activity status and some of the physiographic zones, Officers are supportive of the term “decision makers should generally not grant”, as this provides explicit direction for resource consent processing. The Officers’ prior preference for “strongly discourage” assisted with linkage to the activity status of non-complying in the relevant physiographic zones. With removal of that activity status, the revised wording provides additional clarity and certainty.
- 4.70 At the end of the two policies that use the expression “decision makers should generally not grant” explicit reference has been added to increasing the level of contaminant losses. This is further signalled through the recommended rule regime below, where it is acknowledged that flexibility to adjust farming systems, provided contaminant losses stay within existing loss parameters, is environmentally neutral.
- 4.71 Further, this sentiment has been added to the policies for the three physiographic zones where the science indicated that the assimilative capacity was limited.
- 4.72 Some further adjustments to the new policy recommended in the Section 42A Report that identified the importance of site specific information to refine physiographic zones has been recommended below. This is a relatively minor change, but acknowledges that the mapping is held outside of the pSWLP and the process can be relatively informal.
- 4.73 The recommended revisions to Policies 4 to 12 are set out below, and the maps are recommended to be removed from the pSWLP:

Policy 4 – Alpine

In the Alpine physiographic zone, avoid, remedy, or mitigate erosion and adverse effects on water quality from contaminants, by:

- 1. requiring implementation of good management practices to manage erosion and adverse effects on water quality from contaminants transported via overland flow;*
- 2. having particular regard to adverse effects of contaminants transported via overland flow when assessing resource consent applications and preparing or considering management plans;*

3. *prohibiting dairy farming, and intensive winter grazing and*
4. ~~*decision makers should generally not grant resource consents for cultivation strongly discouraging the granting of⁴⁵ resource consents for cultivation.*~~

Policy 5 – Central Plains

In the Central Plains physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

1. *requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via artificial drainage and deep drainage;*
2. *having particular regard to adverse effects on water quality from contaminants transported via artificial drainage and deep drainage when assessing resource consent applications and preparing or considering management plans.*
3. ~~*decision makers should generally not grant resource consents for additional dairy farming of cows and additional intensive winter grazing where contaminant losses increase.*~~⁴⁶

Policy 6 – Gleyed, Bedrock/Hill Country and Lignite-Marine Terraces

In the Gleyed, Bedrock/Hill Country and Lignite-Marine Terraces⁴⁷ physiographic zones, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

1. *requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via artificial drainage, and overland flow where relevant;*
2. *having particular regard to adverse effects on water quality from contaminants transported via artificial drainage, and overland flow where relevant when assessing resource consent applications and preparing or considering management plans.*

Policy 7 – Bedrock/Hill Country

~~*In the Bedrock/Hill Country physiographic zone, avoid, remedy, or mitigate erosion and adverse effects on water quality from contaminants, by:*~~

1. ~~*requiring implementation of good management practices to manage erosion and adverse effects on water quality from contaminants transported via overland flow and artificial drainage where relevant;*~~
2. ~~*having particular regard to adverse effects on water quality from contaminants transported via overland flow and artificial drainage where relevant when assessing resource consent applications and preparing or considering management plans.*~~

Policy 8 – Lignite-Marine Terraces

~~*In the Lignite-Marine Terraces physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:*~~

1. ~~*requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via overland flow and artificial drainage where relevant;*~~
2. ~~*having particular regard to adverse effects on water quality from contaminants transported via overland flow and artificial drainage where relevant when assessing resource consent applications and preparing or considering management plans.*~~⁴⁸

Policy 9 – Old Mataura

In the Old Mataura physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

⁴⁵ 210.43 DOC

⁴⁶ 752.54 Fish and Game

⁴⁷ 895.3 Oil companies

⁴⁸ Clause 16(2) amendment

1. requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via deep drainage;
2. having particular regard to adverse effects on water quality from contaminants transported via deep drainage when assessing resource consent applications and preparing or considering management plans;
3. decision makers should generally not grant ~~strongly discouraging the granting of~~ resource consents for additional dairy farming of cows and additional intensive winter grazing where contaminant losses increase.⁴⁹

Policy 10 – Oxidising

In the Oxidising physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

1. requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via deep drainage, and overland flow and artificial drainage where relevant;
2. having particular regard to adverse effects on water quality from contaminants transported via deep drainage, and overland flow and artificial drainage where relevant when assessing resource consent applications and preparing or considering management plans;
3. decision makers should generally not grant resource consents for additional dairy farming of cows and additional intensive winter grazing where contaminant losses increase.⁵⁰

Policy 11 – Peat Wetlands

In the Peat Wetlands physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

1. requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via artificial drainage, deep drainage, and lateral drainage;
2. having particular regard to adverse effects on water quality from contaminants transported via artificial drainage, deep drainage, and lateral drainage when assessing resource consent applications and preparing or considering management plans;
3. decision makers should generally not grant ~~strongly discouraging the granting of~~ resource consents for additional dairy farming of cows and additional intensive winter grazing where contaminant losses increase.⁵¹

Policy 12 – Riverine

In the Riverine physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:

1. requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via deep drainage, and overland flow where relevant;
2. having particular regard to adverse effects on water quality from contaminants transported via deep drainage, and overland flow where relevant when assessing resource consent applications and preparing or considering management plans.
3. decision makers should generally not grant resource consents for additional dairy farming of cows and additional intensive winter grazing where contaminant losses increase.⁵²

⁴⁹ 661.13 Ravensdown

⁵⁰ 752.54 Fish and Game

⁵¹ 661.13 Ravensdown

⁵² 752.56 Fish and Game and 797.19 Ngāi Tahu

Policy 12A – Improved physiographic zone information

Where site specific information is available that better identifies the relevant physiographic zone or contaminant pathway, regard should be had to that information when undertaking activities on a site, when preparing Farm Environmental Management Plans, or when determining a resource consent application.⁵³

Policy 15 – Maintaining and improving water quality

- 4.74 Policy 15 was significantly modified during the Section 42A Report development, and questions from the Hearing Panel at the commencement of the hearing further focused the Officers’ attention on this policy, leading to a further substantial revision at that time. The Hearing Panel correctly noted that the redraft of Policy 15 was a “work in progress”.
- 4.75 A small number of submitters, primarily larger organisations, submitted on Policy 15 and presented evidence. Helpful evidence was presented by Fonterra, who provided a further substantial redraft. In addition, the Territorial Authorities also offered suggestions.⁵⁴
- 4.76 Policy 15 incorporates a wide range of concepts and situations with respect to surface and ground water quality. Separating the Policy into two separate policies adds some clarity, but Officers have generally had difficulty creating a simple and concise policy framework. The recommended changes to Policy 15, set out below, are effectively a full replacement of the notified Policy 15 and, while covering the same issues, are substantially clearer.
- 4.77 A further part to the policy is recommended to be added, recognising future processes with respect to water quality. Council has identified that these processes are broader than objective and limit setting under the NPSFM, and have committed to a broader work program entitled “People, Water and Land”. This program of both regulatory and substantial nonregulatory processes is signalled here. It also identifies that when objective and limit setting processes are complete, this will provide considerably more direction to the implementation of Policy 15, particularly through resource consent processes.
- 4.78 The recommended replacement of Policy 15 is:

15A – Maintain water quality where standards are met:

Where existing water quality meets the Appendix E Water Quality Standards or bed sediments meet the Appendix C ANZECC sediment guidelines, maintain water quality by:

1. avoiding, remedying or mitigating the adverse effects of new discharges, so that beyond the zone of reasonable mixing, those standards or sediment guidelines will continue to be met; and
2. requiring any application for replacement of an expiring discharge permit, to demonstrate how the adverse effects of the discharge are avoided, remedied or mitigated, so that beyond the zone of reasonable mixing-those standards or sediment guidelines will continue to be met.

15B - Improve water quality where standards are not met:

Where existing water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet the Appendix C ANZECC sediment guidelines, improve water quality by:

1. avoiding where practicable and otherwise remedying or mitigating any adverse effects of new discharges on water quality or sediment quality that would exacerbate the exceedance of those standards or sediment guidelines beyond the zone of reasonable mixing; and

⁵³ 277.39 Fonterra

⁵⁴ Statement of Evidence of Mr Dunning on behalf of Territorial Authorities at paragraph 45

2. requiring any application for replacement of an expiring discharge permit to demonstrate how and by when adverse effects will be avoided where practicable and otherwise remedied or mitigated, so that beyond the zone of reasonable mixing water quality will be improved to assist with meeting those standards or sediment guidelines.⁵⁵

Policy 15C – Maintaining and improving water quality after FMU processes

Following the establishment of freshwater objectives and limits under Freshwater Management Unit processes and through implementation of non-regulatory methods, improve water quality where it is degraded to the point where freshwater objectives are not being met and is otherwise maintain where freshwater objectives are being met.⁵⁶

New Policy – Industrial and Trade Processes

- 4.79 Fonterra have identified that the pSWLP does not include a specific policy that addresses industrial and trade activities that can affect water quality. Policy 16 addresses farming activities that may affect water quality but does not extend to any other activity. The only other water quality policies that are relevant to industrial uses are generic policies regarding discharges and water quality standards.
- 4.80 Upon hearing the evidence presented, Officers recommend that a new policy is included to provide direction for industrial and trade activities. It is recommended that the policy should require the minimisation of environmental effects by requiring the adoption of the best practicable option to manage and treat discharges of contaminants. It is considered that this supports Objective 18 and gives effect to the SRPS, specifically WQUAL.7 and WQUAL.9.
- 4.81 Officers consider there may be some ambiguity regarding the meaning of the term “minimise” or “minimising”. In a resource management context, there are two possible interpretations of “minimise”:
1. it could mean reducing an effect to the least possible amount; or
 2. to reduce an impact comparative to the existing state or an alternative scenario.
- 4.82 To address this uncertainty, it is recommended a new definition of “minimise” is included based on (1) above, which would apply to this policy, a number of other policies, rules and appendices. The proposed definition is set out below is based on the definition of minimise from the Oxford English Dictionary.
- 4.83 The recommended new policy and definition is:

Policy 16A – Industrial and trade processes that may affect water quality

Minimise the adverse environmental effects (including on the quality of water in lakes, perennial rivers, modified water courses, wetlands, coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands, and groundwater) by requiring the adoption of the best practicable option to manage the treatment and discharge of contaminants derived from industrial and trade processes.⁵⁷

Minimise

to reduce (an adverse effect) to the least practicable degree or amount.⁵⁸

⁵⁵ 17.19 Alliance, 614.3 NZTA, 895.27 Oil Companies, 330.5 GDC, ICC, SDC

⁵⁶ 277.23 Fonterra

⁵⁷ 277.40 Fonterra

⁵⁸ Consequential amendment relating to 277.40 Fonterra

Policy 22 – Management of the effects of groundwater and surface water use

- 4.84 In the Section 42A Report and the analysis of Policy 22, Officers recommended the rejection of the Fish and Game request that trout and salmon be added to the end of subpart one. On reflection, and after further discussion with Council ecologists, Officers now recommend the inclusion of the protection of trout and salmon into this clause, on the basis that trout and salmon, as a well-researched and at times 'indicator' species, can provide a useful criterion, and reflects the recognition of trout and salmon in Section 7 of the RMA.

Policy 39 – Application of the permitted baseline

- 4.85 A number of submitters sought to delete Policy 39, because they consider that it singles out farming activities and that it is inappropriate to include such a policy on the permitted baseline test, as this is a statutory discretion which consent authorities may choose to apply. Fonterra presented evidence requesting either the deletion of the policy or amendments to reflect that there remains some discretion available.
- 4.86 The Section 42A Report confirmed the legality of a policy regarding the application of the permitted baseline, concluding that it does not override the statutory discretion set out in Section 104(2) of the RMA.⁵⁹ The purpose of the policy is to provide some direction on the use of the permitted baseline for farming activities that exceed permitted thresholds. Such farming activities requiring resource consent have the potential to adversely affect water quality and risk not being able to achieve the water quality objectives set in the pSWLP. The policy is also important to ensure that cumulative effects of farming activities are properly managed.
- 4.87 Mr Willis, on behalf of Fonterra, considers that "will" in Policy 39 should be replaced with "may" to make it clear that the consent authorities' discretion on the application of the permitted baseline is retained. However, Mr Willis states that he accepts that such an amendment largely repeats the statutory wording of section 104(2) of the RMA.⁶⁰
- 4.88 Officers consider that amending Policy 39 to instead use "may" will render the policy of little to no guidance to the consent authority, and that Policy 39 would then be superfluous given section 104(2) of the RMA.
- 4.89 Officers consider that Policy 39 should be amended to reflect that there does remain some discretion. However, Officers consider that Policy 39 provides important guidance to consent applicants and the consent authority, so stronger wording than "may" is required to reflect the weight to be given to the consideration of adverse effects.
- 4.90 The recommended revision to Policy 39 is set out below.

Policy 39 – Application of the permitted baseline

When considering any application for resource consent for the use of land for a farming activity, Environment Southland ~~will~~ should⁶¹ consider all adverse effects of the proposed activity on water quality, whether or not this Plan permits an activity with that effect.

Policy 39A – Integrated Management

⁵⁹ See paragraphs 2.98 to 2.108 of the Section 42A Report.

⁶⁰ Statement of Evidence of Mr Willis on behalf of Fonterra at paragraph 9.7.

⁶¹ Statement of Evidence of Mr Willis on behalf of Fonterra at paragraph 9.7.

- 4.91 Officers recommend a minor adjustment to this policy, to improve its clarity of application, particularly with respect to considering whole catchments.
- 4.92 A number of catchment groups and farming businesses that included multiple properties⁶² presented evidence, seeking greater flexibility for the catchment group or the commercial enterprise to manage their losses collectively. In the absence of express limits set out with respect to nutrient losses, this concept is likely to be better left to the FMU processes to come. However, while there is some risk of raising expectations, this concept of collective management has been utilised successfully in Canterbury, and leads to efficiencies, both for the landowners, and also administratively for the Council. Therefore, Officers recommend the concept be added as a second part of the Policy:

Policy 39A – Integrated Management

*When considering the cumulative effects of land use and discharge activities within whole catchments consider:*⁶³ ~~To improve~~⁶⁴

- 1. the integrated management of freshwater and the use and development of land ~~in whole catchments~~, including the interactions between freshwater, land and associated ecosystems (including estuaries);*
- 2. through the Freshwater Management Unit process, facilitating the collective management of nutrient losses, including through initiatives such as nutrient user groups and catchment management groups.*⁶⁵

Policy 40 – Determining the term of resource consents

- 4.93 A number of submitters (in legal submissions and/or evidence) raised the issue of whether Policy 40(6) was appropriate. For example, Ballance considered that Council should not "make assumptions about the character and likely future performance of an applicant when setting a term of consent", rather that issues with compliance should be managed by ongoing monitoring and enforcement action by Council.^{66 67}
- 4.94 Policy 40(6) provides that, "[w]hen determining the term of a resource consent consideration will be given, but not limited, to: ... the applicant's compliance with the conditions of any previous resource consent" (among other things).
- 4.95 There have been a number of cases that have considered whether a council may take past compliance (either positive or negative) into account when processing a resource consent.
- 4.96 Generally, a council cannot take past non-compliance with resource consent conditions or the RMA into account when making a decision on whether to grant or decline an application for resource consent. However, once the decision has been made to grant a consent, it is submitted that the consent authority may take past compliance into account when deciding upon the duration of that consent.

⁶² Dairy Holdings, Fortuna Group and the Three Rivers CG in particular

⁶³ 390.18 Hort NZ

⁶⁴ Clause 16(2)

⁶⁵ 189.21 Dairy Holdings

⁶⁶ Statement of Evinco of Mr Taylor for Ballance dated 11 May 2017 at paragraph 41.

⁶⁷ This and the following 10 paragraphs prepared by counsel.

- 4.97 In *Suncern* and *Hinsen*, the Courts held that an applicant's past conduct can be considered in the context of a resource consent application.⁶⁸ In *Suncern*, the High Court stated that they did "*not think that Suncern's prior conduct had to be dismissed as irrelevant.*"⁶⁹ In *Hinsen*, the Environment Court applied the decision in *Suncern*, and held that its judgment could be influenced by past conduct, and that there were benefits in taking into account prior conduct of an applicant, although they accepted that "*the weight to be given to [past conduct] is for the statutory purpose, not as a punitive measure, and not to override any of the explicit [statutory] criteria*".⁷⁰
- 4.98 These cases indicate that, while past compliance should not be considered in the decision on whether to grant or decline a resource consent in a punitive manner, past compliance may otherwise be considered.
- 4.99 In *PVL Proteins*, the Court found that imposing a shorter duration on a resource consent may be appropriate where there "is uncertainty about the effectiveness of conditions to protect the environment (**including where the applicant [has a] past record of being unresponsive to effects on the environment** and making relatively low capital expenditure on alleviation of environmental effects compared with expenditure on repairs and maintenance or for profit). In addition, where the operation has given rise to considerable public disquiet, review conditions may not be adequate, as it cannot be initiated by affected residents."⁷¹
- 4.100 Further to *PVL Proteins*, the Court has also taken account of historically good compliance as a basis for imposing a longer duration on a resource consent.⁷²
- 4.101 On the basis of the above decisions, it is submitted that a consent authority may consider past compliance with resource consent conditions when determining the duration of a resource consent, particularly where there is some uncertainty as to the potential effects on the environment. For example, a consent authority may impose a longer duration on a consent on the expectation of good compliance with consent conditions (and the RMA as a whole), or, conversely, the consent authority may impose a shorter duration of consent on the expectation of non-compliance with consent conditions (and the RMA as a whole).
- 4.102 We note that in each of the cases detailed above, there was no guidance in the relevant planning framework as to whether the council could take compliance into account in their decision as to duration. However, it was noted in *Kemp* that the Court's primary function is to give effect to the underlying purpose and principles of the RMA and, to the extent they are consistent with those matters, the provisions of the relevant plan.⁷³ Further, a consent may be limited as to duration where there is a specific reason for doing so, which may be found in either the provisions of the relevant plan or in the particular circumstances of the case.⁷⁴
- 4.103 In line with the above caselaw, Policy 40(6) provides explicit policy guidance in the pSWLP that an applicant's past compliance with consent conditions (positive and/or negative) may be considered, among other things, when determining the duration of a resource consent.
- 4.104 Officers are of the opinion that there are relatively few formal mechanisms to positively recognise industry leaders and "good performance". A number of examples of environmentally progressive

⁶⁸ *NZ Suncern Construction Ltd v Auckland City Council* [1997] NZRMA 419 (HC); *Hinsen v Queenstown Lakes District Council* [2004] NZRMA 115 (EnvC).

⁶⁹ *NZ Suncern Construction Ltd v Auckland City Council* [1997] NZRMA 419 (HC) at p12.

⁷⁰ *Hinsen v Queenstown Lakes District Council* [2004] NZRMA 115 (EnvC) at [30].

⁷¹ *PVL Proteins Ltd v Auckland Regional Council* EnvC A061/01 at [30]-[31] [emphasis added].

⁷² *Wellington City Council v Wellington Regional Council* EnvC W020/09, 17 March 2009.

⁷³ *Kemp v Rodney District Council* EnvC Auckland A087/09, 28 September 2009.

⁷⁴ *Otahuhu Auto Sales Ltd v Otahuhu BC* (1976) 6 NZTPA 168 (TCPAB).

farming practices were outlined to the Hearing Panel. In the Officers' opinion, farmers that fully comply with their resource consents and actively adopt good management practices ought to at least have the opportunity to have those behaviours recognised positively in the resource consent process. Officers continue to recommend the recognition of past good performance and adoption of voluntary good management practices:

Policy 40 – Determining the term of resource consents

When determining the term of a resource consent consideration will be given, but not limited, to:

1. *granting a shorter duration than that sought by the applicant⁷⁵ when there is uncertainty regarding the nature, scale, duration and frequency of adverse effects from the activity or the capacity of the resource;*
2. *relevant tangata whenua values and Ngāi Tahu indicators of health;*
3. *the duration sought by the applicant and the reasons for, ~~plus material to support~~⁷⁶ the duration sought;*
4. *the permanence and economic life of any capital investment;*
5. *the desirability of applying a common expiry date for water permits that allocate water from the same resource or land use and discharges that may affect the quality of the same resource;*
6. *the applicant's compliance with the conditions of any previous resource consent, and the applicant's adoption, particularly voluntarily, of good management practices⁷⁷; and*
7. *the timing of development of FMU sections of this Plan, and whether granting a shorter or longer duration will better enable implementation of the ~~any~~⁷⁸ revised frameworks established in those sections.*

⁷⁵ Clause 16(2) amendment

⁷⁶ Clause 16(2) amendment

⁷⁷ 647.3 Progressive Engineering Southland

⁷⁸ Clause 16(2)

Regionwide Rules

Rule 9 – Agrichemicals

- 4.105 In the answers to initial questions on the Section 42A Report, Officers considered that there was marginal benefit in continuing the detail included within Appendix D, relating to agrichemical spray management practices. On reflection, and after hearing the evidence of L Wharfe for Horticulture NZ, Officers now consider including the general requirements within Rule 9, and consequentially deleting Appendix D, to be preferable. Officers consider that it is likely that educational material or industry developed good management practices are far more likely to be referred to by spray applicators than an appendix to the regional plan.
- 4.106 KiwiRail sought that provisions in the pSWLP that managed historic heritage be removed from the rules, and added into advice notes where appropriate. Based on the legal advice above, all references to historic heritage in the rules have been removed and advice notes added where appropriate.
- 4.107 A small number of changes are recommended to the definition of ‘reasonable mixing zone’, based on the submissions and evidence of the Oil Companies and Territorial Authorities. In the Officer’s opinion, these changes do not change the meaning or application of a reasonable mixing zone, but make its intent clearer. This is particularly with regard to the final addition, sought by the Territorial Authorities, that clarifies that a different reasonable mixing zone may result from a resource consent process.
- 4.108 The recommended amendments to the rule are:

Rule 9 – Discharge of agrichemicals onto or into surface water

The discharge of agrichemicals and any associated wetting, antifoaming and anti-drifting agent and marker dyes, into or onto⁷⁹ surface water, is a permitted activity provided the following conditions are met:

- (a) the discharge is for the purpose of eradicating, modifying or controlling excessive growth of aquatic plants, and does not exceed the quantity, concentration or rate necessary, as recommended by the manufacturer; and⁸⁰*
- (b) the agrichemical is approved for aquatic use within New Zealand under the Hazardous Substances and New Organisms Act 1996, and the use and discharge of the substance is in accordance with all the conditions of the approval; and*
- (ba) The discharge shall be undertaken in a manner consistent with NZS8409:2004 Management of Agrichemicals and for specific activities in compliance with the following sections of NZS8409: 2004 Management of Agrichemicals:*
- 1. Use – Part 5.3 and related Appendices; and*
 - 2. Storage – Section 4 and Appendix L4; and*
 - 3. Disposal – Section 6 and Appendix S; and*
 - 4. Records – Appendix C9⁸¹; and*
- (c) all practicable measures are taken to minimise spray drift beyond the target area; and*
- (d) at the downstream edge of the reasonable mixing zone⁸², the discharge does not give rise to any of the following effects in the receiving water:*

⁷⁹ 390.24 Hort NZ

⁸⁰ Clause 16(2) amendment

⁸¹ 390.24 Hort NZ

⁸² Clause 16(2) amendment

- (i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or⁸³
- (ii) any conspicuous change in visual clarity; or
- (iii) the rendering of freshwater unsuitable for consumption by farm animals; or
- (iv) any significant adverse effects on aquatic life, other than the target species; and
- (e) there is no adverse effect on any water takes permitted by the RMA, this Plan or under a resource consent; and
- ~~(f) there are no recorded historic heritage sites in the surface waterbody or artificial watercourse, at the point of discharge or within 1 km downstream of the discharge point;⁸⁴~~
- (g) ~~the discharge does not take place~~ must not be into water within natural state waters, a mātaimai reserve or taiāpure⁸⁵⁸⁶ or into waters subject to a water conservation order⁸⁷, or occur within the microbial health protection zone of a surface water drinking water supply site identified in Appendix J, or where no such zone is identified, within 250 metres upstream of the abstraction point of a surface water drinking water supply site identified in Appendix J⁸⁸; and
- ~~(h) the discharge must not be into waters subject to the Maitai River Water Conservation Order or identified in item 1 of Schedule 1 of the Oreti River Water Conservation Order, unless the discharge is undertaken pursuant to the Soil Conservation and Rivers Control Act 1941⁸⁹ or by a provider of regional, national or critical infrastructure as part of infrastructure maintenance or protection activities.⁹⁰~~

Note: Provisions in the Regional Air Plan also apply to the discharge of agrichemicals.

Note: Any discharge of the vertebrate toxic agents brodifacoum, rotenone or sodium fluoroacetate that complies with the Resource Management (Exemption) Regulations (2017) is exempt from any discharge controls under the Resource Management Act and this Plan.⁹¹

Note: In addition to the provisions of this Plan and any relevant district plan, any activity which may modify, damage or destroy pre 1900 archaeological sites is subject to the archaeological authority process under the Heritage New Zealand Pouhere Taonga Act 2014. The responsibilities regarding archaeological sites is set out in Appendix T.⁹²

Reasonable Mixing Zone

~~When determining the size of the zone of reasonable mixing, minimise the size of the area where the relevant water quality standards are breached. The A zone within which relevant water quality standards may be exceeded but which⁹³ shall not be larger than:~~

- (a) for river and artificial watercourse locations with flowing water present at all times:
 - (i) no longer than 10 times the width of the wetted channel or 200 metres along the longest axis of the zone (whichever is the lesser), and
 - (ii) occupies no greater than two-thirds of the wetted channel width at the estimated Q95 for that location;

⁸³ Clause 16(2) amendment

⁸⁴ 265.78 Federated Farmers

⁸⁵ Mātaimai and taiāpure defined in the introduction at page 11

⁸⁶ 797.33 Ngāi Tahu

⁸⁷ 247.6 Environment Southland; 523.6 G McGregor; and others

⁸⁸ 17.29 Alliance

⁸⁹ 247.6 Environment Southland

⁹⁰ 614.16 NZTA

⁹¹ Clause 16(2) amendment

⁹² Consequential amendment relating to 449.33 Kiwi Rail

⁹³ 895.61 Oil Companies

- (b) *for river and artificial watercourse locations, with intermittent flows, no longer than 20 metres at times of flow and 0 metres at no flow;*
- (c) *when within a drinking water supply zone, or 250 metres upstream of a drinking water supply site, sourced from surface water,⁹⁴ identified in Appendix J, 0 metres; or*
- (d) *a distance determined through a resource consent process, having regard to (a) to (c) of this definition.⁹⁵*

Rule 11 – Pest control

- 4.109 Following notification of the pSWLP, and immediately prior to publication of the Section 42A Report, a range of pest control poisons were explicitly permitted through the Resource Management (Exemptions) Regulations 2017. Rule 11 was adjusted in the Section 42A Report, to acknowledge this adjustment.
- 4.110 Officers now acknowledge that further adjustments to this Rule, as identified through the submissions of Southland TBFree Committee and OSPRI NZ Limited would improve clarity and certainty, without altering the intent or application of the Rule:

Rule 11 - Discharge of vertebrate pest control poisons

The discharge of ~~vertebrate pest control poisons, including sodium monofluoroacetate (1080), baits, pre-feed and deer repellent~~ a vertebrate toxic agent, other than those complying with the Resource Management (Exemption) Regulations 2017,⁹⁶ into or onto land where it may enter water is a permitted activity provided the following conditions are met:

- (a) *the vertebrate toxic agent ~~agrichemical~~⁹⁷ is approved for use within New Zealand under the Hazardous Substances and New Organisms Act 1996, and the use and discharge of the substance is in accordance with all the conditions of the approval; and⁹⁸*
- (b) *the discharge does not occur within the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J.*

Note: *Any discharge of the vertebrate toxic agents brodifacoum, rotenone or sodium fluoroacetate that complies with the Resource Management (Exemption) Regulations 2017 is exempt from any discharge controls under the Resource Management Act and this regional plan.⁹⁹*

Rule 13 – Tile drains

- 4.111 Numerous submitters presented evidence, often including photographs, of drain outlets when drain cleaning was being undertaken.¹⁰⁰ Evidence was also presented on the need to maintain drains, primarily through water blasting. Officers acknowledge that such a cleaning process is necessary to maintain drain functionality. However, Officers consider that Section 70 of the RMA effectively prevents this activity being provided for as a permitted activity in the pSWLP. The evidence presented clearly showed a conspicuous change in the clarity of water, albeit for a potentially short duration.

⁹⁴ 895.61 Oil Companies

⁹⁵ 330.21 GDC, ICC, SDC

⁹⁶ 620.1 OSPRI

⁹⁷ 390.26 Hort NZ

⁹⁸ Clause 16(2) – improve clarity

⁹⁹ Cl 16, Schedule 1 RMA

¹⁰⁰ Including L Templeton, Mid Aparima CG and G & F Eade.

4.112 While this is potentially less than satisfactory for submitters, the requirements of Section 70 would appear to preclude any other outcome.

Conspicuous change¹⁰¹

4.113 Rule 13(a) provides for a permitted activity for the discharge of water from installed subsurface drainage systems into surface water bodies, which repeats the elements of section 107 of the RMA. This includes a condition that the discharge of storm water to surface water does not give rise to a conspicuous change to the colour and/or clarity of the receiving waters.

4.114 Fish & Game submits that this condition should be replaced with clear and enforceable standards to ensure that the effect will not happen and so that compliance with these standards is able to be determined.

4.115 On that basis, Fish & Game seeks amendments to Rules 13(a) and 24(a), (among other things) so that the rules are linked to an objective definition of “conspicuous change” in the receiving waters and a deposited sediment standard.

4.116 The Statement of Evidence of Mr Moss on behalf of Southland Fish and Game Council dated 19 May 2017 provides as follows:

60 I consider that a maximum water clarity change of 20 - 30% dependent on the geology of the river is appropriate, and that this limit should apply year-round to protect the life supporting capacity of freshwater ecosystems. 20 - 30% change in visual clarity standard is the numerical equivalent to the narrative within sections 70 and s107 in the RMA: “no conspicuous change in colour or visual clarity”.

4.117 As set out in the submissions of Mr Smyth for Fish and Game:

In *Maungaharuru-Tangitu Trust v Hawke's Bay Regional Council* the Environment Court noted the difficulties with measuring objectively and reliably whether a discharge was “conspicuous” under s 107(1)(d) of the RMA in the absence of definition as follows:¹⁰²

[54] The word conspicuous is not defined in the Act. In considering its meaning, we have had regard to dictionary definitions in:

- The concise Oxford English Dictionary – “clearly visible, attracting notice or attention”;
- The New Zealand Oxford Dictionary – “clearly visible; striking to the eye”;
- Collins Concise Dictionary – “1. Clearly visible. 2. Attracting attention because of a striking feature.”

[55] We consider that it is clear from the above definitions that conspicuous does not mean simply visible but rather implies some degree of visibility. **For the discharge to be conspicuous we consider that it would need (in layman's term) to catch the eye. Application of such a test is problematic. There are obvious elements of subjectivity involved as what may be seen as conspicuous by one person might not be seen as such by another.** The position from which the discharge is seen may determine its conspicuousness. Again we note that it seemed to be common ground that whatever test was applied, the present discharge is conspicuous.”

¹⁰¹ This section, except the final two paragraphs, has been prepared by counsel.

¹⁰² *Maungaharuru-Tangitu Trust v Hawke's Bay Regional Council* [2016] NZEnvC 232 (25 November 2016) at [54] – [55] (Emphasis added).

- 4.118 To enable an objective assessment in that case, the Court considered it was appropriate to adopt a test of five Munsell units for modelling and assessment of effects, and 10 Munsell units for compliance purposes.
- 4.119 Accordingly, the case law has established that what may be a conspicuous change is a test that will require judgment in each case.
- 4.120 It is clear from the Court’s discussion and decisions that the term “conspicuous change” is capable of objective ascertainment and does not require a further clarification or a definition. “Conspicuous change” has sufficient meaning to be capable of being applied in practice.
- 4.121 Further, the term “conspicuous change” is appropriate within the context of a permitted activity rule within a plan. While “conspicuous change” will require a question of judgment that does not make it incapable of forming part of a rule in a plan. It has been accepted by the Environment Court that not all rules can be expressed in measurable units and that a condition on a permitted activity rule is not as a matter of law automatically invalid simply because it calls for an evaluation or requires an exercise of judgment.¹⁰³
- 4.122 Attached as Appendix C are a range of technical comments with respect to Appendix E, the water quality standards. Included within this is commentary on what an appropriate threshold is for a conspicuous change in the clarity of receiving water. In that advice, it is recommended that a definition be included, which Officers support and is as follows:
- Conspicuous change in clarity means more than a 20% reduction in clarity in all rivers, lakes, and wetlands, except for Lowland Soft Bed rivers, where a maximum of 33% reduction in clarity applies.**¹⁰⁴
- 4.123 A number of other rules in the pSWLP also relate to the requirements in Section 70 of the RMA to not have a conspicuous change in the colour or clarity of the receiving water. Consistent interpretation of those rules will also be aided by a definition.

Reticulated Stormwater Networks

- 4.124 The Territorial Authorities identified that resource consents for new and existing council operated stormwater networks would likely be classified, at best, as a non-complying activity, as discharges from these networks invariably include more than just stormwater. SDC, GDC and ICC consider that a non-complying status for these consents would be particularly onerous and may result in consents being refused as the Section 104D gateway tests may not be passed. This is due to the potential adverse effects of these discharges likely being more than minor and the pSWLP lacking supportive policy provisions for critical infrastructure.
- 4.125 This issue arose in a recent ICC consent application to re-authorise the discharge of stormwater from the Invercargill reticulated stormwater system. The Council Reporting Officer recommended refusing the consent on the basis that the application could not pass the Section 104D gateway test. The adverse effects on the environment were considered to be more than minor (ICC appeared to agree with this view), while the Officer concluded the proposal would also be contrary to the objectives of the operative and proposed plans. In his assessment of the policies of the pSWLP, the Reporting Officer stated:

¹⁰³ *Twisted World Limited v Wellington City Council* EnvC Wellington W024/2002, 8 July 2002 at [6]; *Friends of Pelorus Estuary Inc v Marlborough District Council* EnvC Christchurch C004/08, 24 January 2008 at [101]-[102].

¹⁰⁴ 752.323 Fish and Game

“due in large part to the sewage contamination of the stormwater network, but also the proposed rate of upgrade, the issues with sewer overflow risks within the network, the cumulative effects in the estuary, and the term sought, I believe that the discharges are contrary to Objectives 2, 3 and 4, and Policies 3, 4 and 13 of the Regional Water Plan, and Objectives 14 and 18 and Policy 13 of the Proposed Southland Water and Land Plan.”¹⁰⁵

- 4.126 The Hearing Panel did grant ICC the discharge permit after determining the application was not contrary to the objectives and policies of the regional plans. However, the weighting applied to the pSWLP was less than that of the operative plan. The decision to grant the consent was on the basis that it did not authorise the discharge of sewage but that the effects of those contaminants being entrained in the stormwater discharges should be considered as it would be artificial to separate the two components. The Hearing Panel found that subject to appropriate conditions, the consent would achieve an improvement in water quality over the term of the consent.
- 4.127 It is the Officers’ view that it is not appropriate to prevent the re-authorisation of reticulated stormwater networks. However, improvements in infrastructure and discharge quality will likely be necessary to meet water quality outcomes. Officers recognise the importance of stormwater infrastructure and consider that if the territorial authorities implement methods that result in improved discharge quality, a less onerous consent pathway may be appropriate. It is considered that this approach will still achieve the water quality outcomes of the pSWLP and appropriately gives effect to higher order documents such as the SRPS and NPSFM. Therefore, Officers recommend that a discretionary activity consent pathway be provided, subject to a management plan being provided which sets targets, methods and a monitoring programme aimed to improve discharge quality with any application to authorise discharges from a reticulated stormwater network. This management plan would need to be demonstrably funded to validate that the methods will be implemented to contribute towards an incremental improvement in discharge quality. If this information is provided, the consenting process enables an assessment to determine whether the actions proposed are suitable and sufficient to achieve water quality outcomes.
- 4.128 It is considered that the amendment recommended to Rule 15 better aligns with the pSWLP’s outcomes, including the additional provisions recommended relating to regionally significant infrastructure, while also meeting the NPSFM. It will provide greater certainty that territorial authorities can obtain discharge consents, at the same time as giving the community assurance that water quality will be improved.
- 4.129 A range of minor amendments to Rule 5 are also recommended, to further clarify the position following the Section 42A Report and questions from the Hearing Panel.

Rule 15 – Discharge of stormwater

- (a) *The discharge of stormwater onto or into land in circumstances where contaminants may enter water or into a ~~surface waterbody~~ lake, river, natural wetland, modified watercourse or, including an¹⁰⁶ artificial watercourse, is a permitted activity provided the following conditions are met:*
- (i) *the discharge is not from a reticulated system; and¹⁰⁷*
 - (ii) *the discharge does not originate from industrial or trade premises where hazardous substances are stored or used unless:*
 - (1) *hazardous substances cannot enter the stormwater system; or*

¹⁰⁵ Caldwell, D, Leersnyder, H and Pauling C (2017) Hearing Decision in the matter of an application Invercargill City Council for a discharge permit to discharge water and contaminants into surface water bodies from the Invercargill City Councils reticulated stormwater system.

¹⁰⁶ 247.41 Environment Southland

¹⁰⁷ Clause 16(2) amendment

- (2) *there is an interceptor system in place to collect stormwater that may contain hazardous substances and discharge or divert it to a trade waste system; or*
 - (3) *the stormwater contains no hazardous substances except oil and grease and the stormwater is passed through an oil interceptor system prior to discharge; and*
 - (iii) *the discharge, other than from a Territorial Authority reticulated system, does not contain any sewage, contaminants from on-site wastewater systems and mobile toilets, or agricultural effluent; and*
 - (iv) *for discharges to a ~~surface waterbody~~ lake, river, natural wetland, modified or artificial watercourse¹⁰⁸ the discharge does not result in:*
 - (1) *the production of any conspicuous oil or grease films, scums, foams or floatable or suspended materials; or¹⁰⁹*
 - (2) *the rendering of freshwater unsuitable for the consumption by farm animals; or*
 - (3) *significant adverse effects to aquatic life; or*
 - (4) *any conspicuous change in the colour or visual clarity of the receiving waters at the downstream edge of the reasonable mixing zone¹¹⁰; and*
 - (v) *except for the discharge of stormwater from a roof, road or vehicle parking area, the discharge is not into water within natural state waters; and*
 - (vi) *for discharges to land, the discharge does not cause flooding, erosion, or land instability to any other-person's property.*
- (b) *The discharge of stormwater onto or into land where contaminants may enter water or into a lake, river, natural wetland, modified or artificial watercourse that does not meet Rule 15(a)(i) is a discretionary activity provided the following conditions are met:*
- (i) *the reticulated system is owned and operated by a Territorial Authority; and*
 - (ii) *a management plan is provided with the application that sets out, in a manner that reflects the scale and significance of water quality improvements required in the catchment:*
 - (1) *targets for the reduction in the volume and frequency of wastewater overflows into the stormwater network, and methods to monitor the volume and frequency of those discharges; and*
 - (2) *a monitoring and investigation programme to identify and remedy cross-connections on private and public land; and*
 - (3) *methods to improve the quality of the discharge, which may include capital works, bylaws, investigations, education and preventative activities; and*
 - (iii) *Demonstration of funding for implementing the management plan is provided with the application.*¹¹¹
- (bc) *The discharge of stormwater onto or into land in circumstances where contaminants may enter water or into a ~~surface waterbody~~ lake, river, natural wetland, modified or artificial watercourse¹¹² that does not meet one or more of the conditions in Rule 15(a), excluding condition (a)(iii) and is not otherwise specified in Rule 15(b), is a discretionary activity.*
- (ed) *The discharge of stormwater onto or into land in circumstances where contaminants may enter water or into a ~~surface waterbody~~ lake, river, natural wetland, modified or artificial watercourse¹¹³ that does not meet Rule 15(a)(iii) and is not otherwise specified in Rule 15(b) is a non-complying activity.*

¹⁰⁸ 247.41 Environment Southland

¹⁰⁹ Clause 16(2) amendment

¹¹⁰ 752.107 Fish and Game

¹¹¹ 330.13 GDC, ICC, SDC

¹¹² 247.41 Environment Southland

¹¹³ 247.41 Environment Southland

Rule 5 – Discharges to surface waterbodies ~~that meet water quality standards~~¹¹⁴

Except as provided for elsewhere in this Plan the discharge of any:

- (a) contaminant, or water, into a surface waterbody; or
- (b) contaminant onto or into land in circumstances where it may enter a surface waterbody; is a discretionary activity provided the following conditions are ~~is~~¹¹⁵ met:
 - (i) where the water quality upstream of the discharge meets the standards set for the relevant waterbody in Appendix E “Water Quality Standards”, the discharge does not reduce the water quality below those ~~any~~ standards at the downstream edge of the reasonable mixing zone set for the relevant waterbody in Appendix E “Water Quality Standards” at the downstream edge of the reasonable mixing zone¹¹⁶; and/or
 - (ii) where the water quality upstream of the discharge does not meet the standards set for the relevant waterbody in Appendix E “Water Quality Standards”, the discharge must not further reduce the water quality below those standards at the downstream edge of the reasonable mixing zone; and
 - (iii) Except for a Territorial Authority reticulated system, the discharge does not contain any raw sewage.

Farming

- 4.130 Not unexpectedly, the farming provisions dominated the hearings process, in terms of the number of submitters and issues raised. A large number of individual farmers attended and presented evidence on the submissions, along with a wide range of industry groups. The evidence ranged from more philosophical statements about regulation, through to relatively detailed presentations outlining the specific changes sought.
- 4.131 After hearing the evidence from these farming groups and individuals, it would appear clear that the majority of the policies and rules related to farming activities are opposed by many farmers. In particular, the physiographic zones, hectare-based winter grazing rules, waterbody setbacks and cultivation rules raised a significant number of concerns.
- 4.132 A limited range of individuals and groups presented evidence generally in support of a regulatory approach. Some expressed the view that “not enough was being done”, and others, notably DairyNZ and Fonterra, suggested a number of specific changes, largely based on the notified framework.
- 4.133 At the same time, the national and regional policy framework in the NPSFM and SRPS are clear, that water quality must, in advance of FMU processes, at least be maintained. The available science would also seem clear that diffuse discharges from farming activities are a significant contributor to water quality issues, particularly nutrients, sediment and microbial contaminants. After further discussion with the Council’s science team, and review of the evidence and responses to questions, the policies and rules for farming activities have been substantially restructured in the recommendations below, while still maintaining a focus on supporting the adoption of good management practices, and controls on new and expanded dairy farming and intensive winter grazing.
- 4.134 Throughout the presentations, particularly from individual submitters, it became increasingly clear that economic considerations ranked above environmental considerations for a large number of submitters. Intergenerational equity development, particularly for farmers trying to create economically sustainable farming units for each of their children, appeared to be pushing many farmers toward further intensification and land development opportunities. At the same time, it was

¹¹⁴ 562.11 Meridian

¹¹⁵ Cl 16, Schedule 1 RMA

¹¹⁶ Cl 16, Schedule 1 RMA

clear that the historic rate of dairy conversions and increases in intensive winter grazing have slowed over the last few years, with a reduction in the profitability of the sector. It would appear that existing farms are continuing limited and targeted development opportunities and expansion, rather than “new” dairy platforms and dedicated intensive winter grazing operations being established. As these decisions are driven by market conditions, what is happening now may not be a good indicator for the future.

- 4.135 Through evidence from individual farmers, and particularly in response to questions, farmers identified that they gained information about good management practices from a wide range of sources. This includes Environment Southland’s Land Sustainability Team, industry groups and field days, and an emerging recognition of information sharing through catchment groups. It was also evident that a number of farmers did not involve themselves with any of the above. The Hearing Panel asked a number of farmers how best to “target” the poor performers. Responses to this question varied from peer pressure through to auditing. However, no simple or widely accepted response to this question was forthcoming.
- 4.136 In order to improve the implementation of the farming rules, a restructure of the rules is recommended that seek to make it clear that the various thresholds and requirements apply to the entire landholding, rather than component activities. The impression left by the notified pSWLP rules may be that for activities such as intensive winter grazing, a resource consent and farm environmental management plan only needs to be sought for the intensive winter grazing area. It is important to provide clarity that the consenting and good management practices applies to all activities on the landholding. Indeed, there may be off-sets or activities on another part of the farm that ought to be taken into account. This is achieved by restructuring the rule to include all farming activities under the permitted activity framework, then cascading down to restricted discretionary, non-complying and a limited range of prohibited activities, primarily in the Alpine area.
- 4.137 Officers consider that this restructure provides additional clarity and certainty with respect to the scope of farming activities without changing the intent of the planning framework.
- 4.138 A number of submitters presented evidence and raised issues with respect to the price of land, with the implication that rules in the pSWLP were a significant contributor to farm price reductions. Emma Moran, an economist with the Council has prepared a brief memorandum, attached as Appendix C to this Reply Report, outlining the components of land price, and includes information with respect to improved scientific information about the physical and geographical properties of land. Market failure is also relevant in the context of the pSWLP, in that the loss of contaminants from a property presently comes at zero cost to a landowner. The introduction of restrictions on the loss of contaminants is, in part, driven by the limited or exhausted ability of the surrounding land and water bodies to assimilate those contaminants.
- 4.139 While reduction in land prices due to regulation can occur, other factors, such as reductions in profitability due to market conditions are also likely to be a significant contributor. The research and analysis does not attempt to apportion reductions in land price between different causes.
- 4.140 In the absence of longer term land price information, with some ability to attribute causes of land price changes, it would appear logical that regulation will have an effect on land prices, but the magnitude is unknown.
- 4.141 A number of matters in relation to groundwater quality were raised in evidence, particularly relating to the Wendonside Terrace area. Evidence on this matter from some parties¹¹⁷ claimed that very little monitoring had been undertaken, the monitoring results did not support the conclusion of degraded groundwater quality, and that sampling bores were either inappropriately located or

¹¹⁷ T McKee and the Balfour, Wendonside and Waikaia Group

inadequately secured. Council's science team has responded to these matters in a memorandum on Wendonside hydrogeology and groundwater quality issues. This memorandum is attached at Appendix D to this Reply Report.

- 4.142 A number of farmers sought some form of “above and below” water quality testing regime as a mechanism to trigger action. This included presentations from Twin Farm Ltd. Other submitters appeared to support the testing-based regime in use in the Otago region. Officers have considered both the Otago regime and the concept of upstream and downstream testing (discussed in the following paragraph), and do not support the inclusion of this within the pSWLP. In the Officers' opinion, the Otago Regional Plan methodology is a significant departure from that notified in the pSWLP, and it would be inappropriate to recommend changes of that nature without a public consultation process.
- 4.143 The concept of above and below water quality testing is conceptually simple and attractive. However, consistent implementation, the reliable sampling of results at a range of flow conditions, and other practical difficulties indicate that while such a regime can give good information and identify specific issues, its widespread use on every farm in Southland is likely to be inefficient, and not useful for a wide range of farms, particularly where:
- (a) there are no nearby waterbodies, due to well drained soils; or
 - (b) the “before and after” testing situation is complex, such as multiple properties in a catchment or adjoining a river.
- 4.144 Commissioner van Voorthuysen questioned whether the FEMP in Rule 21(b)(iv) (as set out in the Section 42A Report recommendations) would be required six months after the plan became operative or six months after the rule became operative. It was also queried whether some wording or an advice note would clarify this in the pSWLP.¹¹⁸
- 4.145 Rule 21(b)(iv) (as set out in the Section 42A Report recommendations) would require the preparation of an FEMP within six months from the plan becoming operative (as set out in the answers to supplementary questions on page 6). This is because proposed Rule 21(b)(iv) applies to existing dairy farming of cows and section 20A of the RMA allows certain existing activities to continue for a limited period of time after a rule becomes operative (i.e. in breach of a rule) if they apply for a resource consent within 6 months of the rule becoming operative (or they otherwise comply with a permitted activity rule).
- 4.146 For new farming activities wanting to rely on a permitted activity rule, any FEMP condition will need to be complied with straight away because new activities cannot obtain the limited protection provided by section 20A. Existing activities wishing to expand or intensify within permitted activity limits, will also need to comply with any FEMP conditions straight away (as the limited protection provided by section 20A is lost if an existing activity changes in character, intensity or scale of effects).
- 4.147 The recommended amendments to Rule 20 include some permitted activity rules subject to conditions to prepare and implement an FEMP. The earliest date from which an FEMP is required in the revised recommended rule is from 1 May 2019 (which, depending on the hearing process, may not yet have commenced when the pSWLP is made operative).
- 4.148 Due to the complexities associated with section 20A of the RMA and its differing application to different activities (and it would also apply to more than just the requirement to prepare an FEMP), along with the uncertainty as to when the pSWLP will be made operative (i.e. if it is well before May 2019 then there is no issue) it is considered that an advice note or other wording is not required.

¹¹⁸ This paragraph, and the following five paragraphs, have been prepared by counsel.

4.149 The Council has provided guidance as to the effect of section 20A, and when existing and new activities must comply with the pSWLP rules as notified. It is anticipated that further guidance will be provided closer to the time that the pSWLP is made operative. It is considered that this is an implementation issue and guidance is better to be provided outside the plan.

Physiographic Zones and Activity Status

4.150 Several submitters identified that the differentiation between the physiographic zones was a core concern. Further, some submitters identified that changing farming activities should be a more straightforward resource consent process when the effects of the activity are no greater than those that are already occurring on the landholding. On this basis, it is recommended that new or expanded dairy farming and intensive winter grazing above an area threshold should be subject to a resource consent process, irrespective of the physiographic zone within which the farm is located.

4.151 There was considerable evidence presented at the hearing as to the activity status that is appropriate for new or expanded dairy farming and intensive winter grazing. It would be a fair summary to say that almost all farmers who presented evidence who occupied land within the Peat Wetlands or Old Matura physiographic zones opposed the non-complying activity status. In general, most evidence from individual farmers suggested that there should be fewer controls and resource consents, if necessary, should be a simple and inexpensive process.

4.152 The evidence from some farmers and industry groups was more “sector specific”, in that some sheep and beef farmers opposed rules that may limit their opportunity to further intensify, considering this to be “grandparenting”, while other, primarily more intensive farmers sought to protect their own investment, and encouraged more to be done by all farmers, with less emphasis on dairy farming in particular.

4.153 Officers are of the opinion that a primary focus of this plan, as directed by the NPSFM and the SRPS is to prevent further decline of water quality. This is also a core component of the objectives, as recommended to be amended by Officers. As explained earlier, there are two primary responses to this for the agricultural sector: the limiting of further intensification; and the adoption of good management practices.

4.154 A key consideration is the activity status for further intensification. Two options appear to be available that would potentially prevent the further decline of water quality, without closing the door to future development completely.

4.155 The first option is to specify new or expanded dairying or intensive winter grazing above a threshold to be a discretionary activity. This provides for a relatively simple framework, and treats all situations equally. However, Officers are concerned that discretionary activities are routinely granted, and in several areas of Southland, the capacity for the environment to absorb further additional contaminant losses would appear to be exhausted.

4.156 Raising the activity status to a non-complying activity would be similarly simple and straightforward. However, the non-complying activity test under Section 104D would be a difficult hurdle for the majority of applicants for further intensification. A non-complying activity status is also likely to discourage applications, which may otherwise have merit, due to the additional risks involved.

4.157 A more nuanced approach may be to identify those situations where the environmental effects are comparatively neutral, and provide a targeted, more permissive activity framework for those situations. A restricted discretionary activity status, with appropriate “gateway” conditions is recommended, where it can be shown that the development will at least maintain water quality.

4.158 Officers consider that a restricted discretionary activity is appropriate, where it can be comprehensively shown that the effects of the losses of nutrients, sediment and microbial contaminants, are no worse than already occur. This approach allows focused assessment on management of the farming activities and the mitigation of risk of further deterioration of water quality.

Activity status for farming activities¹¹⁹

4.159 As notified, the pSWLP provided that in all physiographic zones (other than the Alpine physiographic zone), both new or expanded dairy farming of cows, and/or new or expanded intensive winter grazing is classified as either discretionary or non-complying activities depending on the physiographic zone.

4.160 An issue consistently raised at the hearing was the appropriate activity status for the use of land for new and/or expanded farming activities (including dairy farming and intensive winter grazing). A large number of submitters, including B+LNZ and Federated Farmers, raised issues with respect to the activity status being dependent on which physiographic zone the proposal is located in.

4.161 As a starting point, the key differences between discretionary and non-complying activity statuses are outlined below.

4.162 The Courts have held that, where an activity is classified as discretionary, the plan is anticipating that activity occurring in some parts of the region and therefore the effects of that activity in those locations (provided they can be mitigated) are considered broadly consistent with the objectives and policies in the Plan. However, there will also be other parts of the region where the activity might not be appropriate. Put another way, there no presumption that a discretionary activity meets the relevant objectives and policies, nor any presumption that it does not.¹²⁰ As such, applications for discretionary activities must be considered on a case-by-case basis, and decided on their merits.

4.163 A non-complying activity is required to meet a higher statutory test before it is able to be considered under section 104 of the RMA. This is commonly referred to as ‘the gateway test’. A non-complying activity status requires the consent authority to be satisfied that either the adverse effects of the activity will be minor; or that the activity will not be contrary to the objectives and policies in the relevant plan. If one (or both) of these tests can be met the application proceeds through ‘the gateway’ and is then essentially assessed as a discretionary activity under section 104 (the consent authority maintains the discretion to grant or refuse consent under section 104B). If neither gateway is satisfied, application cannot be granted.

4.164 The gateway test in section 104D(1)(a) is confined to adverse effects only. The test is whether the adverse effects as proposed to be remedied and/or mitigated, and taken as a whole are more than minor. While a proposed activity may also have positive effects (including proposals to off-set or compensate for any potential adverse effects), such effects cannot be taken into account when making a determination under section 104D(1)(a).¹²¹

4.165 The physiographic zones provide guidance in respect of the contaminant pathways and potential nutrient attenuation potential of land. The physiographic zones do not take into account the existing state of the receiving environment. Therefore, the physiographic zones are not a tool in and of themselves that are able to dictate the appropriate activity status in respect of land use, in particular parts of the Region.

¹¹⁹ This section prepared by counsel.

¹²⁰ *Port Gore Marine Farms v Marlborough District Council* [2012] NZEnvC 72.

¹²¹ *Logan Limited v Auckland City Council* A124/2008 at [77].

- 4.166 To inform the appropriateness of an activity in a particular location a broad range of information should be considered, including:
- the physiographic zone, including the potential contaminant risk pathways;
 - the current state of the receiving environment, including its sensitivity and capacity to assimilate contaminants whilst maintaining water quality, including hot spots in the local vicinity;
 - the specifics of the particular proposed activity; and
 - mitigations, including off-sets, offered by the applicant.
- 4.167 As set out above, when considering an application for a non-complying activity, any positive effects of a proposed activity cannot be taken into account under section 104D. Any positive effects of a proposed activity could ultimately be considered in the decision of whether to grant the consent (or not) under section 104, if, and only if, the activity first passes through the section 104D gateway test.
- 4.168 Non-complying activity status would preclude the ability of the Council to consider the positive effects of a proposed activity in the first instance. It is submitted that non-complying activity status, in this case is, too blunt a tool to manage the potential risk profile of a proposed activity (at a property scale) across the region. In this respect, it is submitted that it is appropriate that applications for resource consent in respect of new/expanded farming activities be considered on their merits, on a case-by-case basis.
- 4.169 In doing so, the policy assessment (particularly Policy 16(1)(a) and (b)) will assist the decision maker in assessing which activities are appropriate, in light of the myriad of factors set out above (e.g. the contaminant risk pathways and the existing state of the receiving environment, among other things).
- 4.170 A further matter related to the appropriate activity status is that when giving effect to the NPSFM, Environment Southland is also required to consider how to enable communities to provide for their economic well-being, including productive economic opportunities, while managing within limits.¹²²
- 4.171 It is submitted that considering the above factors, the most appropriate activity status for the use of land for new and/or expanded farming activities (including dairy farming and intensive winter grazing), where unable to meet the permitted activity or restricted discretionary activity rules, is discretionary activity status, rather than non-complying.

Cumulative effects

- 4.172 Fonterra presented evidence regarding the recent Horizons declaration proceedings, and requested policy direction that individual applicants would not need to calculate or consider the cumulative effect of their discharges.¹²³ Officers have considered that request, but in advance of identifying FMU objectives and ascertaining whether or not an FMU is under, at or over allocation, it would seem incongruous to either not undertake this assessment or require the Council or some other party to complete it, particularly when cumulative effects are at the heart of the consideration for diffuse discharges. Accordingly, such a policy is not recommended.
- 4.173 Section 88 of the RMA¹²⁴ requires that an application for resource consent must (among other things) include the information relating to the activity, including an assessment of the activity's effects on the environment, as required by Schedule 4. "Effect" includes both positive and adverse effects, effects that are past, present and future, and includes any cumulative effect which arises over time or in combination with other effects.¹²⁵ Further, Schedule 4 provides that an assessment of an

¹²² Policy A6 of the NPSFM (and see also Objective A4).

¹²³ See para 3.35 and 3.36 of Fonterra legal submissions

¹²⁴ This and the following two paragraphs prepared by counsel.

¹²⁵ RMA, section 3.

activity's effects on the environment must include, where the activity includes a discharge of any contaminant, a description of the nature of the discharge and the sensitivity of the receiving environment to adverse effects.¹²⁶

- 4.174 The Court in the recent Horizons One Plan declaration proceedings considered that an application for resource consent must contain an assessment of the environmental effects that meets the requirements of Schedule 4 of the RMA, along with an assessment against the objectives and policies of the relevant regional plan, and an assessment against section 105 of the RMA (insofar as it is relevant). However, the Court considered that an applicant does not have an obligation to include an assessment against section 107, which is instead an obligation imposed on councils when considering whether to grant consent, that includes an assessment of whether a proposed discharge of a contaminant, either by itself or in combination with the same, similar, or other contaminants or water, is likely to give rise to specified effects in the receiving waters.¹²⁷
- 4.175 While an applicant for resource consent is not required to provide an assessment of the proposed activity against the particular requirements of section 107; the RMA and the One Plan decision makes it clear that an application must assess the effects of the activity, including cumulative effects, and the relevant planning provisions. This could require an assessment of matters similar to those specified in section 107 (particularly if there is explicit policy guidance in the relevant plan).

Acknowledgement of Limit Setting

- 4.176 Dairy NZ and Fonterra have presented evidence seeking amendments to Policy 16 to differentiate between the measures required prior to, and following the FMU limit setting process. In addition, both parties have sought to remove the requirement for new dairy farms or the intensification of existing dairy farms or intensive winter grazing activities to “fully mitigate” adverse effects.
- 4.177 Both parties consider that prior to the FMU limit setting process, applications for new dairy farms, or to intensify existing dairy farms, generally should not be granted unless it can be shown that the effects on water quality, including cumulative effects, will be avoided or mitigated to maintain water quality. Fonterra and Landpro have presented evidence on the term “fully mitigate” in Policy 16. Both submitters highlight that the RMA does not set a “no effects” threshold and that in some situations, particularly following the FMU limit setting process, it may be established that additional discharges could occur, depending on the limit set and if “headroom” is created in the future.
- 4.178 Officers agree that it would be appropriate to amend Policy 16 to align with the staged approach of generally halting further intensification of farming activities in the region until the FMU limit setting process is completed. The limit setting process will establish the freshwater objectives for each FMU, the water quality limits and the improvements required or headroom available. Following the FMU limit setting process, applications to establish new, or further intensify existing, dairy farms or winter grazing should not be granted where freshwater objectives are not being met or where the activity will cause freshwater objectives to not be met.

Intensive Winter Grazing

- 4.179 As explained in the Section 42A Report, intensive winter grazing is a particular feature of Southland farming systems, due to reduced grass growth in winter months. It is also acknowledged as a significant contributor to contaminant loads in waterbodies. A large number of submitters raised

¹²⁶ RMA, Schedule 4, clause 6.

¹²⁷ *Wellington Fish and Game Council v Manawatu-Wanganui Regional Council* [2017] NZEnvC 37.

concerns with the hectare based thresholds, and after considering the presentations by submitters, Officers are inclined to agree that a percentage of farm area is a preferable approach. A significant number of alternative thresholds, both percentage and area based, were analysed in the Section 42A Report, and in response to Hearing Panel questions.¹²⁸ Officers maintain that a threshold based on a set land area is technically efficient in terms of capturing the maximum land area of intensive winter grazing land for the minimum number of resource consents. However, Officers acknowledge that on a per property basis, it is less equitable.

- 4.180 A number of submitters were asked how much land area was required for intensive winter grazing, in order to winter a landowner's own stock. Additionally, a number of landowners discussed the use of winter grazing as an integral part of pasture renewal processes, usually on a 7 to 10-year rotation. Most submitters responded that around 10% of land area would be required for a 'self-contained' property.
- 4.181 On this basis, Officers recommend a threshold at 15% of land area, with an upper threshold of 100 hectares of intensive winter grazing. Officers consider this to be a measured response to the potentially significant issue of contaminant loss from intensive winter grazing practices, particularly intensive winter grazing practices that are poorly managed.
- 4.182 An upper threshold of 100 ha is recommended. It is acknowledged that this will affect a number of very large properties, who may still only be wintering their own stock. It is also acknowledged that it is a relatively arbitrary land area. An upper limit is considered appropriate, as a large area of intensive winter grazing, potentially in a catchment already suffering water quality issues, or in a location that has higher risk, ought to be managed through a resource consent process to ensure the pSWLP outcomes will still be achieved. It may be that additional controls, such as lower stocking rates, better critical source area management and follow-up crops, such as oats, may be appropriate where they are necessary to meet the plan's water quality outcomes.
- 4.183 Some submitters identified that with any area limit, it would drive farmers to higher-yielding, higher-input crops such as fodder beet. Officers consider setting two different thresholds, one for fodder beet and one for other crops, but the complexity of mixed cropping and identification of the crop types on farms is problematic. On this basis, only a single threshold is recommended. It is the Officers' view that other factors are far more likely to drive decisions by farmers to plant more intensive crops such as fodder beet, or to go with a potentially safer but lower yielding crop.
- 4.184 Some submitters identified the use of "sacrifice paddocks", where a winter feed crop was harvested and brought to stock, primarily cattle, contained within a single paddock for the winter. It appeared that there was little to no management of contaminant losses from these sacrifice paddocks. Under the notified pSWLP provisions, it is unlikely that such an operation would be considered "intensive winter grazing" or a "feed pad". In order to ensure such activities are addressed by the rules, an alteration to the definition of feed pad is recommended.
- 4.185 In assessing the rules and definitions for feed pads, the Section 42A Report definition contains a likely conflict with the definition of "significant de-vegetation". The change to the definition recommended in the Section 42A Report meant that the definition of significant de-vegetation applies to the bed and banks of waterbodies only, whereas that phrase is used in a wider context in the definition of feed pad. That change is recommended to be deleted to resolve this potential conflict.
- 4.186 A modification to the silage rules is also recommended regarding the use of self-feed silage stacks in association with a feed pad for deer. The environmental effects of deer self-feed regimes is much reduced, due to the feeding method of the deer and location of the self-feed silage stacks, typically

¹²⁸ See: Pearson et al., Spatial Analysis of Winter Forage Cropping in Southland and the Implications for Water Quality Management, November 2016, and subsequent memoranda analysing additional permutations.

on higher and drier ground, which does not lead to heavy pugging and contaminant run-off as is typical for a cattle self-feed silage stack.

- 4.187 It is also apparent from the evidence that there are a range of good management practices that should be considered as essential for all intensive winter grazing. These include a 'last bite' strip alongside any waterbodies, limiting mob size, portable troughs, back fencing and management of supplementary feed, such as baleage. Officers recommend these be included as mandatory components of the permitted activity rule.
- 4.188 Early in the hearing process, Officers were asked to inform the Hearing Panel of the cost of a typical intensive winter grazing resource consent. I am informed by the Council's Consents Manager that typical Council application fees for such an application would be \$1350. Any additional fees are based on cost recovery, and would be highly dependent on the quality of the Farm Environmental Management Plan, and the records and analysis for any changes in contaminant losses. As the rule does not yet have effect, and in general, applications have yet to be processed, there is no reliable data of full costs to base a response on.
- 4.189 During the hearing there was a question in relation to average areas of crop per property and potential conflicts within the Pearson report. One of the authors, Mr Couldrey, has responded as follows:

Table 6 on page 25 of the report does show for the Sheep and Beef industry, an average or mean of 25.6 hectares of winter forage crop was grown that type of property in 2014 (this is a grouping of different land uses that apply to that industry). The box and whisker plots on page 26, Figure 6, refers to the median value, which is around 12 or 14 hectares. The large areas (up to 848 hectares) skew the mean or average value to be higher, 25.6 ha; whereas the median of the box and whisker plot is around 12-14 hectares.

Column 4 of Table 6 shows for the different land uses, the percentage of the total winter forage area that is grown on that land use. For example, the 'Sheep' land use (sheep only properties), 10.7% of Southland's total winter forage crop area, was grown on these properties in 2014. These properties are part of the Sheep and Beef Industry (along with Sheep and Beef, Beef, and Mixed Livestock properties), and in total, the industry accounted for 64.6% of the crop grown in Southland in 2014.

- 4.190 There has been a range of evidence presented on appropriate setback widths. In particular, Mr Kitto for DairyNZ commented on the efficacy of various setback widths.¹²⁹ A number of submitters also commented to the effect that "research has shown that a 600 millimetre setback is adequate".¹³⁰
- 4.191 In the Officers' opinion, the range of research shows the difficulty of arriving at a single setback distance to cover a multitude of situations. Some research uses variables of slope and setback distance, while other research varies riparian vegetation types. Most research has assumptions of uniform sheet flow while other research focuses on the high level of contaminant loss from critical source areas. It has become clear to Officers that a single linear set back distance will be effective in some circumstances, inefficient in others and likely inadequate for critical source areas. While Officers continue to recommend a series of setback distances based on slope for activities where the soil is likely to be exposed, Officers strongly support the adoption of critical source area management and good management practices for cultivation and intensive winter graining grazing through farm environmental management plans.
- 4.192 There were a range of questions raised, including from the Hearing Panel, regarding the 100 metre setback from sensitive waterbodies. This setback was intended to reduce the likelihood of direct run-

¹²⁹ Statement of Evidence of J Kitto for Dairy NZ Limited at paragraph 7.3

¹³⁰ For example, Dillon Ag referred to a Foundation for Arable Research study.

off to these sensitive waterbodies, which would likely introduce high levels of nutrients and sediment. Further advice from Council's Land Sustainability Team has identified that there is typically a drain between these sensitive waterbodies and active farmland, so that a direct flow path does not normally exist. On this basis, the Land Sustainability Team have recommended that the setback be reduced to 20 metres.

- 4.193 Evidence was presented by a number of parties regarding the identification and definition of critical source areas. There was a general acceptance, particularly through the evidence of Beef and Lamb, that critical source areas are very much location specific, and a precise definition with objectivity is likely not possible. However, and in response to questions, a number of clarifications to the definition were identified, so that it would be easier for both experts and individual farmers to identify and agree on what constitutes critical source areas. Officers recommend that the definition be improved, primarily in line with the Beef and Lamb suggestions.
- 4.194 The term is used only sparingly in the rules, primarily due to the difficulties of objectively assessing what are critical source areas. In addition, the term "ephemeral waterbodies" has been added, so that it is clear that ephemeral waterbodies are critical source areas, and there is no potential for a 'gap' in the rules, between critical source areas and intermittent rivers.
- 4.195 One statement on setback distances that was repeated by a number of submitters does justify a particular response. A number of submitters claimed that a 600 millimetre setback distance from waterbodies was adequate. This appeared to be based on research. Officers have attempted to track down this research, as it would appear significantly at odds with other research known to Officers and anecdotal evidence. Officers have been able to identify some commentary and a limited piece of research that could be interpreted to support that setback distance.¹³¹ That research appeared to identify that up to 90% of sediment can be deposited in the first 600 millimetres of riparian vegetation, when it is adjacent to cropping land and on a flat gradient. As Officers understand it, this research does not support the proposition that 600 millimetres is an appropriate setback distance.

Dairy Farming

- 4.196 Much of the discussion and conclusions reached that are relevant to dairy farming are addressed above in relation to physiographic zones, activity status and farming generally. During the hearing process, dairy farming generated a significant diversity of evidence, from claims that it was being unfairly singled out, through to claims that it was the root cause of Southland's water quality issues. A wide variety of individual dairy farmers presented evidence, along with industry groups, DairyNZ and Fonterra. The general support for the policy and rule framework from Fonterra and DairyNZ was noted.
- 4.197 It is also notable that dairying is subject to a resource consent regime with respect to effluent discharges and new dairying activities are subject to a land use consent regime under the existing Regional Water Plan. It was also apparent through evidence that the industry had been taking a lead in the implementation of voluntary GMPs, the use of the Overseer tool for fertiliser assessments and some farms had Sustainable Milk Plans developed in conjunction with Fonterra. Other farms had Environment Southland Land Sustainability Team assisted farm plans.
- 4.198 Anecdotal evidence from the hearing identified that with the reduction in the milk payout, the large-scale new dairy conversions that had occurred over the last two decades appeared to have slowed. Only a few farmers mentioned new dairy conversions or indicated that a new dairy conversion was in their immediate future plans. What did appear to be more common was incremental expansion

¹³¹ An unpublished draft Landcare Research report.

and potentially lower risk development opportunities on existing dairy farms, expanding support blocks so that the dairy platform could be better utilised, or changes to wintering programmes.

- 4.199 As noted above, Officers are recommending the removal of the differentiation between physiographic zones, making new or expanded dairy farming either a restricted discretionary or discretionary activity, depending on the level of effects, and generally simplifying the rule regime.
- 4.200 It is notable that Officers are recommending the removal of the controlled activity status for the expansion of the land area of a dairy platform. Evidence presented identified that discharge consents, upon which the rule was based, tend to identify, with some precision, an area for dairy effluent disposal, which is likely considerably less than the extent of the dairy platform. With a revised definition of dairy platform, discussed below, and a simpler rule framework, that provision was considered to be redundant.
- 4.201 Fonterra raised concerns with respect to the potentially retrospective date upon which a dairy farm's effluent discharge permit needed to exist. The notified date was 31st of May 2016, the Section 42A Report changed this to 1st of May 2016, so as to align with other 1st of May dates, and the actual notification date of the plan was 3rd of June 2016. Officers have no particular concern about changing the date and in order to avoid any risk of prejudice to any party, recommend that the date of notification of the pSWLP, being 3 June 2016, be adopted.
- 4.202 Associated with these changes are improvements to the definition of landholding and a new definition of dairy platform. The definition of landholding is similar to that included in the Section 42A Report, and is essentially oriented around gathering together separate certificates of title and parcels of land that are farmed as one unit. The definition of dairy platform is largely based on the definition of "milking platform" in the draft Stock Exclusion Regulations. This definition is, in the Officers' opinion, comparatively simple and will clearly capture the relevant areas of land.

Cultivation

- 4.203 Through the hearing process there was considerable evidence from individual submitters about cultivation, particularly in relation to the appropriate slope and whether the setbacks from waterways were necessary. Many photographs were shown, which were helpful in providing clarity on individual farming situations. It would be a fair summary to say that the majority of farmers felt that the slope limitations were too restrictive, and the waterbody setbacks, particularly for steeper slopes, were too significant.
- 4.204 This was particularly prevalent at the hearings held in Gore, which may reflect the steeper and more difficult terrain in parts of the northern Southland area. When questioned, many farmers felt that health and safety obligations with respect to limits on what could be safely cultivated would be an appropriate threshold. That was potentially undermined by several submitters who identified that they were able to cultivate very steep slopes, particularly by cultivating downhill. Downhill cultivation was also identified as a potential mechanism by which the overland flow could become concentrated and thereby increase sediment run-off. Ploughing along contours appears to be a clear good management practices that will limit sediment transport, but is only available at more modest slopes.
- 4.205 It became clear during the hearing that there are a range of good management practices, such as leaving the cultivated surface with a relatively coarse structure (rather than fine, easily transported soil particles), active management of critical source areas, cultivating at drier times of the year, and waterbody setbacks that are useful techniques, but are reliant on significant paddock-specific intervention.

- 4.206 Similarly, cultivation for pasture renewal, often involving an intensive winter grazing crop as part of the pasture renewal rotation, was clarified by many submitters to be an essential component of pasture based farming systems.
- 4.207 The evidence also showed a diversity of views on the measurement of slope. Many farmers stated that they would be unable to accurately measure slope. Others identified use of inclinometers on mobile phones that appear to be reasonably accurate. Other, more technical evidence, showed accurate identification of slope thresholds through survey information, LIDAR data or potentially online mapping tools.
- 4.208 After advice from the Council's Land Sustainability Team, a relatively simple framework of setting a threshold, and leaving it open to farmers to choose a method is considered by Officers to be the most appropriate. Over time, it is expected that additional, and easier to use, slope measurement and critical source area identification tools will be developed, particularly if the Council invests in publicly available LIDAR data.
- 4.209 Officers consider that sedimentation of Southland waterways is a considerable issue. Anecdotal evidence would suggest exposed soils, particularly through cultivation and intensive winter grazing, in combination with poor critical source area management is a likely significant contributor to the issue. On this basis, Council Officers continue to recommend a relatively constrained slope threshold of 20°, and a simplified waterbody setback regime. The ability to renew pasture within the setbacks is retained, provided that the method is limited to spraying and direct drilling. The evidence from submitters identified a range of difficulties with and interpretations of "mechanical" cultivation and in general this is recommended to be removed from the rule, to aid simplicity and certainty.

Appendix N – Good Management Practices

- 4.210 The revised rules recommended by Officers do not include the provisions for industry audited self-management (IASM) programs, as included in the notified pSWLP. Those provisions were included as a result of consultation with industry groups, recognising that the programs would likely become more refined through the process. It was signalled in the Section 42A Report that there were concerns about a lack of clarity as to the nature of these programs. Evidence was invited from proponents of the program to provide additional detail for inclusion in the pSWLP.
- 4.211 As Officers understand it, that detail was not forthcoming, and Officers remain uncomfortable as to the somewhat open nature of those provisions. In addition, the provisions of Appendix N, and the lack of auditing of the farm environment management plan mean that it is unlikely that an industry audited self-management program would convey significant benefit. On this basis, Officers recommend that those provisions be removed from the pSWLP.
- 4.212 However, if the Hearing Panel wish to retain IASM in the pSWLP, it would require only a relatively simple reinsertion of the provisions into the relevant policy and rules. If the Hearing Panel were wishing to keep IASM in the policies and rules, it is suggested that more detail on IASM be included within an addition to Appendix N. An example of what might be appropriate as the criteria is set out in the recent Proposed Waikato Regional Plan Change 1. A copy of this is included at Appendix F to this Reply Report.
- 4.213 Significant changes recommended to the farm environmental management plan requirements in Appendix N are detailed below. These can be summarised as:
- The requirements have been split, so that a farm environmental management plan that is undertaken for either a dairy farm or an activity that requires a resource consent is more complex and thorough. This reflects the additional degree of oversight and intervention by the Council, in response to the increased level of risk that has generated the resource consent requirement.

- The farm environmental management plan requirements for farming activities that are neither dairying nor subject to a resource consent are considerably simplified. This includes removing a compulsory requirement for Overseer assessments, which generated significant evidence regarding cost and the usefulness of that information.
- The farm environmental management plans are more “action oriented” rather than recording a large amount of information or analysis. This is particularly the case for the farm environmental management plans for farming activities that are neither dairying nor subject to a resource consent.

4.214 Overall, the evidence appeared clear that farmers needed to see value in farm environmental management plans, they needed to be regularly updated and referred to and simpler in both form and content. Officers are hopeful that the changes proposed will meet this aspiration.

4.215 An analysis of industry developed templates, against the requirements of the Section 42A Report version of Appendix N is included as Appendix H to this Reply Report. It is clear that all the industry developed templates lack some Southland specific features, such as physiographic zone and contaminant pathway analysis, and emphasis on critical source areas and practices such as intensive winter grazing. That said, industry groups and the Council are working together to address some of these gaps, and industry developed templates are supported, provided these gaps can be otherwise filled by farmers or their consultants.

Resource Consent Duration

4.216 A number of submitters were concerned about the need to obtain resource consents on a short-term basis, or possibly even annually. After questioning from the Hearing Panel several submitters identified that a multi-year consent would be preferable, and could possibly even be considered an asset for the property. Submitters were also concerned about the degree of flexibility within multi-year consents, to be able to operate their farming activities as had previously been the case. This particularly applies to sheep, beef, deer and cropping farmers, who tend to vary stocking and crops in accordance with market and climatic opportunities.¹³²

4.217 Policy 40 provides guidance on the term of a consent through identifying matters that are to be considered when the consent is assessed. However, there is no express policy guidance within the pSWLP regarding the timeframe for ‘everyday’ farming activities and a number of submitters have raised this uncertainty as an issue. These submitters are primarily concerned about the cost and effort of obtaining multiple consents for farming activities, which may only last for a few years.

4.218 It is not the intention of Council to overburden farmers undertaking farming activities with unnecessary additional costs and effort. The reasoning for requiring consents is to ensure that best efforts are being made to prevent unacceptable environmental effects and to ensure that the Council’s obligation with respect to water quality are met. Officers recommend inserting an additional clause in Policy 16 (which relates to farming activities) to address these concerns from farmers. This suggested addition to Policy 16 clarifies that one resource consent can cover multiple farming activities, and notes that 5 years is considered to be the normal minimum term for a resource consent, and requires consideration be given to providing flexibility and accommodating market and financial changes.

Waterbodies

Intermittent or ephemeral, or both?

¹³² Evidence and responses to questions of D & R McKee and Lawrence Farms

- 4.219 It has been identified that intermittent and ephemeral watercourses have not been dealt with in a consistent manner throughout the pSWLP, and in some policies and rules it is unclear whether those types of watercourses are included or excluded. A number of questions were asked of Officers at the start of the hearing regarding this, several submitters raised this in evidence and during the hearing process the NES-PF was released, which includes a unique way of dealing with watercourses.
- 4.220 The RMA definition of 'river' includes intermittently flowing bodies of freshwater but does not specifically mention ephemeral watercourses. The answers to questions put to Officers confirmed that pSWLP rules referring to 'rivers' are intended to include intermittent watercourses, and exclude ephemeral watercourses.
- 4.221 Council is focussing on the protection of critical source areas within the FEMP process, which, by the very nature of critical source areas, includes ephemeral watercourses. Overall, it is the Officers' view that "ephemeral watercourse" be left outside the rules of the pSWLP with respect to bed disturbance activities, structures and setbacks. This can be clarified by expressly excluding ephemeral watercourses from the definition of modified and artificial watercourses and clarifying throughout the pSWLP that 'river' excludes ephemeral watercourses. Officers consider this is more appropriate than adjusting the definition of 'river', because the definition of 'river' is taken directly from the RMA.
- 4.222 There have also been some minor amendments suggested to the definition of ephemeral watercourse to remove the words 'typically' and 'significant'. Such terms introduce an element of subjectivity when interpreting the plan. For example, a person wishing to undertake an activity could consider a watercourse not to be an ephemeral river because the rainfall event causing it may not reach a 'significant' level. Officers consider the use of subjective terms is uncertain and has the potential to cause difficulties when using the pSWLP.

Consistent use of terms for waterways

- 4.223 Waterways are referred to in different ways throughout the pSWLP and Officers consider this would benefit from amendment to avoid any possible confusion.
- 4.224 Where appropriate, 'waterbody' has been replaced with 'watercourse' to improve consistency. Consistent use of "lake, river (including intermittent, but excluding ephemeral rivers), modified watercourse, natural wetland, coastal lagoon, estuary" is recommended throughout the pSWLP, to improve certainty.

Perennial river

- 4.225 Perennial river, as defined in the NES-PF only includes intermittent rivers where those intermittent rivers provide habitats for the continuation of the aquatic ecosystem. If this definition is introduced, two potential issues are arise:
- (a) Whether a particular intermittent river provides habitat for the continuation of an aquatic ecosystem may require assessment and judgement; and
 - (b) Other intermittent rivers, that don't have aquatic ecosystems, may provide important flood flow capacity and works in the beds of such intermittent rivers may have adverse effects on downstream waterways and/or flooding on neighbouring land.
- 4.226 In the Officer's view, intermittent rivers, even where they don't provide for the continuation of ecosystems, are still rivers for the purposes of the RMA (and s13).

"Active bed"

4.227 The use of the term 'active bed' has been requested in submissions from Fonterra and Fish and Game and was supported in the Section 42A Report¹³³. The Section 42A Report also noted that the definition and use of 'active bed' is supported by the Environment Southland's Land Sustainability Team. This analysis was not translated into the Section 42A Report recommendations. The definition of active bed sought by Fonterra is:

Active Bed

the bed of a river (including any modified river) or artificial watercourse that is permanently or intermittently flowing and where the bed predominantly comprises sand, gravel, boulders or similar material or aquatic vegetation.

4.228 In the Officers' opinion, this definition is a useful starting point for determining what is an 'intermittent river' for the purposes of rules and setback requirements. Officers have recommended that a modification of this be incorporated into the definition of intermittent river or waterbody.

4.229 Recommendations for Policy 16, the farming rules and associated definitions are:

Policy 16 – Farming activities that affect water quality

1. Minimising the adverse environmental effects (including on the quality of water in rivers, coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands, and groundwater) from farming activities by:

(a) ~~strongly~~¹³⁴ discouraging the establishment of new dairy farming of cows or new intensive winter grazing activities in close proximity to Regionally Significant Wetlands and Sensitive Waterbodies identified in Appendix Q A¹³⁵; and

(b) ensuring that, in the interim period prior to the development of freshwater objectives under Freshwater Management Unit processes,¹³⁶ ~~strongly discouraging~~ applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities will not be granted where:

(i) ~~the adverse effects, including cumulatively, on the quality of water, including cumulatively,~~¹³⁷ of groundwater, waterbodies, water in lakes, rivers, modified water courses, wetlands,¹³⁸ coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands cannot be avoided or fully mitigated; or

(ii) ~~in areas where~~ existing water quality is already degraded to the point of being overallocated; or

(iii) existing water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet the Appendix C ANZECC sediment guidelines;

(c) ensuring that, after the development of freshwater objectives under Freshwater Management Unit processes, applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities:

(i) should not be granted where freshwater objectives are not being met; and

(ii) where freshwater objectives are being met, should not be granted unless the proposed activity (allowing for any offsetting effects) will maintain the overall quality of groundwater and water in lakes, perennial rivers, modified water courses, wetlands, coastal lakes, lagoons, tidal estuaries, salt marshes and coastal wetlands.¹³⁹

¹³³ Paragraph 10.326.

¹³⁴ CI 16, Schedule 1 RMA

¹³⁵ 210.101 DOC; 279.126 Forest and Bird; and 752.193 Fish and Game.

¹³⁶ 277.1 Fonterra

¹³⁷ CI 16, Schedule 1 RMA

¹³⁸ 752.60 Fish and Game

¹³⁹ 277.24 Fonterra (for new (c))

2. Requiring all farming activities, including existing activities, to:
 - (a) ~~either implement a Farm Environmental¹⁴⁰ Management Plan, as set out in Appendix N, or be listed on the Environment Southland Register of Independently Audited Self-Management Participants;~~
 - (b) actively manage sediment run-off risk from farming and hill country development by requiring setbacks from waterbodies, riparian planting, limits on areas or duration of exposed soils and the prevention of stock entering the beds of¹⁴¹ surface waterbodies;
 - (c) manage collected and diffuse run-off and leaching of nutrients, microbial contaminants and sediment through the identification and management of higher risk physiographic zones on a regional scale, and critical source areas within individual properties.
3. When considering a resource consent application for farming activities, other than applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities, consideration should be given to the following:
 - (a) whether multiple farming activities, such as cultivation, setbacks, and winter grazing can be addressed in a single resource consent;
 - (b) that a normal duration of the consent would be at least 5 years; and
 - (c) whether the consent can enable flexibility to accommodate market and climatic changes.¹⁴²

Rule 20 – Farming

- (a) The use of land for farming is a permitted activity if:
 - (i) The landholding is less than 20 hectares in area; or
 - (ii) Where the farming activity includes a dairy platform on the landholding, the following conditions are met:
 - (1) The dairy platform has a maximum of 20 cows; or
 - (2) The dairy platform had a dairy effluent discharge permit on 3 June 2016 that specifies a maximum number of cows; and
 - (3) Cow numbers have not increased beyond the maximum number specified in the dairy effluent discharge permit that existed on 3 June 2016; and
 - (4) From 1 May 2019, a Farm Environmental Management Plan for the landholding is prepared and implemented in accordance with Appendix N; and
 - (5) That on request the landowner provides a written record to Environment Southland:
 - a. of the good management practices, and any newly instigated good management practices in the preceding 12 months, occurring on the landholding; and
 - b. the Farm Environmental Management Plan prepared in accordance with Appendix N; and
 - (6) The land area of the dairy platform is no greater than at 3 June 2016; and
 - (7) No part of the dairy platform is at an altitude greater than 800 metres above mean sea level; and
 - (iii) Where the farming activity includes intensive winter grazing on the landholding, the following conditions are met:
 - (1) From 1 May 2019, intensive winter grazing does not occur on more than 15% of the effective area of a landholding, or 100 hectares, whichever is the lesser; and
 - (2) From 1 May 2019, a Farm Environmental Management Plan for the landholding is prepared and implemented in accordance with Appendix N; and
 - (3) From 1 May 2019, all of the following practices are implemented:

¹⁴⁰ 247.1 Environment Southland

¹⁴¹ 210.55 DOC

¹⁴² 179.1 Crooks, J and S; 450.1 Kmore Farming Ltd

- (a) if the area to be grazed is located on sloping ground, stock are progressively grazed (break fed or block fed) from the top of the slope to the bottom, or a 20m 'last-bite' strip is left at the base of the slope; and
 - (b) when the area is being break-fed, the stock are back fenced to prevent stock entering previously grazed areas; and
 - (c) transportable water trough(s) are provided in or near the area being grazed to prevent stock access surface water bodies for drinking water; and
 - (d) if supplementary feed (including baleage, straw or hay) is used in the area being grazed, it is placed in portable feeders; and
 - (e) if cattle or deer are being grazed the mob size being grazed comprises no more than 120 cattle or 250 deer; and
 - (f) swales within the area being grazed (critical source areas) that accumulate runoff from adjacent flats and slopes are grazed last; and
 - (4) From 1 May 2019, a vegetated strip is maintained, and stock excluded from, the area between the outer edge of the bed of any lake, river (including intermittent, but excluding ephemeral rivers), modified watercourse, artificial watercourse or natural wetland and a distance of:
 - (a) 5 metres from the outer edge of the bed on land with a slope of less than or equal to 7 degrees; and
 - (b) 20 metres from the outer edge of the bed on land with a slope of greater than 7 degrees; and
 - (5) From 1 May 2019, intensive winter grazing does not occur within 20 metres of the outer edge of the bed of any Regionally Significant Wetland or Sensitive Waterbodies listed in Appendix A, coastal lake or lagoon, estuary or the Coastal Marine Area; and
 - (6) No intensive winter grazing occurs at an altitude greater than 800 metres above mean sea level: and
 - (iv) For all other farming activities, from 1 May 2020, a Farm Environmental Management Plan is prepared and implemented in accordance with Appendix N.
- (b) Despite any other rule, the use of land for a dairy platform or intensive winter grazing, at an altitude of greater than 800 metres above mean sea level, is a prohibited activity.
- (c) The use of land for farming that does not meet one or more of conditions (ii) or (iii) of Rule 20(a), is a restricted discretionary activity, provided the following conditions are met:
- (i) A Farm Environmental Management Plan is prepared in accordance with Appendix N;
 - (ii) The application includes the following material, prepared by a suitably qualified and experienced person:
 - (a) An assessment that shows the amount of, and adverse effects from, the nitrogen, phosphorus, sediment and microbiological contaminants discharged from the landholding will be no greater than lawfully existed for the five years prior to the application being made
 - (b) For any mitigation proposed, a detailed mitigation plan (based on the physiographic zone and contaminant pathways) that identifies the mitigation or actions to be undertaken including any physical works to be completed, their timing, operation and their potential effectiveness; and
 - (c) A monitoring plan that specifies how compliance will be achieved in the years following implementation of any consent granted.

Environment Southland will restrict the exercise of its discretion to the following matters:

1. the quality of, compliance with and auditing of the Farm Environmental Management Plan for the landholding, and the applicant's past compliance for this or any other landholding; and

2. whether the assessment undertaken under (ii) above takes into account reasonable and appropriate good management practices to minimise the losses of contaminants from the existing activity, and if not, what additional reductions in contaminant losses will be required; and
3. good management practices to be undertaken, including those to minimise the discharge of nitrogen, phosphorus, sediment and microbiological contaminants to water from the use of land, taking into account the physiographic zone and contaminant pathways; and
4. the potential benefits of the activity to the applicant, the community and the environment; and
5. the potential effects of the land use on surface and groundwater quality and sources of drinking-water.

(d) The use of land for a farming activity that does not meet one or more of the conditions of Rule 20(c) or condition (iv) of Rule 20(a) is a discretionary activity.¹⁴³

Rule 24 – Incidental discharges from farming

- (a) *The discharge of nitrogen, phosphorus, sediment and or microbial contaminants onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene Section 15(1) of the RMA is a permitted activity, provided the following conditions are met:¹⁴⁴*
- (i) the land use activity associated with the discharge is authorised under Rules 20, 21, 22, or 23; and¹⁴⁵
 - (ii) any discharge of a contaminant resulting from any activity permitted by Rule 20 is managed to ensure that after reasonable mixing it does not give rise to any of the following effects on receiving waters:
 - (1) any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; and
 - (2) any conspicuous change in the colour or visual clarity; and
 - (3) any emission of objectionable odour; and
 - (4) the rendering of fresh water unsuitable for consumption by farm animals; and
 - (5) any significant adverse effects on aquatic life; and¹⁴⁶
- (b) *the discharge of nitrogen, phosphorus, sediment and microbial contaminants onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene Section 15(1) of the RMA and ~~does not comply with~~ is not authorised by¹⁴⁷ Rules 25(a) 20, 21, 22, or 23¹⁴⁸ is a non-complying activity.*

Rule 25 - Cultivation

- (a) *The use of land for cultivation is a permitted activity provided the following conditions are met:*
- (i) cultivation does not take place within the bed of a lake, river (including intermittent, but excluding ephemeral rivers),¹⁴⁹ natural wetland, modified watercourse or artificial watercourse; and

¹⁴³ 206.24 Dillon Ag Ltd; 247.9 Environment Southland; 265.83 Federated Farmers; and others

¹⁴⁴ Clause 16(2) Amendment

¹⁴⁵ Clause 16(2) Amendment

¹⁴⁶ 752 Fish and Game

¹⁴⁷ 247.3 Environment Southland

¹⁴⁸ Clause 16(2) Amendment

¹⁴⁹ 277.63 Fonterra

- (ii) cultivation does not take place within a distance from the outer edge of the bed of a lake, river (including intermittent, but excluding ephemeral rivers) or modified watercourse and within¹⁵⁰ of:
- (1) 3 metres from the outer edge of the bed on land with a slope¹⁵¹ of less than or equal to 74 degrees (flat)¹⁵²; and
 - (2) 10 metres from the outer edge of the bed on land with a slope between 4 and 16 degrees (rolling); and¹⁵³
 - (3)~~(2)~~ 20 metres from the outer edge of the bed on land with a slope of greater than 7416 degrees (strongly rolling); and
- (iii) cultivation does not occur above 800~~700~~¹⁵⁴ metres above mean sea level; and ~~or~~
- (iv) ~~mechanical~~ cultivation does not occur¹⁵⁵ on land with a slope greater than 20 degrees. (moderately steep)¹⁵⁶.
- (b) The use of land for cultivation, that does not meet the setback distances of Rule 25(a)(ii), is a permitted activity provided the following conditions are met:
- (i) cultivation does not take place within the bed of a lake, river (including intermittent, but excluding ephemeral rivers),¹⁵⁷ natural wetland, modified watercourse or artificial watercourse and a distance of 3 metres from the outer edge of the bed; and
 - (ii) cultivation does not take place more than once in any five year period; and
 - (iii) cultivation is for the purpose of renewing or establishing pasture; and
 - (iiia) cultivation is only by spraying and direct drilling; and¹⁵⁸
 - (iv) cultivation does not occur above 800~~700~~¹⁵⁹ metres above mean sea level.
- (c) The use of land for cultivation, which does not meet one or more of the conditions of Rule 25(a) or Rule 25(b) is a restricted discretionary activity.
Environment Southland will restrict the exercise of its discretion to the following matters:
1. the management of sediment and other contaminants from critical source areas;
 2. risks to biodiversity and water quality and mitigation measures for addressing those risks; and
 3. monitoring, inspection and audit requirements.
- (d) Despite any other rule, the use of land for cultivation above 800 metres above mean sea level in the Alpine physiographic zone,¹⁶⁰ is a non-complying activity.

Critical Source Area

~~Areas of enriched nutrient or sediment sources and hydrological activity that occur in small parts of a catchment or farm, but contribute a disproportionately large amount of nutrient or sediment to the environment (e.g. steep hills, gullies or swales).~~

- (a) a landscape feature like a gully, swale or a depression that accumulates runoff (sediment and nutrients) from adjacent flats and slopes, and delivers it to surface water bodies (including

¹⁵⁰ 133.5 Civil Tech Ltd; 277.33 Fonterra

¹⁵¹ Slope in Rule 25(a)(i)(1)-(2) is the average slope from the outer edge of the bed to a point 20 metres from the outer edge of the bed.

¹⁵² 265.88 Federated Farmers

¹⁵³ 265.88 Federated Farmers

¹⁵⁴ 265.88 Federated Farmers

¹⁵⁵ 265.88 Federated Farmers

¹⁵⁶ Slope in Rule 25(a)(ii) is the average slope over any 20 metre distance.

¹⁵⁷ 277.63 Fonterra

¹⁵⁸ 538.6 McKenzie, H

¹⁵⁹ 265.88 Federated Farmers

¹⁶⁰ 265.88 Federated Farmers

rivers, lakes and artificial waterways), ephemeral watercourses, and subsurface drainage systems; and

(b) areas which arise through land use activities and management approaches (including cultivation and winter grazing) which result in contaminants being discharged from the activity and being delivered to surface water bodies.¹⁶¹

Cultivation

Preparing land for growing pasture or a crop by mechanical tillage, direct drilling, or herbicide spraying, or herbicide spraying followed by over-sowing for pasture or forage crops (colloquially referred to as 'spray and pray'), but (excluding ~~spot~~ the any spraying undertaken solely for the control of plant pest species).¹⁶²

Dairy platform

An area of a landholding where dairy cows being milked on a daily basis are kept during the milking season.¹⁶³

Feed pad/lot

A fenced in or enclosed area located on production land used for feeding and/or loafing of cattle or deer to avoid damage to pasture when soils are saturated, and can be located either indoors or outdoors. It includes 'sacrifice paddocks', stand-off pads, calving pads, loafing pads, and self-feed silage stacks (other than when being fed to deer).¹⁶⁴

Intensive winter grazing

Grazing of stock between May and September (inclusive) on forage crops (including brassica, beet and root vegetable crops), excluding pasture and cereal crops.¹⁶⁵

Landholding

(a) Any area of land, including land separated by a road or river, held in one or more than one ownership, that is utilised as a single operating unit, and may include one or more certificates of title; except

(b) For land with a residential, commercial, industrial, infrastructural or recreational zoning or designation in the relevant district plan means any area of land comprised wholly of one Certificate of Title or any Allotment as defined by Section 218 of the RMA.

Note: for the purposes of this definition, a "single operating unit" may include, but is not limited by, the following features:

(a) It has effective control by any structure of ownership of the same group of people (for example, land that is controlled by a family trust, and/or beneficiaries of that family trust, and/or a related group of companies, and/or an estate, and/or partner, and/or individual/s or a combination of); or

(b) It is operated as a single business entity.¹⁶⁶

Mean sea level

the mean sea level as determined in accordance with the New Zealand Vertical Datum 2016 (NZVD2016) and LINZS25009 (Standard for New Zealand Vertical Datum 2016).¹⁶⁷

¹⁶¹ 62.17 Beef and Lamb

¹⁶² 390.42 Hort NZ

¹⁶³ 277.66 Fonterra

¹⁶⁴ 25.42 Ardel Dairies; 47.37 Balfour, Wedonside and Waikaia Group; and 828.10 Twin Farm

¹⁶⁵ 258.32 Eyre Creek Ltd, 190.24 Dairy NZ

¹⁶⁶ Consequential amendments

¹⁶⁷ 464.18 Landpro

Appendix N

Part A – Farm Environmental Management Plans

A Farm Environmental Management Plan (FEMP) can be based on either of:

1. the material set out in Part B below; or
2. industry prepared Management Plan FEMP templates and guidance material, with Southland-specific supplementary material added where relevant, so that it includes the material set out in Part B below if a resource consent is required or the landholding includes a dairy platform, or Part C below in all other cases. ~~that:~~
 - ~~(a) includes the material set out in Part B below, contains a methodology that will enable development of a plan that will identify actual and potential environmental effects and risks specific to the property, addresses those effects and risks and has a high likelihood of appropriately avoiding, remedying or mitigating those effects, includes objective performance measures; and~~
 - ~~(b) has been approved as meeting the criteria in (a) and being acceptable to the Southland Regional Council by the Chief Executive of the Southland Regional Council~~

Part B – Farm Environmental Management Plan Content when a Resource Consent is required and for Dairy Platforms

1. A written FEMP Management Plan ~~that~~ is:
 - (a) prepared and retained, identifying the matters set out in clauses 2 to 5 numbers 2-10 below;
 - (b) reviewed updated at least once every 12 months by the farmer and the outcome of the review documented; and
 - (c) provided to the Southland Regional Council upon request.
2. The FEMP contains the following landholding details ~~following property details are recorded~~:
 - (a) physical address;
 - (b) description of the landholding ownership and the owner's contact details ~~name of a contact person~~;
 - (c) legal description(s) of the landholding of the land and farm name; and
 - (d) a list details of all resource consents held for the landholding and their expiry dates, including a copy of each consent.
3. ~~A~~ The FEMP contains a map(s) or aerial photograph(s) of the landholding at a scale that clearly shows the locations of:
 - (a) the boundaries;
 - (b) the physiographic zones (and variants where applicable) and soil types (or Topoclimate South soil maps);
 - (c) all perennial rivers and streams, lakes, ponds, modified watercourses, artificial watercourses, regionally significant wetlands, and natural wetlands;
 - (d) all existing and proposed riparian vegetation and fences (or other stock exclusion methods) adjacent to waterbodies;
 - (e) places where stock access or cross water bodies (including bridges, culverts and fords);
 - (f) all known subsurface drainage system(s) and the locations of the drain outlets;
 - (g) all land that may be cultivated and land to be cultivated over the next 12-month period;
 - (h) all land that may be intensively winter grazed and the land to be planted for winter grazing for the next period 1 May to 30 September;
 - (i) for land to be cultivated or intensively winter grazed:
 - (i) critical source areas;
 - (ii) intended setbacks from surface water bodies;
 - (iii) land with a slope greater than 20 degrees.
 - the boundaries of the property;
 - the location of significant farm infrastructure;

- ~~the location of any critical source areas;~~
- ~~the physiographic unit(s) in which the land is located;~~
- ~~the location of permanent or intermittent rivers, streams, lakes, drains, ponds or wetlands;~~
- ~~where known, the of any subsurface drainage system(s) and relative depth and position, including the outlet(s) of any such systems;~~
- ~~the location of riparian vegetation and fences adjacent to waterbodies;~~
- ~~the location on all water ways where stock access or crossing occurs;~~
- ~~the location of any known and recorded heritage site;~~
- ~~the location of any areas within or adjoining the property that are identified in a District Plan as “significant indigenous biodiversity”.~~

4. Nutrient Budget

~~For all landholdings over 20ha, the FEMP contains a nutrient budget (which includes nutrient losses to the environment) calculated A nutrient budget based on soil nutrient tests has been prepared, using the latest version of the OVERSEER model in accordance with the latest version of the OVERSEER Best Practice Data Input Standards (or an alternative model approved by the Chief Executive of Southland Regional Council) or an equivalent model approved by the Chief Executive of Southland Regional Council, and repeated:~~

- ~~(a) where a material change in land use associated with the farming activity occurs (including a change in crop area, crop rotation length, type of crops grown, stocking rate or stock type) (being a change exceeding that resulting from normal crop rotations or variations in climatic or market conditions) the nutrient budget shall be redone ~~prepared~~ at the end of the year in which the change occurs, and also every three years after the change occurs;~~
- ~~(b) each time the nutrient budget is redone all the input data used to prepare it shall be reviewed by or on behalf of the landholding owner, for the purposes of ensuring the nutrient budget accurately reflects the farming system. A record of the input data review shall be kept by the landholding owner.~~
- ~~(ii) where a material change in the land use associated with the farming activity does not occur, the nutrient budget shall be prepared once every three years;~~
- ~~(iii) an annual review of the input data used to prepare the nutrient budget shall be carried out by or on behalf of the landowner for the purposes of ensuring the nutrient budget accurately reflects the farming system. A record of the review shall be kept by the landowner.~~

5. Good Management Practices

~~The FEMP contains a~~ A good management practices section which identifies:

- ~~(a) the good management practices implemented or expanded on, since 3 June 2016; and~~
- ~~(b) the range of general good management practices which will be undertaken over the coming 12-month period. These must include practices for:~~
 - ~~(i) the reduction of sediment and nutrient losses from critical source areas, particularly those associated with overland flow;~~
 - ~~(ii) cultivation (including practices such as contour ploughing, strip cultivation or direct drilling);~~
 - ~~(iii) the use of land for intensive winter grazing (including those practices specified in Rule 23);~~
 - ~~(iv) riparian areas (including those from which stock are excluded under Rule 70) and the type of riparian vegetation to be planted, how it will be maintained and how weeds will be controlled;~~
 - ~~(v) minimising of the discharge of contaminants to surface water or groundwater, with particular reference to the contaminant pathways identified for the landholding.~~

~~Examples of general good management practices are provided on the Southland Regional Council, DairyNZ and Beef and Lamb New Zealand websites and in the~~

document¹⁶⁸ titled “Industry-agreed Good Management Practices relating to water quality, Version 2, 18 September 2015”.

~~(i) the general good management practices which will be undertaken on farm over the coming 1 June to 31 May period. Examples of general good management practices are provided on the Southland Regional Council website.~~

~~(ii) the physiographic zones, and variants (where applicable) within the property;~~

~~(iii) the key transport pathways and contaminants (where applicable) for each of the physiographic zones within the property, from Table 1 below;~~

~~(iv) the good management practices for any relevant key transport pathways which will be undertaken on farm over the coming 1 June to 31 May period. A list of example actions to consider for each of the mitigations is provided on the Southland Regional Council website;~~

~~(v) upon 12 monthly review, the good management practices that were undertaken in the previous 1 June to 31 May period and the good management practices to be implemented over the coming 1 June to 31 May period;~~

~~(vi) a range of good management practices will be implemented each year.~~

Part C – Farm Environmental Management Plan Content – permitted activity farming

1. A written FEMP that is:

(a) prepared and retained, identifying the matters set out in clauses 2 and 3 below;

(b) reviewed at least once every 12 months by the farmer and the outcome of the review documented; and

(c) provided to the Southland Regional Council upon request.

2. The FEMP contains a map(s) or aerial photograph(s) of the landholding at a scale that clearly shows the locations of:

(a) the boundaries;

(b) all perennial rivers and streams, lakes, ponds, modified watercourses, artificial watercourses, regionally significant wetlands, and natural wetlands;

(c) all existing and proposed riparian vegetation and fences (or other stock exclusion methods) adjacent to waterbodies;

(d) all known subsurface drainage system(s) and the locations of the drain outlets;

(e) for land to be cultivated or intensively winter grazed:

(i) critical source areas;

(ii) intended setbacks from surface water bodies;

(iii) land with a slope greater than 20 degrees.

3. Good Management Practices

The FEMP contains a good management practices section which identifies:

(a) the good management practices implemented or expanded on, since 3 June 2016; and

(b) the range of general good management practices which will be undertaken over the coming 12-month period. These must include practices for:

(i) the reduction of sediment and nutrient losses from critical source areas, particularly those associated with overland flow;

(ii) cultivation (including practices such as contour ploughing, strip cultivation or direct drilling);

(iii) the use of land for intensive winter grazing (including those practices specified in Rule 23);

(iv) riparian areas (including those from which stock are excluded under Rule 70) and the type of riparian vegetation to be planted, how it will be maintained and how weeds will be controlled;

¹⁶⁸ Released by FAR, New Zealand Pork, Dairy NZ, beef + lamb New Zealand, Horticulture New Zealand and Deer Industry New Zealand.

(v) minimising of the discharge of contaminants to surface water or groundwater, with particular reference to the contaminant pathways identified for the landholding.

Examples of general good management practices are provided on the Southland Regional Council, DairyNZ and Beef and Lamb New Zealand websites and in the document¹⁶⁹ titled "Industry-agreed Good Management Practices relating to water quality, Version 2, 18 September 2015".

Table 1: Key transport pathways and contaminants for each physiographic zone

Physiographic zone	Key transport pathways (✓)		
	Overland flow ¹	Deep drainage (leaching to groundwater) ²	Artificial Drainage ³
Alpine	✓	-	-
Bedrock/Hill Country	✓(o)	-	✓(a)
Central Plains	-	✓	✓
Gleyed	✓(o)	-	✓
Lignite-Marine Terraces	✓(o)	-	✓(a)
Old Maitaura	-	✓	
Oxidising	✓(o)	✓	✓(a)
Peat Wetlands	-	✓*	✓
Riverine	✓(o)	✓	-

NOTE:

¹Overland flow and artificial drainage transport nitrogen, phosphorus, microbes and sediment

²Deep drainage transports nitrogen, except in Peat Wetlands, see * below

*Deep drainage transports phosphorus rather than nitrogen, and lateral drainage of phosphorus and microbes through the soil is also a key pathway in the Peat Wetlands (mitigations are the same as for deep drainage)

✓(o) denotes that overland flow is only a key transport pathway in the parts of the steeper parts of the physiographic zone, referred to as the (o), or overland flow variant (refer to physiographic zones map)

✓(a) denotes that artificial drainage is only a key transport pathway in parts of the physiographic zone where there is artificial drainage, referred to as the (a), or artificial drainage variant (refer to physiographic zones map)

6. ~~Riparian Management Plan~~

~~(a) A Riparian Management Plan is prepared and implemented, and records in written and/or map form:~~

- ~~(i) methods to exclude stock, where required, from waterbodies, critical source areas and riparian areas;~~
- ~~(ii) in relation to sheep, the mitigation measures to manage critical source areas to ensure contaminant losses, particularly associated with overland flow, are minimised.~~
- ~~(iii) the mitigation options to minimise overland flow including areas where stock will be excluded and areas where vegetation will be planted;~~
- ~~(iii) the type of vegetation to be planted and how it will be maintained;~~
- ~~(iv) the grazing of appropriately fenced riparian margins for weed control purposes;~~

¹⁶⁹ Released by FAR, New Zealand Pork, Dairy NZ, beef + lamb New Zealand, Horticulture New Zealand and Deer Industry New Zealand.

- ~~(v) — the access to waterways for maintenance purposes, and in particular the waterways maintained by the Southland Regional Council in accordance with the Southland Flood Control Management Bylaw 2010.~~
- ~~(b) — **An up to date copy of the Riparian Management Plan is kept and provided to the Southland Regional Council upon request.**~~

~~7. — Cultivation~~

~~(a) A cultivation map showing:~~

- ~~(i) — waterbodies;~~
- ~~(ii) — buffer strips along those waterbodies as follows:

 - ~~(1) — 3 m buffer where slopes are 4 degrees or less~~
 - ~~(2) — 10 m buffer where slopes are greater than 4 degrees and up to 16 degrees~~
 - ~~(3) — 20 m buffer where slopes are greater than 16 degrees~~
 - ~~(4) — as specified in resource consent conditions where the slopes are greater than 20 degrees;~~~~
- ~~(iii) — land where cultivation is planned over the next period 1 June to 30 May;~~
- ~~(iv) — any proposed good management practices for cultivation, such as contour ploughing, strip cultivation or minimum tillage.~~

~~8. — Intensive winter grazing~~

~~Where intensive winter grazing is undertaken, an intensive winter grazing section which contains:~~

~~(a) — Good management practices:~~

- ~~(i) — to minimise the discharge of nitrogen, phosphorus, sediment and microbiological contaminants to water from the use of land for intensive winter grazing;~~
- ~~(ii) — to avoid the conspicuous discolouration or sedimentation of any adjacent waterbodies;~~

~~(b) — an intensive winter grazing map showing the total extent of land that may be intensively winter grazed on the property which includes the following details in respect to that land:~~

- ~~(i) — the extent of land to be intensively winter grazed for the next period 1 May to 30 September;~~
- ~~(ii) — critical source areas;~~
- ~~(iii) — waterbodies;~~
- ~~(iv) — slope classes;~~
- ~~(v) — buffer strips;~~
- ~~(vi) — location of sub-surface drains their outlet position and relative height.~~

~~9. — Collected Agricultural Effluent~~

- ~~(a) — The animal effluent disposal system application separation distances, depth, uniformity and intensity are self-checked annually in accordance with Section 4 “Land Application” in the guideline “A Farmer’s Guide to Managing Farm Dairy Effluent – A Good Practice Guide for Land Application Systems” [2013].~~
- ~~(b) — Records of the application, separation distances, depth, uniformity and intensity of dairy effluent disposal, in accordance with (e)(ii) above, are kept and provided to the Southland Regional Council.~~
- ~~(c) — The application of collected agricultural effluent is avoided when the soil temperature is less than 5°C.~~

~~10. — Irrigation Management (applies to farming activities that irrigate):~~

- ~~(a) — All irrigation systems installed or replaced after 1 October 2015 meet the Irrigation New Zealand Piped Irrigation Systems Design Code of Practice 2013, Irrigation New Zealand Piped Irrigation Systems Design Standards 2013 and the Irrigation New Zealand Piped Irrigation Systems Installation Code of Practice 2013.~~

- ~~(b) The irrigation system application depth and uniformity are self-checked annually in accordance with the relevant Irrigation NZ Pre-Season Checklist²⁸ and IRRIG8Quick Irrigation Quick tests²⁹ for any irrigation system operating on the property.~~
- ~~(c) Irrigation applications are undertaken in accordance with property specific soil moisture monitoring, or a soil water budget, or an irrigation scheduling calculator. Soil monitoring means monitoring soil moisture using either volumetric or tension based methodology.~~
- ~~(d) Records of irrigation system application depth and uniformity checklists, irrigation applications, soil moisture monitoring or soil water budget or irrigation scheduling calculator results and rainfall are kept and provided to the Southland Regional Council upon request.¹⁷⁰~~

Rule 26 – Onsite Wastewater

- 4.230 There were questions raised in evidence as to why Rule 26(a), for existing permitted on-site effluent systems, had a 1250 litre limit. The simple answer is that the 1250 litre limit is in the Regional Water Plan, as a permitted activity threshold. On that basis, systems have been designed around that permitted activity threshold for many years. An increase in the throughput of these systems may be beyond their design parameters. The difference between this threshold and the current threshold in the more recent NZS1547 is acknowledged, but the more recent standard is not the level to which the systems have been designed. Accordingly, the 1250 litre threshold is recommended to be continued.
- 4.231 There is a minor change recommended to the threshold date for the permitted activity under Rule 26(a). This is to align with the notification date of the pSWLP, as discussed in relation to farming activities and Fonterra's requests, which is detailed above.
- 4.232 SDC, GDC and ICC have questioned the addition of condition (b)(viii) to Rule 26 and consider that it will result in unintended consequences, requiring consent for land application systems that have been designed for lower permeability soils. Ralph Moir and Associates have presented evidence that states the minimum separation requirements are a burden and often unwarranted in many situations, often leading to systems being constructed above ground level and increasing the likelihood of surface breakout.
- 4.233 Rule 26(b) requires on-site wastewater systems to be constructed in accordance with the AS/NZS 1547:2012 standards. These standards provide guidance on the appropriate treatment systems and their design for different site constraints. This includes the permeability of soils and separation to the water table or perched water. Officers agree with SDC, GDC and ICC that clause (b)(viii)(1) would result in systems that have been designed to address soil limitations requiring resource consent. Officers recommend that this clause is deleted. A consequential change is recommended to Rule 28, for consistency.
- 4.234 With regards to clause (b)(viii)(2) of Rule 26, Officers recommend that this is retained as it allows the assessments of land application systems via the resource consent process where there is a greater risk of groundwater contamination if those systems are inadequately designed.
- 4.235 SDC, GDC and ICC have also stated that the Section 42A Report recommended changes to Rule 26(a)(vi) and 26(b)(iv) do not address the changes requested through their original submission, as disposal systems that discharge at or above ground level would not be permitted.
- 4.236 Officers are concerned with onsite wastewater discharge methods that rely on discharging at or above the soil surface due to potential health risks and system failure during freezing conditions.

¹⁷⁰ 62.15 Beef and Lamb; 247.32 Environment Southland; 265.109 Federated Farmers

4.237 Officers consider that reliance on the requirement for wastewater systems to be designed and constructed in accordance with Sections 5 and 6 of the AS/NZS 1547:2012 standards will not necessarily ensure that surface discharge systems are appropriately located, designed and operated. Officers do recommend that these systems be subject to higher scrutiny.

4.238 The recommended changes to Rule 26 are set out below:

Rule 26 – Discharges from on-site wastewater systems

(a) *The discharge of treated domestic wastewater, onto or into land in circumstances where a contaminant may enter water from an existing on-site wastewater system is a permitted activity provided the following conditions are met:*

- (i) *the on-site wastewater system had been installed and was operational prior to ~~31~~¹⁷¹ June 2016;*
- (ii) *the discharge does not exceed 1,250 litres per day, averaged over a period of one month;*
- (iii) *the discharge consists only of contaminants normally associated with domestic wastewater;*
- (iv) *the on-site wastewater system is not used for the disposal of wastewater from chemical toilets;*
- (v) *there is no faecal contamination of any take of water for human consumption as a result of the discharge;*
- (vi) *there is no discharge above the soil surface; and*
- (vii) *there is no direct discharge to groundwater, surface water, an artificial watercourse a lake, river, natural wetland, artificial watercourse, modified watercourse¹⁷² or the coastal marine area, including discharge via ~~tile drains~~ subsurface drainage systems,¹⁷³ stormwater drains, artificial free draining areas such as soak holes and overland flow;*
- (viii) *the inflow or infiltration of stormwater, other surface water and groundwater to the system is minimised;*
- (~~ix~~^{viii}) *the discharge does not occur within the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J.*

(b) *The discharge of treated domestic wastewater, onto or into land in circumstances where a contaminant may enter water from a new on-site wastewater system or a replacement of an existing system is a permitted activity provided the following conditions are met:*

- (i) *the discharge does not exceed 14,000 litres per week;¹⁷⁴*
- (~~ii~~) *the treatment and disposal system is designed and installed in accordance with Sections 5 and 6 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and¹⁷⁵*
- (~~iii~~) *the treatment and disposal system is operated and maintained in accordance with the system's design specification for maintenance or, if there is no design specification for maintenance, Section 6.3 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and¹⁷⁶*
- (~~iiii~~) *the discharge does not result in wastewater being visible on the ground there is no discharge above the soil surface;¹⁷⁷*

¹⁷¹ Consequential change to reflect notification date of the Plan – 277.45 Fonterra

¹⁷² 247.41 Environment Southland

¹⁷³ 152.16 Clover Bell; 752.119 Fish and Game; and 750.15 SDC

¹⁷⁴ 330.14 GDC, ICC and SDC; 658.1 Ralph Moir & Associates; and 750.15 SDC

¹⁷⁵ 247.3 Environment Southland; or Clause 16(2) Amendment

¹⁷⁶ 247.3 Environment Southland; or Clause 16(2) Amendment

¹⁷⁷ 330.14 GDC, ICC and SDC

- (ivv) ~~the discharge does not contain any hazardous substance.~~ consists only of contaminants normally associated with domestic wastewater.¹⁷⁸
- (vvi) the on-site wastewater system is not used for the disposal of wastewater from chemical toilets;
- (vii) the discharge is not within:
- (1) 20 metres of ~~any surface waterbody or artificial watercourse~~ a lake, river, natural wetland, artificial watercourse or modified watercourse,¹⁷⁹ excluding interception drains constructed to enable the effective operation of¹⁸⁰ the on-site wastewater system;
 - (2) 50 metres of the coastal marine area or any natural state waters; ~~or~~¹⁸¹
 - (3) 50 metres of any bore or well ~~used for potable or stock water supply;~~¹⁸² or¹⁸³
 - (4) the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J; or
 - (5) 20 metres of ~~any tile drain subsurface drainage system,~~ excluding subsurface drainage systems which benefit constructed to enable the effective operation of the on-site wastewater system.¹⁸⁴
- (viii) for any land application system, the bottom of the soil infiltration surface is no less than 900 millimetres above the mean seasonal high groundwater table and any perched water.¹⁸⁵
- (c) The discharge of treated domestic wastewater, onto or into land in circumstances where a contaminant may enter water from an on-site wastewater system that does not meet the conditions of Rule 26(a) or (b), is a discretionary activity.
- (d) The discharge of septage onto or into land, in circumstances where a contaminant may enter water, and any associated discharge to air ~~from an on-site wastewater system~~¹⁸⁶ is a permitted activity provided the following conditions are met:
- (i) the discharge occurs on the same landholding as the on-site wastewater system is located;
 - (ii) the discharge consists only of contaminants normally associated with domestic wastewater.
 - (iii) the on-site wastewater system is not used for the disposal of wastewater from chemical toilets;
 - (iv) there is no faecal contamination of any take of water for human consumption as a result of the discharge;
 - (v) the maximum depth of septage application is 7 mm;
 - (vi) no other effluent is discharged to the septage application area for 28 days before and 28 days after the septage application;
 - (vii) the discharge onto or into land does not occur at a location where overland flow will result in contaminants reaching ~~surface water~~ a lake, river, natural wetland, artificial watercourse, modified watercourse or the coastal marine area;¹⁸⁷
 - (viii) the discharge is not within:

¹⁷⁸ 658.1 Ralph Moir & Associates

¹⁷⁹ 247.41 Environment Southland

¹⁸⁰ 247.3 Environment Southland; or Clause 16(2) Amendment

¹⁸¹ 247.3 Environment Southland; or Clause 16(2) Amendment

¹⁸² 750.15 SDC

¹⁸³ 247.3 Environment Southland; or Clause 16(2) Amendment

¹⁸⁴ 658.1 Ralph Moir & Associates

¹⁸⁵ 330.14 GDC, ICC and SDC; and 750.15 SDC

¹⁸⁶ 247.3 Environment Southland; or Clause 16(2) Amendment

¹⁸⁷ 247.41 Environment Southland

- (1) 20 metres of any ~~surface waterbody or artificial watercourse~~ a lake, river, natural wetland, artificial watercourse or modified watercourse;¹⁸⁸
- (2) 50 metres of the coastal marine area or any natural state waters; or
- (3) 100 metres of any bore or well ~~used for potable or stock water supply;~~¹⁸⁹
- (4) 100 metres of any landholding boundary;
- (5) 200 metres of any school, marae, or residential dwelling other than residential dwellings on the landholding;
- (6) the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J;
- (ix) there is no direct discharge to groundwater, ~~surface water, an artificial watercourse~~ a lake, river, natural wetland, artificial watercourse, modified watercourse¹⁹⁰ or the coastal marine area, including discharge via ~~tile drains~~ subsurface drainage system,¹⁹¹ stormwater drains, artificial free draining areas such as soak holes, and overland flow;
- (x) the discharge does not result in any emission of odour that is offensive or objectionable at or beyond the boundary of the landholding¹⁹²;
- (xi) the discharge does not occur on a site less than 100 hectares in area;
- (xii) the application is managed to reduce the risk of vector attraction.¹⁹³
- (e) The discharge of septage into or onto land from an on-site wastewater system, that does not meet the conditions of Rule 26(d), is a discretionary activity.
- (f) Despite Rule 26(a) to (e), the discharge of untreated domestic wastewater, ~~raw sewage,~~¹⁹⁴ or effluent from mobile toilets, into ~~surface~~ a lake, river, natural wetland, artificial watercourse, modified watercourse the coastal marine area¹⁹⁵ or groundwater is a prohibited activity.

Effluent Storage

- 4.239 The Territorial Authorities have questioned the recommended deletions within Policy 17 in the Section 42A Report, which removed reference to community sewerage storage. SDC, GDC and ICC state they did not request this relief in their submission and the change has been made in error. SDC, GDC and ICC are also concerned that Policy 17 would require community sewerage scheme storage to comply with the best practice guidelines which have been produced for farm effluent systems.
- 4.240 Officers consider it would be beneficial to divide Policy 17 into two separate policies, one that addresses the management of farm effluent systems and one that addresses other effluent systems.
- 4.241 The Territorial Authorities have also raised concerns regarding their ability to re-authorise discharges from community sewerage schemes into water, particularly as the activity status for these consents would be non-complying activities under Rule 6. They have sought a discretionary consent pathway for these discharges. SDC, GDC and ICC state that it would be impossible to obtain certification that there will never be any raw sewage overflow via their treated wastewater system. Evidence was presented detailing their expenditure on wastewater infrastructure, particularly the replacement of older pipes and other investigations undertaken to reduce the frequency and volume of overflows.

¹⁸⁸ 247.41 Environment Southland

¹⁸⁹ 750.15 SDC

¹⁹⁰ 247.41 Environment Southland

¹⁹¹ 152.16 Clover Bell; 752.119 Fish and Game; and 750.15 SDC

¹⁹² Clause 16(2) Amendment

¹⁹³ 330.14 GDC, ICC and SDC

¹⁹⁴ 247.3 Environment Southland; or Clause 16(2) Amendment

¹⁹⁵ 247.41 Environment Southland

4.242 Officers do not agree that a discretionary pathway is appropriate for discharges of raw sewage into water, due to the potential for significant adverse effects. Officers consider a non-complying activity status is appropriate for any discharge of raw sewage from a wastewater network. The SRPS policy WQUAL.9 requires the avoidance of the direct discharge of sewage to water unless the discharge has undergone treatment. Officers recognise that network overflows do occur and that it would not be feasible to construct a network that does not overflow at some point. However, the discharge of untreated sewage is culturally offensive to many people, particularly tangata whenua and further effort should be made to reduce the frequency and volume of these discharges. Therefore, Officers' recommend that the new Policy 17A identifies that contingency measures should be undertaken to reduce network wet weather overflows and community sewerage schemes are designed and maintained to avoid dry weather overflows.

Policy 17 – Farm Effluent management

1. Avoid significant adverse effects on water quality, and avoid, remedy, or mitigate as far as practicable¹⁹⁶ other adverse environmental effects of the operation of, and discharges from effluent management systems.
2. Manage effluent systems and discharges from them by:
 - (a) designing, constructing and locating systems appropriately and in accordance with best practice standards¹⁹⁷;
 - (b) maintaining and operating effluent systems in accordance with best practice guidelines;
 - (c) avoiding any surface run-off/overland flow, ponding or contamination of water including via sub-surface drainage,¹⁹⁸ resulting from the application of agricultural effluent to pasture;
 - (d) avoiding the discharge of ~~raw sewage and~~¹⁹⁹ untreated agricultural effluent to water.

Note: Examples of best practice referred to in 17(2)(a) for agricultural effluent include IPENZ Practice Note 21: Farm Dairy Effluent Pond Design and Construction and IPENZ Practice Note 27: Dairy Farm Infrastructure.²⁰⁰

Note: Examples of best practice guidelines referred to in 17(2)(b) for agricultural effluent include DairyNZ's guidelines A Farmer's Guide to Managing Farm Dairy Effluent – A Good Practice Guide for Land Application Systems, 2015 and A Staff Guide to Operating Your Effluent Irrigation System, 2013.²⁰¹

Policy 17A – Community Sewerage Schemes and On-site wastewater systems

1. Minimise adverse effects on water quality, and avoid, remedy, or mitigate other adverse effects of the operation of, and discharges from, community sewerage schemes by:
 - (a) Designing, operating and maintaining community sewerage schemes in accordance with recognised industry standards;
 - (b) Implementing contingency measures to progressively reduce the frequency and volume of wet weather overflows from community sewerage schemes; and
 - (c) Ensuring community sewerage schemes are operated and maintained to minimise the likelihood of dry weather overflows occurring.
2. Avoid the discharge of untreated domestic wastewater, and avoid, remedy, or mitigate the adverse effects of discharges from on-site wastewater systems by:

¹⁹⁶ 265.48 Federated Farmers; 752.61 Fish and Game

¹⁹⁷ 247.4 Environment Southland

¹⁹⁸ 752.61 Fish and Game; 210.56 DOC

¹⁹⁹ 411.31 GDC, ICC, SDC; 440.1 Kent, R

²⁰⁰ 877.21 A Wilson

²⁰¹ 189.14 DHL

- (a) Avoiding any surface run-off/overland flow, ponding of contamination of water from the application of domestic effluent to land; and*
- (b) Designing, locating and maintaining on-site wastewater systems in accordance with Sections 5 and 6 of the New Zealand Standard AS/NZS 1547:2012-On-site Domestic Wastewater Management.*²⁰²

- 4.243 Rule 32 has been drafted to manage the construction of effluent storage ponds to protect against faulty design and adverse environmental effects. However, the rule does not extend to any effluent storage that has already been established. Rule 35 manages the discharge of effluent and attempts to also manage effluent storage through Rule 35(b)(ii). This was drafted in this manner, to reflect the historic approach of the Council's plans, which required authorisation of the construction of ponds, but not their ongoing operation.
- 4.244 It was acknowledged at the hearing that this creates some difficulties, as Rule 35 applies to the discharge of treated effluent as opposed to land use. As a result, it is recommended that a new Rule 32A is included to deal with the use of land for existing effluent storage facilities and any incidental discharge.
- 4.245 The new Rule 32A adopts a similar framework to Rule 32 but only relates to the ongoing operation of storage. The rule differentiates between storage types, recognising that clay lined structures are at greater risk of leaking. It was raised many times in evidence that ponds that are synthetically lined or are constructed entirely above the ground and include leak detection systems are at low risk of leakage. This is particularly the case when the leak detection system is inspected regularly and there is no evidence of leaks.
- 4.246 Therefore, Rule 35(b) has been amended to remove reference to effluent storage structures. Minor amendments have also been made to Rule 32 where it was determined there were words or clauses missing and to also relate to any incidental discharges to ensure there is a consistent approach to effluent storage.

Pond Drop Test

- 4.247 Several submitters have also questioned the requirement for undertaking the pond drop test for existing effluent storage. The drop test is a method that has been developed to measure leakage rates in an effluent pond. The Institute of Professional Engineers (IPENZ) is currently establishing a standard methodology for pond drop testing that will provide some certainty to the testing and results. The Practice Note 21 version 3 Sept 2017 is currently in draft form and out for comment.
- 4.248 Submitters have questioned the appropriateness of requiring a drop test every 3 to 5 years due to the complexity and cost of the process. Alternatives to the drop test, such as subsurface drains with observation portals, have been suggested by submitters seeking a simpler and cheaper methodology for effluent pond drop testing.
- 4.249 Mr Rex Corlett of Opus has advised that observation portals are tile or nova coil type drains which run under a farm effluent pond and run out by pipe to a downstream outlet or to an inspection chamber adjacent to the pond. This system may give some indication of leakage flow if present, but gives no indication of the rate of leakage. In addition, leakage could stem from the side of the pond which may not be observable with this leakage detection system. In the opinion of Mr Corlett, the process is not sufficiently certain to be used as a standalone test for pond leakage.
- 4.250 In the Officers' opinion, a lined pond that has been appropriately designed and certified, with the liner being within its design life, coupled with the use of under-pond drains, an observational portal

²⁰² 411.31 GDC, ICC, SDC; 440.1 Kent, R

and where there is no evidence of leakage, should be a sufficient level of protection. While this view differs from the Section 42A Report, the detail provided by the submitters on the design and integrity of this type of leak detection under lined ponds has given confidence that, at least as an indication of the absence or presence of leakage, these systems are effective. However, if leakage is detected, a consent is required, and a pond drop test may need be undertaken as a part of the application process. Pond drop testing is still considered appropriate for existing clay lined ponds on a three-yearly basis given the higher risk of leakage.

- 4.251 Other submitters, primarily territorial authorities and submitters with industrial or trade waste discharges have also identified that the pond drop test requirements in the relevant rules are an unrealistic, and potentially inefficient method of managing pond leakage. The pond drop test methodology requires the stopping of inflows and outflows, as well as desludging, both of which may be difficult, if not impossible, for a community wastewater system or an industrial system. As both of these activities are subject to resource consent processes, specific requirements for the relevant pond tests can be included, and adjustments to Rules 33 and 34 are recommended to reflect the removal of the pond drop test requirements.

Suitably Qualified Person

- 4.252 Several submitters raised concerns regarding the requirement for a CPEng to certify the drop testing. This is mainly to do with the cost of involving a CPEng every 3 to 5 years, which submitters consider to be onerous and unnecessary.
- 4.253 An alternative to the current drafting in the pSWLP would be to replace the requirement for a CPEng with that of a Suitably Qualified Person (SQP). The assessment of who constitutes a SQP would be carried out by the Chief Executive of Environment Southland, based on standards set out in the pSWLP. Officers are of the view that requiring independent CPEng certification for pond drop testing is unnecessarily onerous. A CPEng is still recommended to design and oversee the construction of effluent storage ponds. Officers consider this is necessary, even for smaller ponds, as information from Council compliance staff indicates that clay lined and poorly constructed ponds make up a large proportion of pond failures in Southland. Amendments to Rule 32 are shown below and the recommended set of criteria are set out in the tracked-changes version of the pSWLP at Appendix P.
- 4.254 The new Rule 32A is set out below:

Rule 32A – Use of land for effluent storage

- (a) The use land for an existing effluent storage system for waste-water, sludge or effluent from an industrial or trade processes or agricultural effluent and including ancillary structures, but excluding an onsite wastewater system, stock underpass, stock truck effluent facility, composting toilet system or mobile toilet, and any incidental discharge directly onto or into land from that storage, is a permitted activity provided the following conditions are met:
- (i) The effluent storage system was either:
- (1) a permitted activity prior to this plan becoming operative; or
- (2) constructed in accordance with a resource consent; and
- (ii) any, pond, tank or structure used to store agricultural effluent with a capacity of more than 35 cubic metres prior to discharge is either:
- (1) fully lined with an impermeable synthetic liner or is of concrete construction, above ground level, and:
- (a) has a leak detection system that underlies the entire pond surface which is inspected not less than monthly and there is no evidence of any leakage;
- and

- (b) is certified by a Suitably Qualified Person in accordance with Appendix P within the last 10 years as meeting the relevant pond drop criteria in Appendix P; or
- (2) is certified by a Suitably Qualified Person in accordance with Appendix P within the last three years as:
 - (a) having no visible cracks or defects that would allow effluent to leak from the storage; and
 - (b) meeting the relevant pond drop criteria in Appendix P.
- (b) The use of land for an existing effluent storage system for waste-water, sludge or effluent from industrial or trade processes or agricultural effluent and including ancillary structures, but excluding an onsite wastewater system, stock underpass, stock truck effluent facility, composting toilet system or mobile toilet, and any incidental discharge directly onto or into land from storage, that does not meet one or more conditions of Rule 32A(a) is a discretionary activity.²⁰³

4.255 The recommended amendments to Rule 32 are set out below:

Rule 32 – Use of land for effluent storage - new

- (a) The use of land for a new effluent storage facility, including ancillary structures, other than onsite wastewater system, composting toilet system or mobile toilet, but including waste-water, sludge or effluent from industrial or trade processes or agricultural effluent, and any incidental discharge directly onto or into land, is a permitted activity provided the following conditions are met:
 - (i) the total capacity of all effluent storage on a landholding, excluding storage authorised by a resource consent, does not exceed 35 cubic metres; and²⁰⁴
 - (ii) the effluent storage is constructed using an impermeable concrete or synthetic lining so there is no overflow or leakage of effluent to land, surface water or groundwater; and
 - (iii) the effluent storage is not within 50 metres of any lake, river, modified watercourse, artificial watercourse, natural wetland or coastal marine area; and
 - (iv) the effluent storage is not within 200 metres of any dwelling not on the same landholding, or 50 metres of the boundary of any other landholding or road²⁰⁵; and
 - (v) the effluent storage is not within 100 metres of any water abstraction point; and
 - (vi) the effluent storage is not located above sub-surface drainage.²⁰⁶
- (b) The use of land for a new agricultural effluent storage facility, and any associated discharge directly onto or into land from that storage, which does not meet the conditions in Rule 32(a), is a controlled activity provided the following conditions are met²⁰⁷:
 - (i) the design, and build process, is certified by a Chartered Professional Engineer as being in accordance with IPENZ Practice Note 21: Farm Dairy Effluent Pond Design and Construction (2013) or IPENZ Practice Note 27: Dairy Farm Infrastructure (2013)²⁰⁸; and
 - (ii) any clay lined effluent storage is certified by a Suitably Qualified Person as meeting the relevant pond drop criteria in Appendix P;
 - (iii) the effluent storage is not within 50 metres of any lake, river, modified watercourse, artificial watercourse, natural wetland or coastal marine area;
 - (iv) the effluent storage is not within 200 metres of any dwelling not on the same landholding, or 50 metres of the boundary of any other landholding or road; and
 - (v) the effluent storage is not within 100 metres of any water abstraction point;

²⁰³ 832.95 Van Gool, R; 687.2 Roseneath Dairies

²⁰⁴ Clause 16(2) amendment

²⁰⁵ 247.11 Environment Southland

²⁰⁶ 752.125 Fish and Game

²⁰⁷ 712.31 Seaview Trust & Oraka Farms; 666.19 Rimu Grasslands & Leicester Downs; and others.

²⁰⁸ 412.1 IPENZ

Environment Southland will exercise its control over the following matters:

- 1. the design and construction of the storage and ancillary structures, including capacity of storage and nature of effluent that will enter;*
- 2. methods to be used to protect any embankments from damage by stock and machinery;*
- 4. the potential adverse effects of the effluent storage on: lakes, rivers, artificial watercourses, installed subsurface drains, groundwater, bores, registered drinking-water supplies, the coastal marine area, trees, stop banks, residential dwellings, places of assembly, urban areas, landholding boundaries and historic heritage;*
- 5. the height of the embankments and placement and orientation of the effluent storage relative to flood flows and stormwater run-off;*
- 6. the quality of, and compliance with, an operational management plan, including operational procedures, emergency response, monitoring and reporting requirements, and installation of monitoring devices; and*
- 7. adoption and implementation of an Accidental Discovery Protocol.²⁰⁹*

(c) The use of land for the construction of any effluent storage, other than onsite wastewater system, stock underpass, stock truck effluent facility, composting toilet system, mobile toilet²¹⁰ or agricultural effluent, but²¹¹ including waste-water, sludge or effluent from industrial or trade processes, and any incidental discharge directly onto or into land, or agricultural effluent, is a restricted discretionary activity provided the following conditions are met:

- (i) the storage is certified as being structurally sound by a Chartered Professional Engineer²¹² for agricultural effluent storage the design, and build process, is certified by a Chartered Professional Engineer as being in accordance with IPENZ Practice Note 21: Farm Dairy Effluent Pond Design and Construction (2013)²¹³; and*
- (ii) the effluent storage is not within 50 metres of any lake, river, modified watercourse, natural wetland surface waterbody,²¹⁴ artificial watercourse or coastal marine area;*
- (iii) the effluent storage is not within 200 metres of any dwelling not on the same landholding, or 50 metres of the boundary of any other landholding or road²¹⁵; and*
- (iv) the effluent storage is not within 100 metres of any water abstraction point;*

Environment Southland will restrict its discretion to the following matters:

- 1. the design and construction of the storage and ancillary structures;*
- 2. methods to be used to protect its embankments from damage by stock and machinery;*
- 3. the adverse effects of the effluent storage on: ~~surface waterbodies~~ lake, river, modified watercourse, natural wetland²¹⁶, artificial watercourses, installed subsurface drains, groundwater, bores, registered drinking- water supplies, the coastal marine area, trees, stop banks, residential dwellings, places of assembly, urban areas, landholding boundaries and historic heritage;*
- 4. the height of the embankments and placement and orientation of the effluent storage relative to flood flows and stormwater run-off;*
- 5. the storage capacity of the effluent storage in relation to the volume and nature of the liquid that will enter the effluent storage facility;*
- 6. the quality of, and compliance with, an operational management plan, including operational procedures, emergency response, monitoring and reporting requirements, and installation of monitoring devices; and*

²⁰⁹ 152.17 Clover Bell; 408.2 Hynds Pip Systems; 614.20 NZTA; and 810.39 Three Rivers CG.

²¹⁰ 247.11 Environment Southland

²¹¹ Consequential amendment: 152.17 Clover Bell; 408.2 Hynds Pip Systems; 614.20 NZTA; and 810.39 Three Rivers CG.

²¹² 663.2 RD Agritech

²¹³ 152 Consequential amendment: 152.17 Clover Bell; 408.2 Hynds Pip Systems; 614.20 NZTA; and 810.39 Three Rivers CG.

²¹⁴ 247.11 Environment Southland

²¹⁵ 247.11 Environment Southland

²¹⁶ 247.11 Environment Southland

7. adoption and implementation of an Accidental Discovery Protocol.

(cc) The use of land for the construction of any effluent storage, other than onsite wastewater system, stock underpass, stock truck effluent facility, composting toilet system, mobile toilet, but including of waste-water, sludge or effluent from industrial or trade processes, and any incidental discharge directly onto or into land from that storage, that does not meet conditions (a), (b)(ii)-(v) or (c)(ii)-(iv) of Rule 32 is a discretionary activity.²¹⁷

~~(d)~~ The use of land for the construction of any effluent storage, other than onsite wastewater system, stock underpass, stock truck effluent facility, composting toilet system, mobile toilet²¹⁸, but including of waste-water, sludge or effluent from an industrial or trade processes,²¹⁹ and any incidental discharge directly onto or into land from that storage, that does not meet the conditions ~~(a), (b)(i), or (c)~~²²⁰ (i) of Rule 32 is a non-complying activity.

4.256 The recommended amendments to Rule 35 are set out below:

Rule 35 – Discharge of agricultural effluent to land

(a) *The discharge of agricultural effluent or water containing agricultural effluent onto or into land, in circumstances where contaminants may enter water, is a permitted activity, provided the following conditions are met:*

- (i) *the discharge is from;*
 - (1) *a dairy shed servicing a maximum of 20 cows or 100 of any other animal; or*
 - (2) *piggeries with a maximum of 70 x 50 kg pig equivalents; or*
 - (3) *directly from feed pads/lots, ~~and wintering pads~~²²¹ that authorised under Rule 35A; or:*
 - ~~(a) — until 31 December 2017 service no more than 100 adult cattle or 250 adult deer; and~~
 - ~~(b) — from 1 January 2018 service no more than 100 adult cattle or 250 adult deer where the feed lot or wintering pad:~~
 - ~~(i) — is not less than 20 metres from the nearest sub-surface (tile) drain, surface waterbody or wetland; and~~
 - ~~(ii) — is the only feed lot or wintering pad on the landholding;~~²²² *or*
 - ~~(c) — service no more than 10 adult cattle or 25 adult deer in any other circumstance; or~~
 - (4) *stock underpasses; or*
 - (5) *holding tanks on stock trucks; and*²²³
- (ii) *there is no discharge of agricultural effluent or water containing agricultural effluent to any surface watercourse, either directly or by overland flow, run-off, or via a pipe; and*
- (iii) *there is no overland flow or ponding of effluent, or application to land when the soil moisture exceeds field capacity; and*
- (iv) *the discharge is not within 20 metres of any ~~surface waterbody, river, lake, artificial watercourse, natural wetlands, listed in Appendix A~~²²⁴ or the coastal marine area; and*

²¹⁷ Consequential amendment relating to 752.125 Fish and Game

²¹⁸ 247.11 Environment Southland.

²¹⁹ Consequential amendment: 247.11 Environment Southland.

²²⁰ Consequential amendment: 152.17 Clover Bell; 408.2 Hynds Pip Systems; 614.20 NZTA; and 810.39 Three Rivers CG.

²²¹ 672.6 A Robertson; 346.1 K & D Hall; 270.3 Firdale Farms; and 220.16 Drylands Farming

²²² 79.5 P Blair

²²³ Clause 16(2) amendment

²²⁴ 247.11 Environment Southland.

- (v) *the discharge is not within 200 metres of any place of assembly or dwelling not on the same landholding, or 20 metres of the boundary of any other landholding or public road²²⁵; and*
 - (vi) *the discharge is not within 100 metres of any authorised²²⁶ water abstraction point; and*
 - (vii) *provided the soil moisture does not exceed field capacity, the maximum discharge depth of agricultural effluent or water containing agricultural effluent is 10 millimetres for each individual application; and*
 - (viii) *the maximum loading rate of nitrogen onto any land area does not exceed 150 kilograms of nitrogen per hectare per year from agricultural effluent or water containing agricultural effluent; and*
 - (ix) *the discharge system is operated and maintained so that there is no spray drift or offensive or objectionable odour beyond the landholding boundary; and*
 - (x) *the minimum return period for discharging collected²²⁷ agricultural effluent or water containing agricultural effluent onto or into the site is 28 days; and*
 - (xi) *the discharge does not occur within the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J; and*
 - (xii) *the location of any known²²⁸ sub-surface drains within the discharge area, and their outlet position and relative depth, is mapped and provided to Environment Southland upon request.*
- (b) *The discharge of agricultural effluent or water containing agricultural effluent onto or into land, in circumstances where contaminants may enter water, that does not meet one or more conditions of Rule 35(a),²²⁹ is a restricted discretionary activity, provided the following conditions are met:*

- (i) *the discharge is the replacement of ~~a lawfully established~~ an existing discharge consent²³⁰ pursuant to Sections 124-124C of the RMA, and*
- (ii) *the existing discharge consent for agricultural effluent specifies a maximum number of animals from which the effluent is collected, and that number is not increasing; ~~and~~*
- (iii) ~~any pond, tank or structure used to store agricultural effluent prior to discharge is certified by a Chartered Professional Engineer as:~~
 - (1) ~~being structurally sound~~²³¹;
 - (2) ~~meeting the relevant pond drop level outlined below when tested in accordance with the methodology in Appendix P.~~

Maximum Depth of Pond (m) excluding freeboard	Maximum Allowable Pond Level Drop (mm per 24 hours)
<0.5	1.2
0.5 to 1.0	1.4
1.0 to 1.5	1.6
1.5 to 2.0	1.8
>2.0	2.0

Environment Southland will restrict the exercise of its discretion to the following matters:

²²⁵ Clause 16(2) amendment

²²⁶ Clause 16(2) amendment

²²⁷ Clause 16(2) amendment

²²⁸ 759.15 Springlands Group

²²⁹ CI 16, Schedule 1 RMA

²³⁰ 189.38 DHL

²³¹ 190.17 DairyNZ

1. application depth and/or rate, storage requirements, nutrient loading rates²³² (in particular nitrogen) and size of the disposal area, timing of the discharge²³³, and contingency plans;
 2. the separation distance (beyond that required under conditions (i), (ii) and (iii) above) of the discharge from rivers, lakes, natural wetlands, surface waterbodies,²³⁴ artificial watercourses, subsurface drains, the coastal marine area, infrastructure²³⁵, residential dwellings, places of assembly, urban areas, landholding boundaries, water abstraction points and registered drinking-water supplies;
 3. other measures to avoid, remedy or mitigate adverse effects (including cumulative effects directly related to the discharge of farm dairy effluent) on water quality taking into account the nature and sensitivity of the receiving environment, including the physiographic zone that the discharge is located in;
 4. the duration of the discharge permit to be issued, including²³⁶ in order to implement the outcomes of any Freshwater Management Unit Process to be undertaken in accordance with Policy 47²³⁷;
 - ~~5. the adequacy of information provided to demonstrate that any pond, tank or structure used to store agricultural effluent prior to discharge does not leak; and~~
 - ~~6. the structural integrity of any pond, tank or structure used to store agricultural effluent prior to it being discharged.~~
- (c) ~~The discharge of agricultural effluent or water containing agricultural effluent onto or into land, in circumstances where contaminants may enter water that did not exist as at 1 May 2016, or seeks to increase the number of stock provided for in the Riverine, Gleyed, Bedrock/Hill Country, Oxidising, Central Plains, or Lignite-Marine Terraces physiographic zones that does not meet one or more conditions of Rule 35(a), or Rule 35(b)(i) and (ii)²³⁸ is a discretionary activity, provided the following conditions are met:~~
- ~~(i) the discharge is not within 20 metres of any surface waterbody—river, lake, natural wetland²³⁹, artificial watercourse or the coastal marine area;~~
 - ~~(ii) the discharge is not within 200 metres of any place of assembly or dwelling not on the same landholding, or 20 metres of the boundary of any other landholding;~~
 - ~~(iii) the discharge is not within 100 metres of any water abstraction point.~~
- (d) ~~The discharge of agricultural effluent or water containing agricultural effluent to land, in circumstances where contaminants may enter water, that does not comply with Rule 35(b)(iii)²⁴⁰ or Rule 35(c) is a non-complying activity.~~
- (e) ~~Despite any other rule, the discharge of untreated agricultural effluent directly²⁴¹ into surface or groundwater is a prohibited activity.~~

4.257 The recommended amendments to Appendix P are:

Appendix P – Effluent Pond Drop Testing

Methodology

- Testing is undertaken over a minimum period of 48 hours.

²³² Clause 16(2) amendment

²³³ Clause 16(2) amendment

²³⁴ 752.128 Fish and Game

²³⁵ 410.11 Invercargill Airport Ltd

²³⁶ Clause 16(2) amendment

²³⁷ 247.12 Environment Southland

²³⁸ 277.50 Fonterra

²³⁹ 247.11 Environment Southland.

²⁴⁰ Cl 16, schedule 1 RMA

²⁴¹ Cl 16, schedule 1 RMA

- Testing recording equipment is to be accurate to ~~not more than~~ 0.8 mm or less²⁴².
- Continuous readings are to be taken over the entire test period at not more than 10 second intervals.
- ~~Data analysis is undertaken by a party independent of equipment installer.~~²⁴³
- Any change in pond fluid level over the test period needs to be accounted for.
- Ponds must be at or over 75% design depth before a test can be undertaken.
- The pond has been de-sludged in the 12 months prior to the test being undertaken and there shall be no sludge or crust on the pond surface during the test.
- The pond surface is not frozen during any part of the testing.
- An anemometer shall be installed for the duration of the test and ~~at no time shall the~~ wind speed shall be at exceed 10 metres per second or less for at least 24 hours during the test²⁴⁴.

Pass/Fail Criteria

When tested in accordance with the methodology above, the pond “meets” the pond drop test criteria if the maximum pond level drop does not exceed the following:

<u>Maximum Depth of Pond (m) excluding freeboard</u>	<u>Maximum Allowable Pond Level Drop (mm per 24 hours)</u>
<u><0.5</u>	<u>1.2</u>
<u>0.5 to 1.0</u>	<u>1.4</u>
<u>1.0 to 1.5</u>	<u>1.6</u>
<u>1.5 to 2.0</u>	<u>1.8</u>
<u>>2.0</u>	<u>2.0</u>

4.258 A recommended definition of suitably qualified person (SQP) is:

Suitably Qualified Person (SQP)

A person that has been assessed and approved by Environment Southland as being appropriately qualified, experienced and competent in the relevant field of expertise.²⁴⁵

Rule 33 – Community sewerage schemes

4.259 The territorial authorities presented significant evidence with respect to community infrastructure, including the operation of and discharges from stormwater and community sewerage schemes.

4.260 A range of minor adjustments to the rule for community sewerage schemes are recommended, including clarity relating to appropriate setbacks from sensitive activities and waterbodies. The removal of the pond drop test requirement is discussed earlier, in relation to agricultural effluent storage ponds.

4.261 A new rule is recommended to be added that clarifies that the discharge of treated effluent direct to water is a non-complying activity. Under the notified pSWLP provisions, a discharge to water from a community sewerage scheme would have required assessment and analysis against Rules 5 and 6, to determine activity status. Officers consider that clarity is appropriate, in clear direction that effluent discharges to land are preferred, through a discretionary activity status. Due to the

²⁴² 247.33 Environment Southland

²⁴³ 191.15 JM and KB Dale

²⁴⁴ 25.36 Ardel Dairies

²⁴⁵ 451.10 Knockinnon Farm Trust

environmental and cultural implications of direct discharges to water, a non-complying activity status for these discharges is considered appropriate.

4.262 The recommended adjustments and new Rule 33A are:

Rule 33 – Community sewerage schemes

(a) *The discharge of effluent or bio-solids onto or into land, in circumstances where contaminants may enter water, from a community sewerage scheme is a discretionary activity, provided the following conditions is are met:*

~~(i) any pond, tank or structure used to store the effluent or bio-solids prior to discharge is certified by a Chartered Professional Engineer as:~~²⁴⁶

~~(1) being structurally sound;~~²⁴⁷

~~(2) meeting the relevant pond drop level outlined below, when tested in accordance with the methodology in Appendix P.~~²⁴⁸

Maximum Depth of Pond (m) excluding freeboard	Maximum Allowable Pond Level Drop (mm per 24 hours)
<0.5	1.2
0.5 to 1.0	1.4
1.0 to 1.5	1.6
1.5 to 2.0	1.8
>2.0	2.0

~~(ii) the discharge of effluent or bio solids is not within 20 metres of any river, lake, natural wetland, artificial watercourse or the coastal marine area; and~~

~~(iii) the discharge of effluent or bio solids is not within 200 metres of any place of assembly or dwelling not on the same landholding, or 20 metres of the boundary of any other landholding; and~~

~~(iv) the discharge is not within 100 metres of any water abstraction point.~~²⁴⁹

(b) *The discharge of effluent or bio-solids onto or into land, in circumstances where contaminants may enter water, from a community sewerage scheme that does not meet the conditions of Rule 33(a) is a non-complying activity.*

Rule 33A – Community sewerage schemes

(a) The discharge of effluent or bio-solids into water, from a community sewerage scheme, is a non-complying activity.²⁵⁰

Stand-off pads, feed pads/lots, calving pads and wintering pads

4.263 A number of submitters identified stand-off pads, feed pads/lots and wintering pads, as useful tools to achieve GMP, particularly to maintain animal health and as a preventative measure against pugging and paddock erosion during wet winter months. A key adverse effect arising from the use of land for stand-off pads, feed pads and wintering pads is the high concentration of nutrients and pathogens and the potential for these to be lost to surface water or groundwater through runoff or leaching. Rule 35 provides a control for the discharge of animal effluent from such structures, however, a provision to authorise the use of land for such structures was not included in the notified version of the pSWLP.

²⁴⁶ 330.15 GDC, ICC, SDC

²⁴⁷ 330.15 GDC, ICC and SDC; 411.31 ICC

²⁴⁸ 330.15 GDC, ICC and SDC; 411.31 ICC

²⁴⁹ 279.79 Forest and Bird; 780.6 Strathfair Farms; and 275.4 A Flett

²⁵⁰ 440.1 Kent, R, 386.2 Hopcroft Farms Ltd

- 4.264 Long term stand-off and wintering pads, with or without effluent collection systems, have the potential to cause significant environmental effects which should be identified and mitigated on a case-by-case basis during the resource consent process. The use of feeding or calving pads typically consist of lower stocking rates for shorter periods of time resulting in reduced probability of adverse environmental effects. Officers consider standards (ii) and (iii) in Rule 35A below, are sufficient to capture long term stand-off and wintering pads which have greater potential to cause adverse effects.
- 4.265 The location of the pad is a key aspect to mitigate potential adverse effects. Officers have identified receptors in the receiving environment which may be sensitive to the presence of stand-off pads, feed pads/lots, calving pads or wintering pads (such as drinking water supply sites, surface water bodies and critical source areas) and have recommended setback distances relative to each receptor.
- 4.266 The design and materials used in the construction of stand-off pads, feed pads, calving pads and wintering pads ensures the operation of the pad is effective in mitigating potential adverse effects. DairyNZ have produced guidance material on the suggested surface material options, such as sealing the base of pads to prevent nutrients leaching into groundwater and the use of woody materials to assist in the absorption of nutrients and for animal comfort purposes²⁵¹. Standards (v) to (vi) of Rule 35A are based on recommendations made in the DairyNZ guidance material, and the adoption of such recommendations is supported by Officers as providing the most appropriate level of environmental protection.
- 4.267 Officers recommend the following wording for new Rule 35A:

Rule 35A – Feed pads/lots

- (a) The use of land for a feed pad/lot, is a permitted activity provided the following conditions are met:
- (i) if accommodating adult cattle or adult deer, each feed pad/lot services no more than 100 adult cattle or 250 adult deer at any one time; and
- (iii) animals do not remain on the feed pad/lot for longer than three continuous months; and
- (iv) the feed pad/lot is not located;
- (1) within 50 metres from the nearest sub-surface drain, river, (including intermittent but excluding ephemeral) watercourse, lake, natural wetland or artificial watercourse or another feed pad/lot on the same landholding; or
- (2) within a microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J; or
- (3) within 200 metres of a place of general assembly or dwelling not on the same landholding, or 20 metres of the boundary of any other landholding; or
- (4) within a critical source area; and
- (v) the feed pad/lot is constructed with a sealed and impermeable base, or a minimum depth of 500 millimetres of wood-based material (bark, sawdust or chip) across the base of the feed pad/lot to prevent the leakage of animal effluent into land and groundwater; and
- (vi) the overland flow of stormwater or surface runoff from surrounding land is prevented from entering the feed pad/lot; and
- (vii) all liquid animal effluent or stormwater containing animal effluent is collected and disposed of to a sealed animal effluent storage system authorised under Rule 32 or Rule 32A; and

²⁵¹ https://www.dairynz.co.nz/media/667797/dairynz_stand_off_pads_booklet.pdf

- (viii) any material scraped from the feed pad/lot, including solid animal effluent, is collected and if applied to land, is applied in accordance with Rule 38.
- (b) The use of land for a stand-off pad, feed pad/lot, calving pad or wintering pad that does not meet one or more of the conditions of Rule 35A(a) is a discretionary activity.²⁵²

Rule 36 – Horticulture wash-water

4.268 A minor change is recommended to this Rule, in response to evidence and supplementary material provided by HortNZ. HortNZ identified that specific good management practices had been developed, with an appropriate degree of certainty, for the use and disposal of horticultural wash water. Officers have reviewed the guidelines, and it would appear that implementation of these guidelines would lead to good environmental outcomes and include standards that are largely consistent with the standards within Rule 36 in any case. Accordingly, it is recommended that the guidelines be adopted into the rule as follows:

Rule 36 – Horticulture wash-water

The discharge of water containing contaminants from vegetable or bulb washing to land, where contaminants may enter water, is a permitted activity, provided that the following conditions are met:

- (aa) either the discharge complies with Section 2 “Good Practice” of the Horticulture NZ Washwater Discharge Code of Practice 2017; or²⁵³
- (a) *the discharge does not exceed 20 cubic metres per day;*
- (b) ~~the rate of discharge does not result in any ponding of the contaminants or water containing contaminants; there is no overland flow; or ponding for more than 24 hours~~²⁵⁴ of horticultural washwater, or application of the washwater to land when soil moisture exceeds field capacity; and²⁵⁵
- (c) ~~the discharge only contains water, and soil, and there are no measurable concentrations of chemical additives present in the discharge~~ HSNO approved sanitisers that are used in accordance with their label instructions and comply with NZS 8409:2004 Management of Agrichemicals; and²⁵⁶
- (d) *the discharge is not within:*
- (i) 20 metres of any lake, river, modified watercourse, artificial watercourse, the coastal marine area,²⁵⁷ or natural²⁵⁸ wetland listed in Appendix A⁴, but excluding groundwater;
or
- (ii) *20 metres of any landholding boundary; or*
- (iii) *100 metres of any residential dwelling; or*
- (iv) *the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J;*²⁵⁹

Rules 40 and 41 – Silage

²⁵² 208.3 Dillon, M and S; 265.93 Federated Farmers

²⁵³ 390.31 HortNZ

²⁵⁴ 507.6 Marshall,

²⁵⁵ 752.129 Fish and Game

²⁵⁶ Consequential Amendment relating to 390.42 Hort NZ

²⁵⁷ 279.82 Forest and Bird

²⁵⁸ 247.11 Environment Southland

²⁵⁹ Clause 16(2) Amendment

- 4.269 Several individual farmers presented evidence that included information on silage, along with expert evidence from Mr Callander for Fonterra. The evidence generally identified that there was some confusion between Rule 40 and Rule 41 as to the management of discharges from silage storage. Officers have recommended, through adjustments to the rules outlined below, deletions from Rule 40 that remove this overlap.
- 4.270 As is discussed earlier, the evidence identified that there is a range of practices that may fall under the general provisions relating to feed pads. The provisions relating to feed pads are recommended to be adjusted so that all “concentrated” animal feeding systems are addressed. This includes “self feed silage stacks”, which have similar effects to a feed pad, and ought to be managed in a similar way. On this basis, self feed silage stacks for cattle are clearly cross-referenced to recommended new Rule 35A.
- 4.271 Other evidence identified that the requirement to fully seal silage stacks was particularly onerous, and possibly not in line with the level of effects likely to be generated²⁶⁰. Officers are also aware that leachate from silage stacks is particularly rich in nutrients and any leachate should be captured and disbursed wherever possible. Officers have recommended a range of adjustments to Rule 41, which deals with silage leachate, to remove the requirement for silage stacks to be sealed in future, but have improved the requirements for capture and management of leachate.

Rule 40 – Silage Storage²⁶¹

- (a) *The use of land as a silage storage facility, and any incidental air discharge, is a permitted activity provided the following conditions are met:*
- (i) *the activity does not cause any discharge that results in a noxious, dangerous, offensive, or objectionable odour beyond the boundary of the landholding on which silage is stored; and*²⁶²
 - (ii) *there is no overland flow of stormwater into the silage storage facility; and*
 - ~~(iii) *there is no discharge of contaminants from the silage storage facility to any surface or groundwater or naturally occurring wetland;*~~²⁶³
 - ~~(iv) *the activity does not modify, damage or destroy any recorded historic heritage site;*~~²⁶⁴
 - (v) *no part of the silage storage facility is within:*
 - (1) *50 metres of any surface waterbody lake, river, modified watercourse, artificial watercourse*²⁶⁵ *or naturally occurring*²⁶⁶ *wetland, or any potable water abstraction point; or*
 - (2) *100 metres of any dwelling or place of assembly, on another landholding constructed or in use prior to the silage storage facility being lawfully established; or*
 - (3) *the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J; and*
 - (vi) *no part of the silage storage facility is ~~on land~~ located within 50 metres of a classified as a HAIL site under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health 2011; and*

²⁶⁰ Mr Callander for Fonterra

²⁶¹ Clause 16(2) Amendment.

²⁶² Clause 16(2) amendment

²⁶³ 277.52 Fonterra

²⁶⁴ Consequential amendment relating to 449.33 KiwiRail

²⁶⁵ 247.41 Environment Southland

²⁶⁶ Clause 16(2) amendment

- (vii) *no part of the silage storage facility is located on land that is made permanently or intermittently wet by the presence of springs, seepage, high groundwater, ephemeral streams, or flows of stormwater other than from the cover of any silage stack; and²⁶⁷*
- (viii) *cattle are not able to graze directly from the silage storage facility, unless the area where the cattle access complies with Rule 35A.*²⁶⁸
- (b) *The use of land as a silage storage facility that does not meet the conditions in Rule 40(a) is a restricted discretionary activity provided to the following conditions are met:*
 - (i) *no part of the silage storage facility is within:*
 - (1) *20 metres of a ~~surface waterbody~~ lake, river, modified watercourse, artificial watercourse or natural wetland; or*
 - (2) *50 metres of a dwelling, potable water abstraction point, or place of assembly, on another landholding; or*
 - (3) *50 metres of the main stems of the Waiau, Aparima, Ōreti or Mataura rivers, or inside flood banks of the main stems of these rivers (if present); or*
 - (4) *the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J.*
 - (ii) ~~*no part of the silage storage facility is within the Coastal Marine Area.*~~²⁶⁹

Environment Southland will restrict the exercise of its discretion to the following matters:

- ~~1. *measures necessary to avoid, remedy or mitigate the discharge of silage leachate to water;*~~
2. *measures necessary to prevent noxious, dangerous, offensive, or objectionable effects beyond the boundary of the landholding on which silage is stored;*
3. *measures necessary to prevent inflows of stormwater, or infiltration from underlying seeps, springs, or groundwater;*
4. *the physical dimensions and location of the silage storage facility;*
- ~~5. *measures necessary to avoid adverse effects on historic heritage; and*~~²⁷⁰
6. *methods of containing any silage leachate that may be emitted prior to application to land, including volume of storage.*

An application for resource consent under Rule 40(b) will be processed and considered without public or limited notification unless the applicant requests notification Environment Southland considers that special circumstances exist that warrant notification of the application.

- (c) *The use of land as a silage storage facility that does not meet one or more of the conditions in Rule 40(b) is a non-complying activity.*

Rule 41 – Silage leachate

- (a) *The discharge of silage leachate onto or into land, in circumstances where contaminants may enter water, is a permitted activity, provided the following conditions are met:*
 - (i) *the discharge is via an agricultural effluent discharge system authorised under Rule 35; or*
 - (ii) ~~*the discharge of silage leachate does not enter any surface or naturally occurring*~~²⁷¹
~~*wetland; and*~~

²⁶⁷ 189.40 DHL

²⁶⁸ Consequential amendment relating to 208.3 Dillon, M and S; 265.93 Federated Farmers

²⁶⁹ Clause 16(2) amendment

²⁷⁰ Consequential amendment relating to 449.33 KiwiRail

²⁷¹ Clause 16(2) Amendment.

- (iia) there is no discharge of leachate directly to groundwater via a pipe, soak pit or other soil bypass mechanism and there is no overland flow or ponding of silage leachate outside of the silage storage facility;*²⁷²
- (iii) any discharge is not within:*
- (1) 20 metres of a ~~surface waterbody, artificial watercourse~~ lake, river, modified watercourse, artificial watercourse, natural wetland or the coastal marine area; ~~or~~*
 - (2) 100 metres of a place of assembly or dwelling not on the same landholding, or 20 metres of the boundary of any other landholding; or*
 - (3) 100 metres of a water abstraction point; ~~and~~ or*
 - (4) the microbial health protection zone of a drinking water supply site identified in Appendix J, or where no such zone is identified, then 250 metres of the abstraction point of a drinking water supply site identified in Appendix J; and*
- (iv) any discharge does not result in:*
- (1) ~~overland flow or ponding of silage leachate~~*²⁷³;
 - (2) depth of application in excess of 10 millimetres for each individual application;*
 - (3) a loading rate of nitrogen from the discharge of silage leachate in excess of 150 kilograms of nitrogen per hectare per year.*
- (b) The discharge of silage leachate onto or into land, in circumstances where contaminants may enter water,*²⁷⁴ *that does not*²⁷⁵ *meet the conditions in Rule 41(a) is a discretionary activity.*

Rule 38 – Animal and vegetative waste

- 4.272 The Hearing Panel have raised questions about the discharge of solid waste when there are soil constraints related to moisture content and temperature. The notified version of Rule 38 included condition (d)(iv) which permitted discharges, except between 1 May to 30 September. Several submitters opposed this condition as there would be times during this period when discharges could occur and it would result in waste accumulating and requiring disposal at times when it may be less preferable to do so. The amendments recommended to Rule 38 in the Section 42A Report deleted condition (d)(iv) as it was determined that the other conditions of the rule would ensure that waste is applied when soil conditions are suitable, specifically condition (d)(iii).
- 4.273 It has been discussed whether Rule 38 should require conditions regarding soil moisture and temperature as a means of ensuring discharges occur when the soil conditions are suitable. This information may be collected already on many landholdings and therefore presents no additional costs to dischargers. In addition, the Council maintains a network of soil monitoring across the region.
- 4.274 Officers consider that no amendments to the rule are necessary with respect to soil moisture, as the rule prevents discharges when the soil field capacity is exceeded. This may be determined by soil moisture monitoring on a property or the Council's network. Additionally, for those properties expected to discharge significant quantities of animal or vegetative waste, resource consents would likely be required for other discharges of effluent or liquids. In addition, for farming activities, a Farm Environmental Management Plan would be required for large properties (greater than 20 hectares) or a resource consent would be necessary. Through the Farm Environmental Management Plan or the resource consent process, the use of soil monitoring to determine the timing of discharges could be encouraged.

²⁷² Consequential amendment relating to 277.52 Fonterra

²⁷³ Consequential amendment relating to 277.52 Fonterra

²⁷⁴ Cl 16, schedule 1 RMA

²⁷⁵ 797.49 Ngāi Tahu

4.275 Soil temperature has an important role in microbial activity, which is necessary to break down animal and vegetative waste. In some winter months and for shaded slopes there is a risk that animal and vegetative waste will not 'decompose' and may be mobilised in a rain event or otherwise build up. On-farm soil temperature monitoring is not difficult or costly, and Environment Southland runs a representative soil temperature and moisture network across the region.

Rule 42 – Cleanfill sites

4.276 KiwiRail presented evidence outlining their concerns in relation to the management of cleanfill. KiwiRail identified that cleanfill is a key component of their maintenance regime and sought greater freedom to manage cleanfill within the rail corridor.

4.277 The KiwiRail evidence identified a reasonably simple fix, justified by the large size of the KiwiRail landholding. Officers agree that the inclusion of "per annum" criteria would assist with certainty and reasonableness of the cleanfill limitation.

4.278 That said, the definition of landholding would capture the entire rail corridor within Southland region and set a maximum cleanfill limit of 500 m³ per annum. Officers have considered this, and consider that networks, such as the State Highway, territorial authority roads and the rail corridor are exceptions to the normal situation, and accommodating these concerns would require a specific exception to the cleanfill rule. Officers consider that such an exception could be provided, but also ought to apply to both the rail and road network. This is on the basis that such a provision can be justified as the works within roads and rail corridors are typically undertaken with appropriate professional supervision and with environmental and health and safety practices in place.

(i) *the total amount of cleanfill discharged at all cleanfill sites on a landholding does not exceed 500 cubic metres per calendar year, except in the case of a formed road reserve or a rail corridor, where no limit applies;²⁷⁶*

Rule 47 – Closed Landfills

4.279 ICC, SDC and GDC have requested in evidence that Rule 47 is amended to delete the date from condition (a)(ii) and amend the activity status of Rule 47(b) from discretionary to restricted discretionary. The reason for this deletion is because the environmental impacts of a low risk discharge are not influenced by the date by which the report is prepared and to align the consent status with the operative Regional Water Plan.

4.280 The rule as drafted in the pSWLP reflects the operative Regional Water Plan provisions and includes the date by which assessments are required to be submitted. The operative plan also includes a discretionary consent requirement where the assessment is provided after 1 November 2015.

4.281 ICC was the only Territorial Authority to submit on Rule 47 and their submission supported the rule as notified. The further submissions from SDC opposed the submission from W and T Holder on the activity status of the rule and submissions from Forest & Bird, ICC and Fish and Game that supported the notified rule; SDC sought, in its further submission, the date to be deleted. No submitters sought any changes to the date of the rule in their original submissions.

4.282 Officers consider that there is no scope based on the submissions to amend Rule 47 as requested by ICC, SDC and GDC in their evidence. If the Hearing Panel do consider there is scope to amend Rule

²⁷⁶ 449.20 Kiwirail

47, Officers agree with ICC, SDC and GDC that the environmental effects will be unchanged by deleting the date from condition (a)(ii).

Fish Screens

- 4.283 Fish and Game and Forest and Bird sought the inclusion of an appendix setting out fish screen standards in the pSWLP. Both submitters refer to the suitability of the Canterbury Regional Council (ECan) 'Fish Screen Standards and Guidelines' schedule in the Canterbury Land and Water Regional Plan. The adoption of ECan's 'Fish Screen Standards and Guidelines' was supported in paragraph 8.241 of the Section 42A Report, however, at that stage Officers questioned the suitability and application of the schedule in the Southland Region.
- 4.284 Evidence provided by Fish and Game at the hearing confirmed that the appendix is appropriate for the Southland Region as there are many of the same species of fish with similar screening requirements. On this basis, Officers recommend the following appendix be adopted:

Appendix R – Fish Screen Standards and Guidelines

(1) Where the diversion or take does not exceed a maximum rate of 10 litres per second and a maximum volume of 100 cubic metres per day, a fish screen shall be installed to prevent fish from entering the intake. The fish screen shall be designed to the following standard and kept functional at all times while water is being taken:

- (a) Water shall only be taken when a fish screen with a mesh size or slope width not exceeding 2 millimetres for intakes within 2 kilometres of the coast, a coastal lake or estuary, or 3 millimetres for anywhere else is operated and maintained across the full width of the intake to ensure that fish and fish fry are prevented from bypassing the screen into the intake; and
- (b) The screen area shall be designed to ensure the calculated average through screen velocity does not exceed 0.12 metres per second (screens should generally be designed to exceed this are to account for some routine level of clogging of the screen with detritus). The required area (square metres) of fish screen should exceed = Flow (litres per second)/120.

Example: The minimum required fish screen area for a cylindrical screen can therefore be calculated from:

$$\text{Area} = 2\pi r (r + h) \times z$$

Where: $\pi = 3.141592659$

r = radius of cylinder (metres)

h = length or height of cylinder (metres)

z = proportional open mesh area of screen material

(i.e. 0.5 for mesh that is 50% open area)

Note: The above formula holds where the screen is fully immersed in water as is usually the case with pump takes. Where this is not the case, the area will need to be adjusted accordingly. Where 50% of the screen may be exposed, then the area calculation will need to be adjusted to half (or multiplied by 0.5), or the actual screen area would need to be doubled (multiplied by 2) in order to achieve the same area immersed. This example makes no allowance for the area taken up by the end of the intake pipe. Where high levels of detritus and other clogging materials are present, screen areas should be increased to account for reduced effective screen area.

(2) Where the diversion or take does not exceed a maximum rate of 10 litres per second and a maximum volume of 100 cubic metres per day but does not meet the standards in (1) above:

or where the diversion or take exceeds a maximum rate of 10 litres per second and a maximum volume of 100 cubic metres per day and the diversion is less than 10 cubic metres per second or the take is less than 500 litres per second pumped, a fish screen shall be installed to prevent fish from entering the intake. The fish screen shall be designed with the following features:

- (a) The site is located as close to the river source as possible to minimise exposure of fish to the fish screen structure, and minimises the length of stream affected while providing the best possible conditions for (b) - (f) below;
- (b) Water velocity through the screen ("approach velocity") is slow enough (generally <0.12 metres per second) to allow fish to escape the entrainment (being sucked through or washed over the screen) or impingement (being squashed or rubbed against the screen);
- (c) Water velocity across (or past) the screen ("sweep velocity") is greater than the approach velocity (b) and is sufficient to sweep the fish past the intake;
- (d) An effective bypass system is provided that is easily accessible to entrained fish, and fish are taken away from the intake and back into the source channel, or into water which provides the fish with unimpeded passage back into the source channel;
- (e) Screening material (mesh, profile bars or other) on the screen needs to have a smooth surface and openings that prevent any damage to fish coming into contact with the screening material; and
- (f) The intake structure and fish screen are operated to a consistent, appropriate standard with appropriate operation and maintenance procedures, and this operation and maintenance should be regularly checked or monitored. A record should be kept of all the maintenance and monitoring carried out.

- (3) Where the diversion is more than 10 cubic metres per second or the take is more than 500 litres per second pumped, in addition to the features listed in (2)(a) to (f) above, it will be necessary for the intake to be purpose designed and to consider on a case by case basis whether any additional features will be necessary to ensure fish are prevented from entering the intake.

Note: Submerged galleries (abstracting water vertically) and galleries in the river banks (abstraction water horizontally), or behavioural barriers and devices such as those that use light and sound diversions that may not meet all of the engineering features set out in (2) above, but shall be considered to comply with them where it is demonstrated that they are able to exclude fish to the same degree of effectiveness.²⁷⁷

Section 14(3)(b) takes²⁷⁸

- 4.285 Commissioner van Voorthuysen has requested an evidential basis for why Section 14(3)(b) takes should or should not be included within the 86 cubic metre takes in the pSWLP.
- 4.286 The issue of whether section 14(3)(b) takes can be constrained was considered by the Environment Court in the Variation 6 proceedings in *Carter Holt Harvey Ltd v Waikato Regional Council*²⁷⁹. In Variation 6, the Waikato Regional Council wanted to classify any section 14(3)(b) take which was not existing prior to 15 October 2008, and when assessed in combination with all other authorised takes, exceeded 100 percent of the primary allocable flow set out in a table, as a discretionary activity.
- 4.287 The effect of both the policy and rule proposed in Variation 6 was to constrain the statutory right to take water in accordance with section 14(3)(b) without the need for a resource consent.

²⁷⁷ 279.95 Forest and Bird, 752.142 Fish and Game

²⁷⁸ This section prepared by counsel.

²⁷⁹ *Carter Holt Harvey Ltd v Waikato Regional Council* [2011] NZEnvC 380

4.288 Some parties argued that such a rule was ultra vires. Section 30(4)(f) of the Act was relied on by the parties to support this argument. Section 30(4)(f) provides, in relation to the regional council's ability to establish rules to allocate water that:

(4)(f) the rule may allocate water ... as long as the allocation does not affect the activities authorised by section 14(3)(b) to (e).

4.289 However, this argument has previously been rejected by the Environment Court on the basis that the authorisation to take water pursuant to section 14(3)(b) is not unlimited. The Court stated:

[111] We reject that submission. We accept the submission of counsel for the respondent, Mr Milne, that the provisions are not ultra vires. The authorisation to take pursuant to Section 14(3)(b) is not unlimited. The taking or use must not have, or be likely to have, an adverse effect on the environment. There is no qualifier to "adverse effect" so, on the face of it, any effect which is greater than de minimis would be sufficient to terminate the statutory authorisation. The constraining provisions proposed in Variation 6 do not "affect the activities authorised by s14(3)(b)". Rather, what they seek to do is define the point at which a take, that would otherwise be authorised under section 14(3)(b), has, or is likely to have, an adverse effect, and hence fails to gain the statutory authorisation.

[112] Such an interpretation underlays good common sense policy reasons. Those who would likely be affected by the rule would be people undertaking new dairy conversions since 15 October 2008, or increasing their stock numbers in catchments at or above full allocation. The position of all existing Section 14(3)(b) takes as at 15 October 2008 is protected. Converting a forestry or dry-stock property to a dairy farm is a capital intensive exercise. It is preferable for would be converters to have a clear statement in the Plan of the respondent's position on when Section 14(3)(b) takes have, or will likely have, an adverse effect and hence lose their statutory authorisation, rather than leaving that to the vagaries of possible enforcement action.

4.290 It is clear from the face of section 14(3)(b) and the above, that the statutory right to take water for an individual's reasonable domestic needs or the reasonable needs of a person's animals for drinking water is not unconstrained. The taking or use must not, or must not be likely to, have an adverse effect on the environment. Accordingly, we consider that the Council may limit takes under section 14(3)(b) to ensure that the taking or use does not have an adverse effect on the environment.

4.291 In light of the above, the Council may impose restrictions on the rate of take, or the volume of water that may be taken under section 14(3)(b) provided that the restrictions are to "define the point at which a take, that would otherwise be authorised under section 14(3)(b), has, or is likely to have, an adverse effect, and hence fails to gain the statutory authorisation."

4.292 A restriction on the rate of take, or the volume of water that may be taken could also be used to define what is "reasonable" in terms of "an individual's reasonable domestic needs" or "the reasonable needs of a person's animals for drinking water". Such restrictions may be imposed through planning provisions, or by adopting guidelines outside the planning provisions.

4.293 The memoranda provided by Mr Hughes assesses the appropriateness of the proposed permitted activity limits of 86m³ for the abstraction of groundwater and surface water. Mr Hughes states that the proposed limits are unlikely to result in more than minor effect on the environment in terms of well interference effects, localised and cumulative effects on surface water and on groundwater sustainability.

4.294 Officers consider that the addition of Section 14(3)(b) takes to this volume could lead to an adverse effect on neighbouring takes or the wider environment, and accordingly consider Section 14(3)(b) takes should be specifically included in the permitted activity volumes.

Abstraction and use of surface water for construction purposes

- 4.295 Fulton Hogan and Southern Aggregates sought to amend Rule 49 to enable surface water to be taken as required for temporary construction activities. An increased rate of take and daily volume were requested to allow for surface water takes not exceeding six months in duration. Officers consider amending Rule 49 to separately authorise the take and use of surface water for construction activities to be an appropriate inclusion.
- 4.296 Officers consider a rate of take of 15 litres per second and daily volume of 100m³ is sufficient to cover the temporary take and use of surface water for construction phase activities. The following wording of Rule 49(aa) and subsequent amendments to Rule 49 are recommended:

(aa) Despite Rule 49(a), the take and use of surface water for infrastructure construction, maintenance and repair is a permitted activity provided the following conditions are met:

- (i) the rate of take does not exceed 15 litres per second; and
- (ii) the volume of the take does not exceed 100m³ per day; and
- (iii) the rate of the take does not exceed 30 percent of the instantaneous flow in the lake, river, modified water course or coastal lagoon at the time of the take; and
- (iv) the point of abstraction is not located within 50 metres of any existing lawfully established surface water take; and
- (v) Environment Southland is notified at least three working days prior to the take commencing; and
- (vi) the take occurs between 1 September and 31 March inclusive; and
- (vii) fish are prevented from entering the water intake in accordance with Appendix R; and
- (viii) where the volume of the take exceeds 20,000 litres per day, a water meter capable of recording the rate of take, and maximum daily volume shall be installed. The water take data shall be recorded daily and that data shall be provided to Environment Southland on request. The accuracy of the water meter shall be verified every 12 months.²⁸⁰

(b) Except as provided for in Rules 49(a), 49(aa)²⁸¹, 50(a), 50(b), 51(a) and 51(b), the taking, diversion and use of surface water from any of the following sources is a restricted discretionary activity provided the following conditions are met²⁸²:

- (i) for any ~~surface waterbody~~ lake, river, modified watercourse, natural wetland, coastal lagoon²⁸³ or artificial watercourse where the total surface water allocation is within the secondary allocation specified in Policy 21(3); ~~or~~
- (ii) for non-consumptive takes ~~any surface waterbody or artificial watercourse where~~²⁸⁴ the total volume of water taken or diverted is returned within 100 metres of the take or diversion point; or
- (iii) for any ~~surface waterbody~~ lake, river, modified watercourse, natural wetland, coastal lagoon²⁸⁵ or artificial watercourse where the total volume of water taken is greater than 40 cubic metres per landholding per day but²⁸⁶ is less than 70 cubic metres per landholding per day.

Environment Southland will restrict its discretion to the following matters:

²⁸⁰ 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

²⁸¹ 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

²⁸² Clause 16(2) amendment

²⁸³ 247.41 Environment Southland – definition of surface waterbody

²⁸⁴ 464.24 Landpro

²⁸⁵ 247.41 Environment Southland – definition of surface waterbody

²⁸⁶ Clause 16(2) amendment

1. *the volume, rate, frequency and timing of water to be taken (including any water to be returned to the ~~surface waterbody~~ lake, river, modified watercourse, natural wetland, coastal lagoon or artificial watercourse²⁸⁷ and the delay between the taking and returning of this water); and²⁸⁸*
 2. *any effects on river ~~and stream~~ ²⁸⁹flows (including effects on minimum flows, flow variability and duration of flows), wetland ~~and~~ or²⁹⁰ lake water levels, aquatic ecosystems, aquifer storage volumes, the availability and reliability of supply for existing users and water quality; and²⁹¹*
 3. *the location of the take or diversion; and²⁹²*
 4. *the efficiency of water use, in accordance with Appendix O²⁹³; and²⁹⁴*
 5. *~~the need for the installation and use of a water meter; and²⁹⁵~~*
 6. *monitoring requirements; and²⁹⁶*
 7. *methods to prevent fish from entering the ~~intake-reticulation system; and²⁹⁷~~*
 8. *~~take cessation in response to minimum flow and level requirements; and²⁹⁸~~*
 9. *consistency with any water conservation order; and²⁹⁹*
 10. *the degree of hydraulic connection to groundwater; and³⁰⁰*
 11. *any effect on a ~~natural-regionally-significant~~ wetland; and³⁰¹*
 12. *the proposed method of take and delivery of the water; and*
 13. *any water storage available for the water taken and its volume.*
- (c) *Except as provided for in Rules 49(a), 49(aa)³⁰², 49(b), 50(a), 50(b), 51(a), 51(b), ~~51(c)~~, and 51(c), the taking, diversion and use of surface water where the total rate of authorised surface water abstraction does not exceed allocation is within³⁰³ the primary allocation specified in Appendix K is a discretionary activity.*
- (d) *Except as provided for in Rules 49(a), 49(aa)³⁰⁴, 49(b), 49(c), 50(a), 50(b), 51(a), 51(b), and 51(c), the taking, diversion and use of water is a non-complying activity.*
- (e) *Despite Rules 49(b), 49(c), and 49(d) the taking, diversion and use of water from the Cromel Stream, unless the application is for the replacement of an expiring water permit pursuant to Section 124 of the Act, and the rate of take and volume is not increasing, and use of the water is not changing, is a prohibited activity.*

New Rule 52A – Manapouri Power Station

²⁸⁷ 247.41 Environment Southland – definition of surface waterbody

²⁸⁸ Clause 16(2) amendment

²⁸⁹ Clause 16(2) amendment

²⁹⁰ Clause 16(2) amendment

²⁹¹ Clause 16(2) amendment

²⁹² Clause 16(2) amendment

²⁹³ 47.21 Balfour, Wendonside & Waikaia Group, 259.17 F D Enterprise, 464.24 Landpro and others

²⁹⁴ Clause 16(2) amendment

²⁹⁵ Clause 16(2) amendment

²⁹⁶ Clause 16(2) amendment

²⁹⁷ Clause 16(2) amendment

²⁹⁸ Clause 16(2) amendment

²⁹⁹ Clause 16(2) amendment

³⁰⁰ Clause 16(2) amendment

³⁰¹ Clause 16(2) amendment

³⁰² 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

³⁰³ Clause 16(2) amendment

³⁰⁴ 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

Activity status for the re-consenting of the Manapouri Power Scheme³⁰⁵

4.297 Meridian has sought a new rule to provide for the re-consenting of the Manapouri Power Scheme as a controlled activity.

4.298 A controlled activity is one for which the relevant authority must grant a resource consent (unless it has insufficient information to determine whether or not the activity is a controlled activity). The extent to which the Council can control such an activity is by the imposition of conditions for those matters over which control is reserved.³⁰⁶

4.299 The High Court has confirmed that controlled activity status is available in respect of the take and use of water for hydro-electricity generation.³⁰⁷ The High Court considered that what a regional council must do is ensure that it carries out its listed functions (in section 30) for the purpose of giving effect to the RMA. For the purposes of assigning activity status, "*this requires a merits-based assessment of the best activity status to give effect to its functions and, ultimately, the purpose of the RMA*".³⁰⁸ The Court noted the observations of the Court of Appeal in *Coromandel Watchdog of Hauraki Inc v Chief Executive of the Ministry of Economic Development*, where it was stated:³⁰⁹

"[28] The important point for present purposes is that the exercise required by s 32, when applied to the allocation of activity statuses in terms of s 77B, requires a council to focus on what is 'the most appropriate' status for achieving the objectives of the district plan, which, in turn, must be the most appropriate way of achieving the purpose of sustainable management."

4.300 The High Court did not consider the appropriate activity status in respect of the take and use of water for hydro-electricity generation. The High Court also did not make a finding as to whether the categorisation of the activities in this case were, or would have been, available as findings of facts in the circumstances of the case (despite some parties requesting it to). The High Court concluded that that was a matter for the regional council to determine on the merits.

4.301 The role of Environment Southland when categorising activities section 77A is to determine "the most appropriate way to achieve the purpose of the Act" and "examine whether the provisions in the proposal are the most appropriate way to achieve the objectives".³¹⁰ This further supports the need for a factual assessment of the activity, as set against the pSWLP, the RMA and other relevant standards and policies.³¹¹

Planning Assessment

4.302 Meridian presented evidence requesting the addition of a rule to allow the re-authorisation of their existing consents related to the operation of the Manapouri Power Station. Meridian has requested that a controlled activity rule is inserted into the pSWLP that regulates the taking or use, diverting or damming and discharge of water that is part of the Manapouri hydro-electric generation schemes for which consents are already held.

³⁰⁵ The following five paragraphs have been prepared by counsel.

³⁰⁶ RMA, ss 77A, 77B and 104A.

³⁰⁷ *Rangitata Diversion Race Management Ltd v Canterbury Regional Council* [2015] NZHC 2174.

³⁰⁸ *Rangitata Diversion Race Management Ltd v Canterbury Regional Council* [2015] NZHC 2174 at [34].

³⁰⁹ *Coromandel Watchdog of Hauraki Inc v Chief Executive of the Ministry of Economic Development* [2007] NZCA 473, [2008] 1 NZLR 562.

³¹⁰ RMA, s 32.

³¹¹ In line with *Rangitata Diversion Race Management Ltd v Canterbury Regional Council* [2015] NZHC 2174 at [37].

- 4.303 Upon hearing the evidence presented, Officers disagree that a controlled activity rule is appropriate for re-consenting the Manapouri Power Station. The current abstraction of surface water from the Waiau River for the Manapouri Power Station is approximately 95% at low flows.³¹² The remainder of the Waiau River allocation is allocated to other users. Water abstracted for the power station is not returned to the Waiau River and therefore cannot mitigate any potential effects or be available for other users.
- 4.304 Assigning a controlled activity status for renewing the Manapouri Power Station on the basis of the current activity, would not enable a re-assessment of the appropriateness of the volume of water abstracted or the rate of take. Although the Manapouri Power Station is of significant social and economic benefit, the power station is located within a National Park which holds considerable conservation values. Given the allocation of water to Meridian and the impact the take has on the Waiau River flows, it is not unquestionable that there may be a need to reconsider the effects of the activity. Officers recommend that a restricted discretionary activity status is applied for the renewal of the Manapouri Power Station water takes. The restricted activity status enables the restriction of assessment matters that are to be considered in the consent process whilst ensuring that Environment Southland can consider the appropriateness of re-authorising the same activity.
- 4.305 Proposed Rule 52A is set out below which address the re-consenting of the Manapouri Power Station. A condition requiring the application to be subject to s124 of the RMA ensures that there will be no additional water sought and therefore no over-allocation of the Waiau River as the Waiau catchment is fully allocated.
- 4.306 Officers recommend that a non-complying activity status applies to any applications that seek additional water allocation given the Waiau Surface Water Allocation Zone is fully allocated.
- 4.307 Officers have considered if it is appropriate for the same provisions for consent renewal to be afforded to the Monowai Power Station. Officers consider that it is not appropriate because the Monowai Power Station is not recognised as nationally significant in the way the Manapouri Power Station is under the Manapouri Te Anau Development Act 1963.
- 4.308 The recommended Rule 52A is set out below.

Rule 52A - Manapouri Hydro-electric Generation Schemes

(a) Despite any other rules in this Plan, any activity that is part of the Manapouri hydro-electric generation schemes, for which consent is held and which is the subject of an application for a new consent for the same activity and is:

- (i) the taking or use of water; or
- (ii) the discharge of water into water or onto or into land; or
- (iii) the discharge of contaminants into water or onto or into land; or
- (iv) the damming or diversion of water;

is a restricted discretionary activity provided the following conditions are met:

- (1) the application is for the replacement of an expiring resource consent pursuant to Section 124 of the Act; and
- (2) where the replacement consent is for the taking or use of water, the rate of take and volume is not increasing and the use of water is not changing.

Environment Southland will restrict the exercise of its discretion to the following matters:

- 1. the volume and rate of water taken, used, diverted or discharged and the timing of any take, diversion or discharge, including how this relates to generation output; and
- 2. any effects on river and stream flows, wetland and lake water levels, aquatic ecosystems, and water quality;

³¹² URS, Manapouri Tailrace Amended Discharge Project (MTAD): Hydrology Assessment, January 2009

3. mitigation or remediation measures to address adverse effects on the environment; and
4. the benefits of renewable electricity generation.

An application for resource consent under Rule 52A(a) will be publicly notified.

- (b) Despite any other rules in this Plan, any activity that is part of the Manapouri hydro-electric generation schemes, for which consent is held and which is the subject of an application for a new consent for the same activity and is:
- (i) the taking or use of water; or
 - (ii) the discharge of water into water or onto or into land; or
 - (iii) the discharge of contaminants into water or onto or into land; or
 - (iv) the damming or diversion of water;
- that does not meet one or more of the conditions of Rule 52A(a) is a non-complying activity.³¹³

Water Metering

- 4.309 The Hearing Panel have asked whether it would be appropriate to amend the requirements for metering in Rule 49 and Rule 54 to align with the Measurement and Reporting of Water Takes Regulations 2010.
- 4.310 Condition (vii) of Rule 49(a) and condition (iv) of Rule 54(a) require any takes greater than 2,000 litres per day to be metered, with the maximum daily volume of the take recorded and provided to Environment Southland on request. The meter is to be verified every 12 months.
- 4.311 The rate of 2,000 litres per day is incorrect. The intention of Environment Southland in their submission was to require the metering of takes greater than 20,000 litres per day which is consistent with the current requirements of the Regional Water Plan. Currently, any take that is greater than 20,000 litres per day is metered and that data is provided to Environment Southland. This provides the Council data regarding water usage and allows an assessment of individual takes against the permitted activity rules. The Council state this has been effective.
- 4.312 The Measurement and Reporting of Water Takes Regulations 2010 do not restrict the ability of a Council to develop rules or impose conditions on resource consents that are more stringent than the regulations. To ensure consistency with the current requirements, Officers recommend that Condition (vii) of Rule 49(a) and condition (iv) of Rule 54(a) is amended. The revised rules are set out below.

Rule 49 – Abstraction, ~~diversion~~³¹⁴ and use of surface water

- (a) *The take and use of surface water is a permitted activity provided the following conditions are met:*
- (i) the volume of take does not exceed 2000 litres per day, plus 250 litres per hectare per day, up to a maximum of 40 cubic metres per landholding per day, or per facility per day on public conservation land managed as such under the National Parks Act 1980, Conservation Act 1987, or the Reserves Act 1977;*
 - (ii) the maximum volume of take allowed under this rule and Rule 54(a) is not added. A maximum of 86 cubic metres of groundwater and surface water combined per*

³¹³ 562.15 Meridian

³¹⁴ Clause 16(2) amendment

landholding per day inclusive of any water taken pursuant to s14(3)(b) of the RMA,³¹⁵ may be taken;

- (iii) the ~~rate~~ volume of take does not exceed 30 percent of the ~~naturalised~~ instantaneous flow in the surface waterbody at the time of take;
- (iv) the rate of take does not exceed 2 litres per second;
- (v) fish are prevented from entering the reticulation system in accordance with Appendix R,³¹⁶ and
- (vi) the following details are supplied to Environment Southland upon request:
 - (1) farming type;
 - (2) stocking rate;
 - (3) point of abstraction;
 - (4) what the water was used for; and
 - (5) maximum rate of take.
- (vii) where the volume of take exceeds 20,000 litres per day, a water meter capable of recording the rate of take, and maximum daily volume of take shall be installed. The water take data shall be recorded daily and that data shall be provided to the Southland Regional Council on request. The accuracy of the water meter shall be verified every 12 months.³¹⁷

(aa) Despite Rule 49(a), the take and use of surface water for infrastructure construction, maintenance and repair is a permitted activity provided the following conditions are met:

- (i) the rate of take does not exceed 15 litres per second; and
- (ii) the volume of the take does not exceed 100m³ per day; and
- (iii) the rate of the take does not exceed 30 percent of the instantaneous flow in the lake, river, modified water course or coastal lagoon at the time of the take; and
- (iv) the point of abstraction is not located within 50 metres of any existing lawfully established surface water take; and
- (v) Environment Southland is notified at least three working days prior to the take commencing; and
- (vi) the take occurs between 1 September and 31 March inclusive; and
- (vii) fish are prevented from entering the water intake in accordance with Appendix R; and
- (viii) where the volume of the take exceeds 20,000 litres per day, a water meter capable of recording the rate of take, and maximum daily volume shall be installed. The water take data shall be recorded daily and that data shall be provided to Environment Southland on request. The accuracy of the water meter shall be verified every 12 months.³¹⁸

(b) Except as provided for in Rules 49(a), ~~49(aa),~~³¹⁹ 50(a), 50(b), 51(a) and 51(b), the taking, diversion and use of surface water ~~from any of the following sources~~ is a restricted discretionary activity provided the following conditions are met³²⁰:

- (i) for any surface waterbody or artificial watercourse ~~where~~ the total surface water allocation is within the secondary allocation specified in Policy 21(3); ~~or~~ and
- (ii) for non-consumptive takes ~~any surface waterbody or artificial watercourse where~~³²¹ the total volume of water taken or diverted is returned within 100 metres of the take or diversion point; or

³¹⁵ 247.14 Environment Southland

³¹⁶ 279.95 Forest and Bird; 752.142 Fish and Game

³¹⁷ 247.14 Environment Southland; 464.13 Landpro

³¹⁸ 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

³¹⁹ 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

³²⁰ Clause 16(2) amendment

³²¹ 464.24 Landpro

- (iii) for any surface waterbody or artificial watercourse where the total volume of water taken is greater than 40 cubic metres per landholding per day but³²² is less than 70 cubic metres per landholding per day.

Environment Southland will restrict its discretion to the following matters:

1. the volume, rate, frequency and timing of water to be taken (including any water to be returned to the surface waterbody and the delay between the taking and returning of this water);
 2. any effects on river ~~and stream~~³²³ flows (including effects on minimum flows, flow variability and duration of flows), wetland and lake water levels, aquatic ecosystems, aquifer storage volumes, the availability and reliability of supply for existing users and water quality;
 3. the location of the take or diversion;
 4. the efficiency of water use, in accordance with Appendix O³²⁴;
 5. ~~the need for~~ the installation and use of a water meter;³²⁵
 6. monitoring requirements;
 7. methods to prevent fish from entering the ~~intake-reticulation system~~;³²⁶
 8. take cessation in response to minimum flow ~~and level~~ requirements;³²⁷
 9. consistency with any water conservation order;
 10. the degree of hydraulic connection to groundwater;
 11. any effect on a ~~natural-regionally-significant~~ wetland;
 12. the proposed method of take and delivery of the water; and
 13. any water storage available for the water taken and its volume.
- (c) Except as provided for in Rules 49(a), 49(aa)³²⁸, 49(b), 50(a), 50(b), 51(a), 51(b), and 51(c), the taking, diversion and use of surface water where the total rate of authorised surface water abstraction does not exceed allocation ~~is within~~³²⁹ the primary allocation specified in Appendix K is a discretionary activity.
- (d) Except as provided for in Rules 49(a), 49(aa)³³⁰, 49(b), 49(c), 50(a), 50(b), 51(a), 51(b), and 51(c), the taking, diversion and use of water is a non-complying activity.
- (e) Despite Rules 49(b), 49(c), and 49(d) the taking, diversion and use of water from the Cromel Stream, unless the application is for the replacement of an expiring water permit pursuant to Section 124 of the Act, and the rate of take and volume is not increasing, and use of the water is not changing, is a prohibited activity.

Rule 54 - Abstraction and use of groundwater³³¹

- (a) The take and use of groundwater is a permitted activity provided the following conditions are met:
- (i) The rate and volume of abstraction does not exceed:
 - (1) A maximum of 86 cubic metres per day per landholding; and
 - (2) A maximum rate of 5 litres per second; and

³²² Clause 16(2) amendment

³²³ Clause 16(2) amendment

³²⁴ 47.21 Balfour, Wendonside & Waikaia Group; 259.17 F D Enterprise; 464.24 Landpro; and others

³²⁵ Clause 16(2) amendment

³²⁶ Clause 16(2) amendment

³²⁷ Clause 16(2) amendment

³²⁸ 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

³²⁹ Clause 16(2) amendment

³³⁰ 288.33 Fulton Hogan Ltd and Southern Aggregates Ltd

³³¹ **Advice note:** To determine the aquifer type and allocation volume for a proposed groundwater abstraction, Plan users should firstly refer to Map Series 3: Groundwater Management, to establish the relevant groundwater zone. Once the relevant groundwater zone has been established, Appendix L can be used to determine the aquifer type.

- (3) *The point of abstraction is not within 50 metres of an existing lawfully established groundwater take;*
- (ii) *The maximum volume of take allowed under this rule and Rule 50(a) is not added. A maximum of 86 cubic metres of groundwater and surface water combined per landholding per day inclusive of any water taken pursuant to s14(3)(b) of the RMA,³³² is allowed;*
- (iii) *The following details are supplied to Environment Southland upon request:*
- (1) Farming type;*
 - (2) Stocking rate; ~~and~~*
 - (3) Point of abstraction;*
 - (4) What the water is used for; and*
 - (5) Maximum rate of take.*³³³
- (iv) *Where the volume of the take exceeds 20,000³³⁴ litres per day, a water meter capable of recording the rate of take, and maximum daily volume of take shall be installed. The water take data shall be recorded daily and that data shall be provided to the Southland Regional Council on request. The water meter shall be verified every 12 months.*³³⁵
- (b) *The non-consumptive take and use of groundwater is a permitted activity provided the following conditions are met:*
- (i) *the rate and volume of take does not exceed:*
- (1) a maximum rate of 10 litres per second;*
 - (2) a maximum daily volume of 750 cubic metres;*
 - (3) ~~if the degree of hydraulic connection, calculated in accordance with Appendix L.2 is not Riparian, Direct or High, the relevant surface water minimum flows and allocation limits are met,~~*³³⁶
- (ii) ~~(4)~~ any interference effects are “acceptable” in accordance with Appendix L.3;*
- (iii) ~~(ii)~~ the same amount of water is returned to the same ~~waterbody or~~ aquifer within 250 metres of the point at which it was taken;*
- (iv) ~~(iii)~~ there is no significant delay between the taking and returning of the water.*
- (c) *The take and use of groundwater for hydraulic testing and bore development purposes and any associated discharge of groundwater into water or onto or into land is a permitted activity provided the following conditions are met:*
- (i) Environment Southland ~~must be~~ is notified at least three days prior to test commencement;*
 - (ii) the rate of take ~~must~~ does not exceed 75 litres per second;*
 - (iii) the duration of pumping does not exceed five consecutive days;*
 - (iv) any discharge of water to water is consistent with the water quality requirements of section 70 of the RMA;*
 - (v) water discharged onto land must not contribute to flooding on any other landholding;*
 - (vi) records of all pumping and recovery tests including the rate and duration of pumping, water levels in the pumped well and any water level observation wells and the time measurements are taken are provided to Environment Southland within one month of the completion of the test.*

³³² 247.14 Environment Southland

³³³ 752.147 Fish and Game

³³⁴ 464.13 Landpro

³³⁵ 247.17 Environment Southland

³³⁶ 247.17 Environment Southland

- (d) Other than ~~as that~~ provided for by Rule 54(a), 54(b) and 54(c)³³⁷, the take and use of³³⁸ groundwater ~~takes~~³³⁹ from groundwater management zones listed in Appendix L.5³⁴⁰ is a discretionary activity provided the following conditions are met:
- (i) the total volume of authorised groundwater ~~abstraction allocation~~ is within the primary or secondary allocation limits established in Appendix L.5; and
 - (ii) if the degree of hydraulic connection, calculated in accordance with Appendix L.2 Table L.2, is ~~not Riparian, Direct or High or Moderate~~ the relevant surface water minimum flows and allocation limits ~~specified in Table L.2 are complied with~~ ~~are met~~; ~~and~~³⁴¹
 - (iii) any interference effects are 'acceptable' in accordance with Appendix L.3; ~~and~~³⁴²
 - (iv) if the total ~~groundwater~~ volume of authorised groundwater ~~abstraction allocation~~³⁴³ is within the secondary allocation limit, then minimum groundwater level cut-offs and seasonal recovery triggers are established in accordance with criteria outlined in Appendix L.6.
- (e) Other than that provided by Rule 54(a), 54(b) and 54(c)³⁴⁴, the take and use of groundwater from a confined aquifer is a discretionary activity provided the following conditions are met:
- (i) the total ~~groundwater~~ volume of authorised groundwater ~~abstraction allocation~~³⁴⁵ is within the primary allocation limits (including minimum water level cut-offs and seasonal recovery triggers) established in Appendix L.5 or following the methodology outlined in Appendix L.6; ~~and~~³⁴⁶
 - (ii) any interference effects are 'acceptable' in accordance with Appendix L.3.
- (f) Other than that provided by Rule 54(a), 54(b) and 54(c)³⁴⁷, the take and use of groundwater outside ~~the~~ groundwater management zones listed in Appendix L.5 is a discretionary activity provided the following conditions ~~are~~ ~~is~~³⁴⁸ met:
- (i) the total volume of authorised groundwater abstraction is within the primary allocation limit established following the methodology outlined in Appendix L.7³⁴⁹; and
 - (ii) any interference effects are 'acceptable' in accordance with Appendix L.3;
- (g) The take and use of groundwater that does not comply with Rules 54(b) to 54(f) is a non-complying activity.

Rule 54 – Dewatering groundwater for excavation, construction or maintenance

4.313 A small number of submissions were lodged, including a submission from Z, BP and Mobil ("The Oil Companies") requesting the inclusion of a rule allowing dewatering for the purpose of excavation or construction as a permitted activity. This submission was briefly addressed in the Section 42A Report, which suggested there was insufficient information in the submissions regarding the likely adverse effects arising from such an activity and accordingly recommended they be rejected.

4.314 The submission from The Oil Companies requested the addition of the following clause within Rule 54:

³³⁷ 457.1 L & M

³³⁸ 247.17 Environment Southland

³³⁹ 247.17 Environment Southland

³⁴⁰ 247.17 Environment Southland

³⁴¹ Clause 16(2) amendment

³⁴² Clause 16(2) amendment

³⁴³ Clause 16(2) amendment

³⁴⁴ 457.1 L & M

³⁴⁵ Clause 16(2) amendment

³⁴⁶ Clause 16(2) amendment

³⁴⁷ 457.1 L & M

³⁴⁸ Clause 16(2) amendment

³⁴⁹ 247.17 Environment Southland

- (x) The take and use of groundwater for temporary construction dewatering activities is a permitted activity provided the following conditions are met:
- (i) Environment Southland must be notified at least three days prior to dewatering commencing;
 - (ii) the rate of take does not exceed 40 litres per second;
 - (iii) the duration of pumping does not exceed 10 consecutive days;
 - (iv) the point of abstraction is not within 50 metres of an existing lawfully established groundwater take;
 - (v) records of the rate and duration of pumping are taken and are provided to Environment Southland within three months.

4.315 After further consideration of this request, including consideration of material presented in evidence, it has become apparent that a permitted activity rule could be included for dewatering activities, with some modifications from that sought by the Oil Companies. Similar provisions within the Otago Regional Council and Canterbury Regional Council (ECan) plans have also been reviewed.

4.316 Council Officers recommend incorporating a new permitted activity rule for dewatering, based on the provisions submitted by The Oil Companies, with additional conditions to avoid potential adverse effects on the environment. The suggested new rule reads as follows:

- (ca) The taking of water from groundwater for the purpose of dewatering for carrying out excavation, construction or maintenance and the associated use and discharge of that water is a permitted activity, provided the following conditions are met:
- (i) Environment Southland is notified at least three days prior to dewatering commencing; and
 - (ii) The take continues only for the time required to carry out the work, and in any event, the take does not exceed a duration of 60 days in any 12-month period; and
 - (iii) The rate of take does not exceed 40 litres per second; and
 - (iv) The taking of water does not cause subsidence of any site not owned by the person undertaking the dewatering; and
 - (v) The water is not taken from the Lumsden, Wendonside or North Range aquifers; and
 - (vi) The take or discharge is not from, into, or onto contaminated or potentially contaminated land; and
 - (vii) The take does not have a moderate, high or direct stream depletion effect on a surface waterbody, determined in accordance with Appendix L.2, unless the abstracted groundwater is being discharged to the surface waterbody to which it is hydraulically connected; and
 - (viii) An assessment of interference effects, undertaken in accordance with Appendix L.3, does not show that any community, group or private drinking-water supply bore will be prevented from taking water; and
 - (ix) At the point and time of any discharge to surface water, the rate of flow in the river or artificial watercourse is at least five times the rate of the discharge; and
 - (x) The concentration of total suspended solids in any discharge to a surface waterbody does not exceed:
 - (a) 100 g/m³ where the discharge is to any Lowland softbed, Lowland hard bed, or Hill river or to an artificial watercourse; or
 - (b) 50 g/m³ where the discharge is to any other lake, river or natural wetland; and
 - (xi) The point of discharge is not within a Drinking Water Protection Zone as set out in Appendix J; and
 - (xii) Records of the rate and duration of pumping are taken and are provided to Environment Southland within three months.³⁵⁰

³⁵⁰ 895.56 Oil Companies

Bed disturbance – Structures and maintenance

- 4.317 As is discussed above in relation to the legal submissions from KiwiRail that relate to provisions in the pSWLP that sought to manage historic heritage, based on the legal advice above, all references to this have been removed from the rules, and added into advice notes where appropriate.
- 4.318 Real Journeys submitted that the bed disturbance required to maintain the serviceability of slipways and boat ramps should be provided as a permitted activity in the pSWLP. Slipways are used intermittently to 'slip' vessels for inspections and to enable maintenance and repairs to occur. As slipways are used intermittently, gravel accumulated on the slipways must be removed prior to its use, resulting in a disturbance of the bed and gravel extraction.
- 4.319 Rule 56 of the pSWLP authorises the placement, erection, reconstruction and use of structures which facilitate access to waterbodies. The Section 42A Report recommended maintaining Rule 56 as notified and deemed inclusions sought by Real Journeys to be unnecessary. Following the hearing, Officers consider Rule 56, Rule 66 (authorising the maintenance of structures) and Rule 73 (gravel extraction) should be extended to specifically include slipways. It is the Officers' view that effects arising from the use and maintenance of existing slipways will be small scale and temporary, therefore a permitted activity status is appropriate. The placement, erection or reconstruction of new slipways will require resource consent as a discretionary activity. The following amendments to Rules 56, 66 and 73 are recommended:

Rule 56 - Boat ramps, jetties, ~~and wharves~~ and slipways³⁵¹

- (a) *The placement, erection or reconstruction of any boat ramp, jetty, ~~or wharf~~ or slipway³⁵² in, on or over the bed of any river (including intermittent, but excluding ephemeral watercourses)³⁵³, modified watercourse, or lake, and any associated bed disturbance and discharge resulting from the carrying out of the activity, is a discretionary activity.*
- (b) *The use of any boat ramp, jetty, wharf or slipway³⁵⁴ in, on or over the bed of any river (including intermittent, but excluding ephemeral watercourses)³⁵⁵, modified watercourse, or lake is a permitted activity provided the following conditions are met:*
- (i) *the structure is lawfully established;*
 - (ii) *fish passage shall not be impeded as a result of the activity;*
 - (iii) *the structure shall not cause significant erosion of, or deposition on, the surrounding bed or banks;*
 - (iv) *any build-up of debris against the structure, which may adversely affect flood risk, drainage capacity or bed or bank stability, shall be removed as soon as practicable;*
 - (v) *the structure shall be maintained in a state of good repair; and*
 - (vi) *no contaminants, shall be discharged to water as a result of use of the structure unless allowed by a relevant permitted activity rule or resource consent.*
- (c) *The use of any boat ramp, jetty, wharf or slipway³⁵⁶ in, on or over the bed of any river (including intermittent, but excluding ephemeral watercourses)³⁵⁷, modified watercourse, or lake that does not meet one or more of the conditions of Rule 56(b) is a discretionary activity.*

³⁵¹ 664.24 Real Journeys

³⁵² 664.24 Real Journeys

³⁵³ 277.63 Fonterra

³⁵⁴ 664.24 Real Journeys

³⁵⁵ 277.63 Fonterra

³⁵⁶ 664.24 Real Journeys

³⁵⁷ 277.63 Fonterra

Rule 66 - Maintenance of structures

- (a) Unless otherwise stated in this Plan, the maintenance of any structure in, on, under or over the bed of any river (including intermittent, but excluding ephemeral rivers)³⁵⁸, modified watercourse, or lake, and any associated bed disturbance, gravel extraction³⁵⁹ and discharge resulting from the carrying out of the activity, is a permitted activity provided the following conditions are met:
- (i) the structure ~~was~~ is³⁶⁰ lawfully established; and³⁶¹
 - (ii) fish passage ~~shall~~ is not ~~be~~³⁶² impeded as a result of the activity; and³⁶³
 - (iii) there ~~shall be~~ is no ~~bed~~ disturbance of ~~the~~³⁶⁴ roosting and nesting areas of the black fronted tern, black billed gull, ~~and or~~ banded and black fronted dotterel; and³⁶⁵
 - (iv) any activity in the water ~~shall be~~ is³⁶⁶ kept to a minimum to avoid, as much as practicable, discoloration ~~to~~ of the river or lake. Where any sediment release occurs, it will be only temporary; and³⁶⁷
 - (v) any bed disturbance ~~shall be kept to~~ is³⁶⁸ the minimum necessary to undertake the activity and the bed must ~~shall~~³⁶⁹ be returned as near as practicable to its original channel shape, area, depth, or gradient on completion of the activity (with the exception of revegetation or where gravel is required to be moved³⁷⁰); and³⁷¹
 - (vi) no fuel storage or machinery refuelling ~~shall~~ occurs³⁷² on any area of the bed; and³⁷³
 - (vii) no contaminants, other than sediment released from the bed, ~~shall be~~ are³⁷⁴ discharged to water during the activity unless allowed by a relevant permitted activity rule or a resource consent; and³⁷⁵
 - ~~(viii) there are no recorded historic heritage sites, at the site of the activity;~~³⁷⁶
 - (ix) before any equipment, machinery, or operating plant is moved to a new activity site it ~~shall~~ must³⁷⁷ be effectively cleaned to prevent the spread of “pests” or “unwanted organisms” as defined by the Biosecurity Act 1993; and³⁷⁸
 - (x) all equipment, machinery, operating plant and debris associated with the structure or bed disturbance activity ~~shall be~~ is³⁷⁹ removed from the site on completion of the activity; and³⁸⁰

³⁵⁸ 277.63 Fonterra

³⁵⁹ 664.28 Real Journeys

³⁶⁰ Clause 16(2) amendment

³⁶¹ Clause 16(2) amendment

³⁶² Clause 16(2) amendment

³⁶³ Clause 16(2) amendment

³⁶⁴ Clause 16(2) amendment

³⁶⁵ Clause 16(2) amendment

³⁶⁶ Clause 16(2) amendment

³⁶⁷ Clause 16(2) amendment

³⁶⁸ Clause 16(2) amendment

³⁶⁹ Clause 16(2) amendment

³⁷⁰ 664.28 Real Journeys

³⁷¹ Clause 16(2) amendment

³⁷² Clause 16(2) amendment

³⁷³ Clause 16(2) amendment

³⁷⁴ Clause 16(2) amendment

³⁷⁵ Clause 16(2) amendment

³⁷⁶ 449.33 Kiwirail

³⁷⁷ Clause 16(2) amendment

³⁷⁸ Clause 16(2) amendment

³⁷⁹ Clause 16(2) amendment

³⁸⁰ Clause 16(2) amendment

- (xi) *from the beginning of November until the end of May, there ~~shall be~~ is no disturbance of the tidal river habitat up to the spring tide level; and³⁸¹*
- (xii) *the structure ~~shall~~ does not cause significant erosion of, or deposition on, the surrounding bed or banks; and³⁸²*
- (xiii) *any build-up of debris against the structure, which may adversely affect flood risk, drainage capacity or bed or bank stability, ~~shall be~~ is³⁸³ removed as soon as practicable; and*
- (xiv) *the structure ~~shall be~~ is³⁸⁴ maintained in a state of good repair.*

Note: *In addition to the provisions of this Plan and any relevant district plan, any activity which may modify, damage or destroy pre-1900 archaeological sites is subject to the archaeological authority process under the Heritage New Zealand Pouhere Taonga Act 2014. The responsibilities regarding archaeological sites is set out in Appendix T.³⁸⁵*

- (b) *Unless otherwise stated in this Plan, the maintenance, gravel extraction³⁸⁶ and any associated bed disturbance of any structure in, on, under or over the bed of any river (including intermittent, but excluding ephemeral rivers)³⁸⁷, modified watercourse, or lake and discharge from carrying out the activity³⁸⁸ that does not meet one or more of the conditions of Rule 66(a) is a restricted discretionary activity.*

Rule 73 – Gravel extraction

- (a) *The excavation or disturbance of the bed of any river (including intermittent, but excluding ephemeral rivers)³⁸⁹, modified watercourse, ~~stream~~³⁹⁰ or lake for the purpose of extracting gravel (except where the extraction of gravel is associated with the maintenance of structures which is otherwise authorised under Rule 66)³⁹¹ is a restricted discretionary activity provided the following conditions are met:*
 - (i) *the quantity of gravel removed is less than 120 cubic metres per year; and³⁹²*
 - (ii) *there shall be no extraction from flowing water ~~or from below the Q95 level of the river~~³⁹³; and³⁹⁴*
 - (iii) *no holes or pits shall be dug and the area shall be left level and tidy on completion of the activity; and³⁹⁵*
 - (iv) *fish passage shall not be impeded as a result of the activity; and³⁹⁶*
 - (v) *there shall be no bed disturbance of the roosting and nesting areas of the black fronted tern, black billed gull, and banded and black fronted dotterel; and³⁹⁷*

³⁸¹ Clause 16(2) amendment
³⁸² Clause 16(2) amendment
³⁸³ Clause 16(2) amendment
³⁸⁴ Clause 16(2) amendment
³⁸⁵ Consequential amendment relating to 449.38 KiwiRail
³⁸⁶ 664.28 Real Journeys
³⁸⁷ 277.63 Fonterra
³⁸⁸ 562.21 Meridian
³⁸⁹ 277.63 Fonterra
³⁹⁰ Clause 16(2) amendment
³⁹¹ Consequential amendment relating to 664.28 Real Journeys
³⁹² Clause 16(2) amendment
³⁹³ 288.36 Fulton Hogan
³⁹⁴ Clause 16(2) amendment
³⁹⁵ Clause 16(2) amendment
³⁹⁶ Clause 16(2) amendment
³⁹⁷ Clause 16(2) amendment

- (vi) any activity in the water shall be kept to a minimum to avoid, as much as practicable, discoloration to the river or lake. Where any sediment release occurs, it will be only temporary; and³⁹⁸
- (vii) any bed disturbance shall be kept to the minimum necessary to undertake the activity and shall be returned as near as practicable to its original channel shape, area, depth, or gradient on completion of the activity (with the exception of revegetation); and³⁹⁹
- (viii) no fuel storage or machinery refuelling shall occur on any area of the bed; and⁴⁰⁰
- (ix) no contaminants, other than sediment released from the bed, shall be discharged to water during the activity unless allowed by a relevant permitted activity rule or a resource consent; and⁴⁰¹
- ~~(x) there are no recorded historic heritage sites, at the site of the activity~~⁴⁰²
- (xi) before any equipment, machinery, or operating plant is moved to a new activity site it shall be effectively cleaned to prevent the spread of “pests” or “unwanted organisms” as defined by the Biosecurity Act 1993; and⁴⁰³
- (xii) all equipment, machinery, operating plant and debris associated with the bed disturbance activity shall be removed from the site on completion of the activity; and
- (xiii) from the beginning of November until the end of May, there shall be no disturbance of the tidal river habitat up to the spring tide level.

Environment Southland will restrict its discretion to the following matters:

1. the quantity and location of the extraction; and⁴⁰⁴
2. any effects on infrastructure⁴⁰⁵, river morphology and dynamics (including erosion or deposition), aquatic and riverine ecosystems and habitat, taonga species, natural character and amenity values, navigation hazard, public access, recreation values⁴⁰⁶, historic heritage and the spiritual and cultural values and beliefs of the tangata whenua.

Emergency fire-fighting and emergency response training activities

4.320 The New Zealand Fire Service (NZFS) submitted that provisions should be included in the pSWLP allowing the take, use and discharge of water and contaminants for the purpose of fire-fighting and emergency response training activities, as permitted activities.

Water permits

4.321 The NZFS sought amendments to policies and rules relevant to the take of water for the purposes of emergency or training purposes. On 1 July 2017, the RMA was amended to include Section 14(3)(e) which authorises the take of water for emergency or training purposes in accordance with Section 48 of the Fire and Emergency New Zealand Act 2017. Based on this RMA amendment, Officers do not consider any further changes with regards to water permits as sought by NZFS need to be made.

Discharge permits

4.322 The NZFS seek that a new permitted activity rule is included to authorise the discharge of contaminants to surface water associated with emergency fire-fighting and emergency response

³⁹⁸ Clause 16(2) amendment

³⁹⁹ Clause 16(2) amendment

⁴⁰⁰ Clause 16(2) amendment

⁴⁰¹ Clause 16(2) amendment

⁴⁰² 449.37 Kiwirail

⁴⁰³ Clause 16(2) amendment

⁴⁰⁴ Clause 16(2) amendment

⁴⁰⁵ 614.34 NZTA

⁴⁰⁶ 752.166 Fish and Game

training activities. The Section 42A Report stated that Section 330 of the RMA provides an exemption to Sections 9, 12, 13, 14 and 15 of the RMA for emergency works, therefore an additional permitted activity rule to authorise the discharge of contaminants is not required. After reflecting on the NZFS evidence, Officers agree that discharges arising from emergency works are not covered by the RMA or another rule of the pSWLP.

- 4.323 Officers agree that the inclusion of a new permitted activity rule authorising the discharge of water and contaminants to surface water or to land as a result of emergency fire-fighting and emergency response training activities is appropriate. The following wording is recommended:

Rule 18A – Discharges from emergency fire-fighting

(a) The discharge of water and contaminants associated with emergency fire-fighting activities into or onto surface water or onto or into land in circumstances where a contaminant may enter water, is a permitted activity.⁴⁰⁷

Rule 18B – Discharges from emergency response training activities

(a) The discharge of water and contaminants associated with emergency response training activities undertaken by Fire and Emergency New Zealand, the Department of Conservation, New Zealand Defence Force or a local authority into or onto surface water or onto or into land in circumstances where the contaminant may enter water, is a permitted activity provided the following conditions are met:

- (i) The discharge does not give rise to any of the following effects in a surface water body:
- (1) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or
 - (2) any conspicuous change in visual clarity; or
 - (3) the rendering of freshwater unsuitable for consumption by farm animals; or
 - (4) any significant adverse effects on aquatic life; and
- (ii) The discharge must not occur to a surface water body for more than two continuous hours within a 24 hour period; and
- (iii) The discharge of firefighting foam or powder (whether mixed with water or not) must not occur directly to a surface water body.⁴⁰⁸

Sediment Traps

- 4.324 It was raised by some submitters that provisions drafted in the current version of the pSWLP would require resource consents to be sought for mitigation measures which result in environmental benefit. The need for resource consents to authorise such activities is a deterrent to implementation of GMPs. During the hearing, an example which was regularly mentioned was sediment traps, essentially ponds excavated into the bed of surface water bodies to slow the flow of water for the purpose of trapping sediment which would usually progress downstream.
- 4.325 Rule 59 of the pSWLP enables the construction of sediment traps. However, the size limit is very small and does not specifically provide for their ongoing maintenance, which is considered a key step in maintaining functionality and effectiveness. The treatment of sediment traps is also complicated by the rule also addressing culverts. Further, Rule 74 authorising the use of land for the modification and maintenance of a wetland, has the potential to limit the maintenance of sediment traps if wetland characteristics are present.
- 4.326 Overall, Officers agree that sediment traps, when suitably located, constructed and maintained, are very useful tools, particularly in drainage networks and as a means of managing runoff to surface

⁴⁰⁷ 612.7 NZFS

⁴⁰⁸ 612.7 NZFS

water from critical source areas. A new rule addressing the construction, excavation, modification and maintenance of sediment traps is suggested to provide the clarity and certainty sought by submitters. Officers consider there should be limits on the location and environmental effects of sediment traps, beyond which a resource consent would be required to allow a case-by-case assessment to be undertaken.

4.327 There appears to be a minor error in Rule 59, which refers to the crest of the “culvert” in (a)(viii). This is clearly an error, as a culvert does not have a “crest”. The rule is intended to read from the “crest of the fill to the natural bed at the downstream invert of the structure”.

4.328 Suggested new Rule 59A is set out below, along with suggested changes to Rule 59:

Rule 59 – Culverts and Sediment Traps

(a) *The placement, erection or reconstruction of any culvert, including any associated inlet or outlet protection structure, ~~or sediment trap~~ in, on, under or over the bed of any river (including intermittent, but excluding ephemeral river)⁴⁰⁹, modified watercourse, or lake, and any associated bed disturbance and discharge resulting from the carrying out of the activity, is a permitted activity provided the following conditions are met:*

- (i) the maximum diameter of any culvert ~~is shall be~~ 1,200 millimetres; and⁴¹⁰*
- (ii) any culvert is a single structure (i.e. it is not placed in combination with other culverts across the width of the river); and*
- (iii) any culvert ~~is shall be~~ positioned so that its alignment is the same as the river; and*
- (iv) any culvert ~~is shall be~~ designed to pass flood flows (either through, around or over the culvert) and ~~does shall~~ not increase the risk of flooding to neighbouring properties; and*
- (v) the invert (or bottom) of any culvert ~~is shall be~~ installed to a depth of either 300 millimetres below the natural bed level or one-third of the diameter of the culvert, whichever is the lesser; and*
- (vi) any culvert ~~is shall be~~ purpose built for the passage of water (i.e. it shall not be a drum, container or other item not designed as a culvert); and*
- ~~(vii) any sediment trap is less than or equal to 2.5 square metres in surface area;~~*
- (viii) fill over any culvert ~~is shall~~ not be greater than 4 metres (the vertical distance measured from the crest of the culvert fill to the natural bed at the downstream invert of the structure)⁴¹¹; and*
- (ix) any structure is not within any mātaimai, nohoanga, or taiāpure⁴¹²; and*
- (x) fish passage ~~is shall~~ not be impeded as a result of the activity; and*
- (xi) there ~~is shall be~~ no bed disturbance of the roosting and nesting areas of the black fronted tern, black billed gull, and banded and black fronted dotterel; and*
- (xii) any activity in the water ~~is shall be~~ kept to a minimum to avoid, as much as practicable, discoloration to the river or lake. Where any sediment release occurs, it will be only temporary; and*
- (xiii) any bed disturbance ~~is shall be~~ kept to the minimum necessary to undertake the activity, and ~~is shall be~~ returned as near as practicable to its original channel shape, area, depth, or gradient on completion of the activity (with the exception of revegetation); and*
- (xiv) no fuel storage or machinery refuelling ~~shall~~ occurs on any area of the bed; and*
- (xv) no contaminants, other than sediment released from the bed, ~~is shall be~~ discharged to water during the activity unless allowed by a relevant permitted activity rule or resource consent; and*
- ~~(xvi) there are no recorded historic heritage sites, at the site of the activity;~~⁴¹³*

⁴⁰⁹ 277.63 Fonterra

⁴¹⁰ Clause 16(2) amendment

⁴¹¹ 523.9 G McGregor

⁴¹² Mātaimai and taiāpure defined in the introduction at page 11

⁴¹³ 449.28 KiwiRail

- (xvii) ~~before any equipment, or machinery, or operating plant~~ is moved to a new activity site it ~~is shall be~~ effectively cleaned to prevent the spread of “pests” or “unwanted organisms” as defined by the Biosecurity Act 1993; and
- (xviii) ~~all equipment, or machinery, operating plant~~ and debris associated with the structure or bed disturbance activity ~~is shall be~~ removed from the site on completion of the activity; and
- (xix) ~~from the beginning of November until the end of May, there is shall be~~ no disturbance of the tidal river habitat up to the spring tide level; and
- (xx) the structure does shall not cause significant erosion of, or deposition on, the surrounding bed or banks; and
- (xxi) any build-up of debris against the structure, which may adversely affect flood risk, drainage capacity or bed or bank stability, ~~is shall be~~ removed as soon as practicable; and
- (xxii) the structure ~~is shall be~~ maintained in a state of good repair.

Note: In addition to the provisions of this Plan and any relevant district plan, any activity which may modify, damage or destroy pre-1900 archaeological sites is subject to the archaeological authority process under the Heritage New Zealand Pouhere Taonga Act 2014. The responsibilities regarding archaeological sites is set out in Appendix T.⁴¹⁴

- (b) The placement, erection or reconstruction ~~and any associated bed disturbance~~⁴¹⁵ of any culvert, including any associated inlet or outlet protection structure, ~~or sediment trap~~, in, on, under or over the bed of any river (including intermittent, but excluding ephemeral rivers)⁴¹⁶, modified watercourse, or lake, and any associated bed disturbance and discharge resulting from the carrying out of the activity,⁴¹⁷ that cannot meet one or more of the conditions of Rule 59(a) is a controlled activity.

Environment Southland will exercise control over the following matters:

1. the design and location⁴¹⁸ of the culvert;
 2. any effects on flood risk, river morphology and dynamics (including erosion and deposition), aquatic and riverine ecosystems and habitat (including fish passage), taong species, the spiritual and cultural values and beliefs of the tangata whenua, and historic heritage, landscape, natural character and amenity values, navigational safety, and public access.⁴¹⁹
 3. any conditions in Rule 59(a) that cannot be met.
- (c) The use of any culvert including any associated inlet or outlet protection structure ~~or sediment trap~~ in, on or over the bed of any river (including intermittent, but excluding ephemeral rivers)⁴²⁰, modified watercourse, or lake is a permitted activity provided the following conditions are met:
 - (i) the structure shall not cause significant erosion of, or deposition on, the surrounding bed or banks;
 - (ii) any build-up of debris against the structure, which may adversely affect flood risk, drainage capacity or bed or bank stability, shall be removed as soon as practicable;
 - (iii) the structure shall be maintained in a state of good repair; and

⁴¹⁴ Consequential amendment relating to 449.28 KiwiRail

⁴¹⁵ 101.11 T Buckingham; A & K Marshall; 646.9 Progress Valley Farms; and others

⁴¹⁶ 277.63 Fonterra

⁴¹⁷ 562.18 Meridian

⁴¹⁸ 752.153 Fish and Game

⁴¹⁹ 752.153 Fish and Game

⁴²⁰ 277.63 Fonterra

- (iv) *no contaminants, shall be discharged to water as a result of use of the structure unless allowed by a relevant permitted activity rule or resource consent.*
- (d) *The use of any culvert including any associated inlet or outlet protection structure ~~or sediment trap~~ in, on or over the bed of any river (including intermittent, but excluding ephemeral rivers)⁴²¹, modified watercourse, or lake that does not meet one or more of the conditions of Rule 59(c) is a discretionary activity.*

New Rule 59A – Sediment Traps

- (a) *The construction, excavation, modification or maintenance of a sediment trap in, on, under or over the bed of any river (including intermittent, but excluding ephemeral watercourses) or modified watercourse and any associated bed disturbance, removal of aquatic weeds and plants and associated discharge resulting from carrying out the activity, is a permitted activity provided the following conditions are met:*
- (i) *the construction, excavation, modification or maintenance of the sediment trap is undertaken solely for sediment control purposes, or maintaining the capacity and effective functioning of the sediment trap; and*
- (ii) *the sediment trap is not within any mātaimai, nohoanga, or taiāpure; and*
- (iii) *there is no disturbance of:*
- (1) *the roosting, and nesting areas of the black fronted tern, black billed gull, and banded and black fronted dotterel; and*
- (2) *the tidal river habitat up to the spring tide level between 1 November and 31 May (inclusive); and*
- (3) *trout spawning habitat during the trout spawning season between 1 June and 31 October (inclusive); and*
- (iv) *the sediment trap has:*
- (1) *a maximum surface area (of water) of 20 square metres; and*
- (2) *rock armouring at the upstream end of the sediment trap, to prevent scouring; and*
- (3) *fencing to prevent stock access; and*
- (4) *battered banks with a slope of not less than 1 vertical: 3 horizontal; and*
- (v) *the construction, excavation, modification or maintenance of the sediment trap does not result in the destabilisation of any lawfully established structure; and*
- (vi) *no contaminants, other than sediment released from the bed, or rock armouring required to prevent erosion, is discharged to water during the activity unless allowed by a relevant permitted activity rule or discharge permit; and*
- (vii) *fish passage is not impeded as a result of the construction, excavation, modification or maintenance of the sediment trap; and*
- (viii) *the sediment trap does not cause erosion of, or deposition on, the surrounding bed or banks; and*
- (ix) *any build-up of sediment within the sediment trap, which may adversely affect flood risk, drainage capacity, or bed or bank stability is removed as soon as practicable; and*
- (x) *no fuel storage or machinery refuelling occurs on any area of the bed; and*
- (xi) *before any equipment, machinery, or operating plant is moved to a new activity site it shall be effectively cleaned to prevent the spread of “pests” or “unwanted organisms” as defined by the Biosecurity Act 1993; and*
- (xii) *all equipment, machinery, sediment and debris associated with the sediment trap shall be removed from the site on completion of the activity; and*
- (xiii) *where the modified watercourse is spring-fed removal of aquatic weeds and plants shall be only to the extent that is necessary to undertake the activity and shall be kept to an absolute minimum.*

⁴²¹ 277.63 Fonterra

(b) The construction, excavation, modification or maintenance of a sediment trap in, on, under or over the bed of any river (including intermittent, but excluding ephemeral watercourses), modified watercourse or lake and any associated bed disturbance, removal of aquatic weeds and plants, and associated discharge resulting from carrying out the activity that does not met one or more of the conditions of Rule 74A is a discretionary activity.⁴²²

Rule 60 – Dams and weirs

4.329 Rule 60 regulates dams and weirs.

4.330 Commissioner Rodway raised concerns that there is a contradiction between Rules 60(c) and (d), as recommended in the Section 42A report, which results in an area of the Oreti River downstream from the ‘forks’ and upstream of ‘Rocky Point’ being stated as both a non-complying and a prohibited activity. The Maitara WCO prohibits damming of the portion of the main stem “at Rocky Point at NZMS 260 E44373946 upstream to the forks at E42 345 450”.

4.331 It is recommended that Rule 60(d) is amended to make it clear that the activity status for the placement or erection of dams or weirs in the Oreti River mainstem is a non-complying activity downstream of Rocky Point, and prohibited upstream, between Rocky Point and the forks.

4.332 Officers have also reviewed the order of the phrasing used in Rule 60(a) and (b) and recommend that Rule 60(b) be amended so that the order of phrasing used is consistent with Rule 60(a).

Inconsistency with the Water Conservation (Maitara River) Order⁴²³

4.333 Rule 60 provides that the placement, erection or reconstruction of any dam or weir is a permitted activity provided that (among other things) the dam or weir is not in the Maitara or Waikaita River, including the tributaries, or in the Ōreti River.

4.334 Fish and Game opposed Rule 60, on the basis that it was inconsistent with the Water Conservation (Maitara River) Order 1997, in particular clause 6 which provides:

- 6 *Water permit to dam not to be granted, etc*
- (1) *A permit to dam the Maitara River from its source to the sea and the Waikaita River from its source to its confluence with the Maitara River must not be granted under Part 6 of the Act.*
 - (2) *A permit to dam any tributary of the Waikaita River or the Maitara River which forms part of the protected waters must not be granted under Part 6 of the Act if the dam would harm salmonid fish-spawning or prevent the passage of salmonid fish.*
 - (3) *The prohibition in subclause (1) does not apply to water permits in respect of the weir at approximate map reference NZMS 260 F46:912385 if the water permits are granted or renewed subject to similar terms and conditions to which the former permits were subject.*

4.335 Section 67(4)(a) of the RMA provides that a regional plan must not be inconsistent with a Water Conservation Order.

4.336 In legal submissions, Fish & Game submitted that because the Maitara River Water Conservation Order does not require a ban on the placement or erection of dams or weirs on the tributaries of the

⁴²² 737.29 Smithhill Ltd; 114.9 Callahan, P

⁴²³ This section prepared by counsel.

Waikaia River or the Mataura River, prohibited activity status for such activities in the pSWLP would be inconsistent with the Water Conservation Order.

- 4.337 Fish and Game are seeking amendments to the rules so that dams and weirs in the tributaries of the Mataura and Waikaia Rivers are permitted activities on the condition that it does not harm spawning or impede the passage of salmonid fish.
- 4.338 Officers are now recommending that dams and weirs in the tributaries of the Mataura and Waikaia Rivers are discretionary activities under Rule 60(b) of the pSWLP, where such dams or weirs do not meet the permitted activity standards under Rule 60(a).
- 4.339 The term "inconsistent" was considered in *Re Canterbury Cricket Association Incorporated*.⁴²⁴ There, the Court held that the meaning of the phrase "inconsistent with the Recovery Plan" in section 23(1) of the Canterbury Earthquake Recovery Act 2011 was to be ascertained from the text and in light of its purpose.⁴²⁵ The Court approached the determination of whether there was an inconsistency as follows:⁴²⁶
- (a) first, ascertain whether there is a conflict;
 - (b) if there is conflict, to identify the nature of the conflict; and
 - (c) if possible, interpret the conflicting provisions in a way that gives effect to the respective purposes.
- 4.340 It is submitted that whether a regional plan is inconsistent with a water conservation order is a question of scale and degree and is to be judged in the particular circumstances of the case.
- 4.341 The Mataura River Water Conservation Order provides restrictions on the granting of resource consents to dam any tributary of the Waikaia River or the Mataura River. A rule that requires a resource consent to be obtained for damming of these tributaries does not conflict with these restrictions.
- 4.342 Accordingly, it is submitted that the recommended discretionary activity rule in respect of the damming of any tributary of the Waikaia River or the Mataura River is not inconsistent with the Mataura River Water Conservation Order. When considering any application for resource consent, the consent authority will also need to ensure that no resource consent is granted in contravention of clause 6 of the Mataura River Water Conservation Order.
- 4.343 Fish and Game is also concerned that the Officers recommended discretionary activity rule would require even small dams to obtain consent and noted that under Rule 29(a) of the Operative Plan, a "small" dam can be constructed as a permitted activity on the tributaries of the Mataura or Waikaia River provided that, among other things, it "shall not harm spawning or prevent passage of salmonid fish".
- 4.344 On reflection, Officers are comfortable that it is appropriate to permit a dam or weir on the tributaries of the Mataura or Waikaia River that meets the permitted activity standards in Rule 60(a), but for the above reasons, where such standards cannot be met, the activity should be discretionary.

Dam height

- 4.345 Fish and Game made a submission against a condition of Rule 60 (Dams and Weirs), requiring a dam or weir between 2 and 4 metres in height to be certified by a Suitably Qualified and Experienced

⁴²⁴ *Re Canterbury Cricket Association Incorporated* [2013] NZEnvC 184.

⁴²⁵ *Re Canterbury Cricket Association Incorporated* [2013] NZEnvC 184 at [44].

⁴²⁶ *Re Canterbury Cricket Association Incorporated* [2013] NZEnvC 184 at [40].

Engineer. In particular, Fish and Game identified that the need to obtain engineering certification or resource consent would act as an impediment to farmers wanting to detain water, particularly as part of a sediment control solution. The Building Act 2004 requires all large dams (defined as 4 metres or greater in height and capacity to impound 20,000 cubic metres or greater of water or other fluid) to obtain a building consent. It is the Officers' view that such a change would likely increase the likelihood of these small dams and sediment traps being installed. However, Council's engineers are concerned that a 4 metre high dam, constructed without appropriate expertise, could be unsafe. Officers acknowledge the likely benefits in terms of sediment control, but in light of the engineering concerns, recommend a precautionary approach of not reducing the supervision requirements.

4.346 The recommended changes to Rule 60 are set out below:

Rule 60 - Dams and weirs

Note 1: The Building Act 2004 specifies obligations on the owner of a dam as defined in the Act regarding classification, certification and other matters of safety. Plan users should contact Environment Southland to inquire as to the need to meet these requirements in each case.

Note 2: These rules manage dam and weir structures. Any associated take, diversion, use or discharge of water requires consent under other rules.

*Note 3: This rule does not apply to weirs constructed for erosion control purposes under Rule 61.*⁴²⁷

- (a) *The ~~use~~,⁴²⁸ placement, erection or reconstruction of any dam or weir, in, on or over the bed of any lake, river (including intermittent, but excluding ephemeral watercourses)⁴²⁹, modified watercourse and the associated damming of water (either inside or outside the bed of a river or lake), and any associated bed disturbance and discharge resulting from the carrying out of the activity, is a permitted activity provided the following conditions are met:*
- (i) if the maximum height of the dam or weir is ~~4 metres~~ 2 metres⁴³⁰ or less in height (the vertical distance measured from the crest of the dam to the natural⁴³¹ bed) and the impoundment volume is ~~shall be~~ less than 20,000 cubic metres of water or other fluid; and*
 - (ii) if the maximum height of the dam is between 2 to 4 metres (the vertical distance measured from the crest of the dam to the natural bed), and⁴³² the impoundment volume is less than 20,000 cubic metres⁴³³ the design and construction of the dam or weir is certified by a suitably qualified and experienced engineer; and*
 - (iii) the dam or weir shall not be located upstream of any railway, formed public road, or residence, where these are likely to be affected by any failure of the structure;*
 - (iv) the dam or weir shall have a spillway, or an auxiliary spillway that is capable of conveying flood flows;*
 - (v) the dam or weir shall neither impound water nor adversely affect drainage beyond the landholding on which it is constructed, unless agreed to in writing by any affected landowner;*
 - (vi) the discharge from the dam or weir shall be to the original channel, and shall not cause significant erosion of, or deposition on, the downstream bed or banks;*

⁴²⁷ 614.24 NZTA

⁴²⁸ 247.18 Environment Southland

⁴²⁹ 277.63 Fonterra

⁴³⁰ 560.12 T & J McRae

⁴³¹ Consequential amendment to 523.9 G McGregor and to align with the Building Act 2004

⁴³² 414.11 INZ

⁴³³ 759.23 Springlands Group (subsequent amendment due to height changes required for certification)

- (vii) the dam or weir is not in the Mataura, Ōreti or Waikaia River;
- (viii) For the purposes of Rule 60(a)(i)(1) the height of a dam or weir is the vertical distance from the crest of the dam or weir and must be measured:
- (1) in the case of a dam or weir across a stream, from the natural bed of the stream at the lowest downstream outside limit of the dam or weir; and
 - (2) in the case of a dam or weir not across a stream, from the lowest elevation at the outside limit of the dam or weir; and
 - (3) in the case of a canal, from the invert of the canal;
- (ix) the structure is not within any mātaimai, nohoanga⁴³⁴, or taiāpure⁴³⁵;
- (x) fish passage shall not be impeded as a result of the activity;
- (xi) there shall be no bed disturbance of the roosting and nesting areas of the black fronted tern, black billed gull, and banded and black fronted dotterel;
- (xii) any activity in the water shall be kept to a minimum to avoid, as much as practicable, discoloration to the river or lake. Where any sediment release occurs, it will be only temporary;
- (xiii) any bed disturbance shall be kept to the minimum necessary to undertake the activity, and shall be returned as near as practicable to its original channel shape, area, depth, or gradient on completion of the activity (with the exception of revegetation);
- (xiv) no fuel storage or machinery refuelling shall occur on any area of the bed;
- (xv) no contaminants, other than sediment released from the bed, shall be discharged to water during the activity unless allowed by a relevant permitted activity rule or resource consent;
- ~~(xvii) there are no recorded historic heritage sites, at the site of the activity⁴³⁶;~~
- (xvi) before any equipment, machinery, or operating plant is moved to a new activity site it shall be effectively cleaned to prevent the spread of “pests” or “unwanted organisms” as defined by the Biosecurity Act 1993;
- (xvii) all equipment, machinery, operating plant and debris associated with the structure or bed disturbance activity shall be removed from the site on completion of the activity;
- (xviii) from the beginning of November until the end of May, there shall be no disturbance of the tidal river habitat up to the spring tide level;
- (xix) the structure shall not cause significant erosion of, or deposition on, the surrounding bed or banks;
- (xx) any build-up of debris against the structure, which may adversely affect flood risk, drainage capacity or bed or bank stability, shall be removed as soon as practicable; and
- (xxi) the structure shall be maintained in a state of good repair.
- (aa) The use of any dam or weir is a permitted activity provided the following conditions are met:
- (i) the structure was lawfully established;
 - (ii) the structure does not cause significant erosion of, or deposition on, the surrounding bed or banks;
 - (iii) any build-up of debris against the structure, which may adversely affect flood risk, drainage capacity or bed or bank stability, is removed as soon as practicable;
 - (iv) the structure is maintained in a state of good repair; and
 - (v) no contaminants, other than sediment released from the bed, are discharged to water during the activity unless allowed by a relevant permitted activity rule.⁴³⁷
- Note: In addition to the provisions of this Plan and any relevant district plan, any activity which may modify, damage or destroy pre-1900 archaeological sites is subject to the archaeological authority process under the Heritage New Zealand Pouhere Taonga

⁴³⁴ Temporary campsite (stopover), for seasonal gathering of food/kai and natural resources

⁴³⁵ Mātaimai and taiāpure defined in the introduction at page 11

⁴³⁶ Consequential amendment relating to 449.28 KiwiRail

⁴³⁷ 247.19 Environment Southland

Act 2014. The responsibilities regarding archaeological sites is set out in Appendix T.⁴³⁸

- (b) The use, placement, erection or reconstruction ~~and any associated bed disturbance~~ of any dam or weir, in, on or over the bed of any lake, river (including intermittent, but excluding ephemeral watercourses), modified watercourse and the associated damming of water (either inside or outside the bed of a river or lake), and any associated bed disturbance and discharge resulting from the carrying out of the activity,⁴³⁹ that does not meet one or more of the conditions of Rule 60(a) and is not a non-complying activity under Rule 60(c) or a prohibited activity under Rule 60(d), is a discretionary activity.
- (c) The placement, erection or use of any dam or weir ~~damming of water~~⁴⁴⁰ on the main stems of the Aparima River, downstream of the Aparima Forks at NZ Topo 50 CE09 051 299, and the Ōreti River, downstream of Rocky Point ~~the forks~~ at NZ Topo 50 CE09:274-327~~CC09 245 832~~⁴⁴¹, is a non-complying activity.
- (d) The placement or erection of dams or weirs in the Maitai or Waikato River, including the tributaries⁴⁴² and in the Oreti River main stem at Rocky Point ~~at~~ from NZMS 260 E44373946⁴⁴³ ~~upstream at~~ to⁴⁴⁴ the forks at E42345 450⁴⁴⁵~~446~~ is a prohibited activity.

New Rule – Maimai

- 4.347 Fish and Game sought the inclusion of a new rule authorising the construction and use of maimai in the bed of surface water bodies as a permitted activity. Maimai are semi-permanent structures finished in vegetative material located on the bed or banks of surface waterbodies used for gamebird hunting.
- 4.348 The Section 42A Report raised concerns regarding the validity and certainty of the permitted activity conditions proposed in the original submission made by Fish and Game and recommended the permitted activity rule not be adopted as the existing rule framework managed such structures. On reflection, Officers agree that maimai provide considerable recreational importance for users, therefore a permitted activity rule allowing the use of such structures is appropriate.
- 4.349 Fish and Game provided revised wording of the proposed rule at the hearing and Officers agree with many of these, using them as a basis for the drafting of the recommended new rule. The Regional Coastal Plan for Southland includes rules authorising the erection, extension, maintenance and repair of new and existing maimai. Officers have reviewed these rules to ensure there is consistency between provisions. Rules relating to the erection, extension, maintenance and repair of maimai in the Hawkes Bay and Waikato Regional Plans have also been used as guidance in drafting the new rule.
- 4.350 The recommended wording for the new Rule 65A is set out below:

Rule 65A – Maimai

⁴³⁸ Consequential amendment relating to 449.28 KiwiRail

⁴³⁹ Clause 16(2) amendment to make consistent with (a).

⁴⁴⁰ Clause 16(2) amendment to make consistent with (a).

⁴⁴¹ Consequential amendment relating to 752.154 Fish and Game

⁴⁴² 47.23 Balfour, Wendonside & Waikato Group

⁴⁴³ NZ Topo50 CE09:274-327; NZTM2000 1227364 mE, 4932686 mN

⁴⁴⁴ Cl 16, Schedule 1 RMA

⁴⁴⁵ 752.154 Fish and Game

⁴⁴⁶ NZ Topo50 CC09:245-832; NZTM2000 1224494 mE, 4983155 mN

- (a) The erection, placement, use, maintenance or alteration of any maimai in, on, or over the bed of any river (including intermittent, but excluding ephemeral watercourses), modified watercourse, or lake is a permitted activity provided the following conditions are met:
- (i) the maimai does not exceed 10 square metres in area;
 - (ii) there is no disturbance of the tidal river habitat up to the spring tide level between 1 November and 31 May (inclusive);
 - (iii) there is no disturbance of the roosting and nesting areas of the black fronted tern, black billed gull, and banded and black fronted dotterel;
 - (iv) the erection or placement does not impede any legal access to the river, modified watercourse or lake;
 - (v) the maimai is on piles;
 - (vi) the maimai is secure against fluvial and coastal processes;
 - (vii) fish passage is not impeded as a result of the erection, placement or use of the maimai;
 - (viii) no contaminants are discharged to water unless allowed by a relevant permitted activity rule or resource consent;
 - (ix) the maimai does not cause erosion of, or deposition on, the surrounding bed or banks;
 - (xii) any build-up of debris against the maimai, which may adversely affect flood risk, drainage capacity or bed or bank stability, is removed as soon as practicable; and
 - (xiii) the maimai is maintained in a structurally sound condition at all times.
- (b) The erection, placement, use, maintenance or alteration of any maimai in, on, or over the bed of any river (including intermittent, but excluding ephemeral watercourses), modified watercourse or lake that does not meet one or more of the conditions of Rule 65A(a) is a restricted discretionary activity.
- Environment Southland will restrict its discretion to the following matters:
- (1) Any effects on flood risk, river morphology and dynamics (including erosion and deposition), aquatic and riverine ecosystems and habitats (including fish passage), the spiritual and cultural values and beliefs of the tangata whenua, taonga species, historic heritage, landscape, natural character and amenity values, navigation hazard, and public access and recreation values.
 - (2) The actual and potential environmental effects of not meeting the condition or conditions of Rule 65A(a).⁴⁴⁷

Rule 70 – Stock exclusion

- 4.351 Livestock entering waterways can cause significant damage to water quality through direct contamination and have negative effects on local waterway habitats. It is widely considered that exclusion of cattle, pigs and deer from waterways is a standard good management practice. The majority of dairy farms already exclude stock from permanently flowing waterways over a certain size, with the aim of excluding 100 percent of dairy cattle from permanently flowing waterways⁴⁴⁸.
- 4.352 A stock exclusion rule was included in the notified pSWLP which received reasonable opposition from the rural sector, particularly those with extensive landholdings⁴⁴⁹.
- 4.353 Following the submission period, the Government prepared a draft set of stock exclusion regulations and sought comment. It was expected that those regulations would be finalised prior to the close of the hearing. The Section 42A Report⁴⁵⁰ noted that the Council will be required to implement these once they come into force. As they are currently drafted, the Council would not be able to have provisions any less restrictive than the regulations.

⁴⁴⁷ 752.173 Fish and Game

⁴⁴⁸ Sustainable Dairying: Water Accord

⁴⁴⁹ For example, Glenlapa Station.

⁴⁵⁰ Para 10.281, page 549 s42A report

4.354 In the Section 42A Report, Rule 70 was recommended to be amended to reflect the provisions set out in the proposed regulations.

Differences between pSWLP and regulations

4.355 The Clean Water report presented by the Ministry for the Environment sets out proposed requirements and deadlines for compliance with a national stock exclusion regulation in Table 1, on page 29, as set out below:

Table 1:⁴⁵¹

Farm/stock type	Plains (0-3°)	Undulating/rolling land (>3-15°)	Steeper land (>15° and over)
Dairy cattle (on milking platforms) and pigs	1 July 2017 for waterways over 1 metre wide on all slopes 1 July 2020 for waterways less than 1 metre wide on the plains		
Dairy support (on either land owned/leased by the dairy farmer or third party land)	1 July 2022 for all waterways on the plains regardless of size and waterways over 1 metre wide on rolling land		Only where break feeding, by 1 July 2022
Beef cattle and deer	1 July 2025 from all waterways regardless of size	1 July 2030 for waterways over 1 metre wide	
	Where break feeding by 1 July 2022		

4.356 The notified pSWLP stock exclusion rule (Rule 70) had lesser stock exclusion requirements in the Bedrock/Hill country areas due to steep landscape and the extensive nature of many farms in the area. However, timeframes, particularly for the exclusion of beef cattle, were shorter in some situations. As stated above, any rules less restrictive than the (future) regulation would be overridden by the regulation. However, the Council is able to set more stringent rules than the regulation.

4.357 As it has transpired, the final regulations have not been forthcoming from central Government, leading to a current period of uncertainty. Two issues would appear to be unresolved from the current draft:

1. Many areas on extensively farmed properties, such as high-country stations, are below the fencing threshold of 16 degrees of slope, and would require fencing. Due to the extensive nature of the farming and the dynamic nature of the rivers in these area, that is often impractical, or at least the costs would appear to outweigh the benefits.
2. Recent research⁴⁵² has shown that a significant proportion of contaminants are sourced from smaller waterways, which are below the 1 metre wide threshold in the draft regulation. This means that the draft regulation may be inadequate to achieve the desired water quality improvements.

4.358 In the absence of any stock exclusion regulations being made before the Hearing Panel makes its recommendations to the Council, there is no requirement for the Hearing Panel to consider the proposed regulations. Under section 66(1)(f) of the RMA, a regional plan must be prepared in accordance with regulations. However, there is no requirement to take into account proposed

⁴⁵¹ Clean Water: 90% of Rivers and Lakes Swimmable by 2040, 2017

⁴⁵² McDowell, R.W, Cox, N and Snelder, T.H (2017). *Assessing the Yield and Load of Contaminants with Stream Order: Would Policy Requiring Livestock to Be Fenced Out of High-Order Streams Decrease Catchment Contaminant Loads?* Journal of Environmental Quality (46), 1038-1047. <https://doi.org/10.2134/jeq2017.05.0212>

regulations (this is contrasted to the requirement to “have regard to” any proposed regional policy statements).⁴⁵³

- 4.359 At this point in time, the Hearing Panel is required to make a decision on submissions, based on the submissions and evidence before it. As set out in this Reply Report, the Officers consider that the pSWLP should contain rules with stock setbacks from waterbodies (e.g. recommended Rule 20).
- 4.360 If the stock exclusion regulations are made before the Hearing Panel makes its recommendations to the Council, the Hearing Panel will need to make its recommendations in accordance with the regulations.⁴⁵⁴ Should the regulations come out before the Hearing Panel has done so, counsel will update the Panel in relation to what is required of it, as that will ultimately depend on the provisions of the regulations, including any savings or transitional provisions.
- 4.361 For the reasons outlined in the Section 42A Report, Officers continue to recommend a rule framework largely based on the draft stock exclusion regulations. In the unlikely event that the regulations are not finalised, Officers are of the view that the recommended rule needs to be appropriate for the life of the pSWLP. Significant changes recommended to the Section 42A Report version of Rule 70 are:
1. Some smaller waterbodies, artificial water courses and wetlands are included in the stock exclusion requirements, particularly in flatter land and for more intensive farming activities.
 2. A simple stocking rate has been included in the stock exclusion requirements for land above 200 metres in altitude, so that extensively farmed properties do not require fencing.
 3. Activity status for not meeting the stock exclusion requirements is more clearly specified. This includes primarily a discretionary activity status, given the wide range of farming situations shown in evidence.
- 4.362 The possibility of including sheep within Rule 70 was considered in the Section 42A Report, and addressed (generally with opposition) by several submitters who presented evidence on the topic. After discussion with Council’s Land Sustainability officers, Officers are of the view that stock exclusion rules for sheep are unlikely to address much of the microbial contaminant issues posed by sheep. Anecdotal evidence would suggest that, unlike cattle, pigs and deer, sheep are not attracted to waterbodies, but do tend to congregate in nearby areas. On that basis, critical source area management, management of stock camp sites and stock water provision would appear to be more effective, good management, practices. Council’s Land Sustainability team is focussing efforts in the catchments with high *E.Coli* levels that have high a sheep signature. Given this, Officers do not recommend inclusion of sheep in Rule 70.
- 4.363 The recommended revision of Rule 70 is:

Rule 70 – Stock exclusion from waterbodies

(a) From 1 July 2020 the disturbance of:

(i) roosting and nesting areas of the black fronted tern, black billed gull, and banded and black fronted dotterel; and

(ii) tidal river habitat up to the spring tide level; located in the bed of a lake, river (including intermittent rivers but excluding ephemeral rivers), modified watercourse, natural wetland, estuary or lagoon by livestock including cattle, deer, pigs or sheep is a prohibited activity.

(b) From 1 July 2020, the disturbance of the bed of a sensitive waterbody listed in Appendix A by livestock including cattle, deer, pigs or sheep is a prohibited activity.

⁴⁵³ Section 66(2)(a).

⁴⁵⁴ Section 66(1)(f).

- (c) The disturbance of the bed of a river (including intermittent rivers but excluding ephemeral rivers), modified watercourse or an artificial watercourse for the purposes of moving livestock including cattle, deer, pigs or sheep is a permitted activity provided the following conditions are met:
- (i) the livestock are being supervised and are actively driven across the water body in one continuous movement; and
- (ii) from 1 July 2019, the crossing occurs less frequently than once per week.
- (d) The disturbance of the bed of a river (including intermittent rivers but excluding ephemeral rivers), modified watercourse or an artificial watercourse for the purposes of moving livestock including cattle, deer, pigs or sheep that do not comply with the conditions of Rule 70(c) is a non-complying activity.
- (e) Other than as provided for by Rules 70(c) and 70(d), the disturbance of the bed a lake, river (including intermittent rivers but excluding ephemeral rivers), modified watercourse, natural wetland, artificial watercourse (other than a stockwater dam or race), estuary or lagoon by cattle, deer or pigs is a discretionary activity in accordance with the dates and conditions set out in Table xx below:

Table xx:

Farm/stock type	Land slope (as classified by the LRI slope dataset)		
	Plains (0-3°)	Undulating/rolling land (>3-15°)	Steeper land (>15° and over)
<u>Dairy cattle (on milking platforms) and pigs</u>	<u>All water bodies that are:</u> <ul style="list-style-type: none"> • <u>over 1 metre wide by 1 July 2017 on all slopes</u> • <u>less than 1 metre wide by 1 July 2020 on the Plains and undulating/rolling land</u> 		
<u>Dairy support (on either land owned/leased by the dairy farmer or third party land)</u>	<u>All water bodies from 1 July 2022</u>	<u>All water bodies over 1 metre wide from 1 July 2022</u>	<u>All water bodies where break feeding occurs from 1 July 2022</u>
<u>Beef cattle and deer</u>	<u>All water bodies from 1 July 2025</u>	<u>All water bodies over 1 metre wide from 1 July 2030, unless the average stocking rate on the landholding is less than 6 stock units per hectare and the altitude is greater than 200 metres above sea level.</u>	
	<u>All water bodies where break feeding occurs from 1 July 2022⁴⁵⁵</u>		

Rule 74 – Wetlands

- 4.364 Officers have recommended a number of minor changes to the wording of Rule 74 that have been identified as appropriate to improve clarity and consistency of language. The changes recommended do not change the intent or effect of the rules from that which was recommended in the Section 42A report (except as identified below).
- 4.365 Scobie Family Trust and TNZ Growing Products presented evidence relating to existing peat harvesting activities at some wetland areas in Southland. The economic and biosecurity advantages of continuing to harvest peat were identified. The harvesting operations appeared to be well established and operating in defined areas. The submitters were concerned that the proposed non-

⁴⁵⁵ 62.13 Beef and Lamb; 277.55 Fonterra

complying activity status puts their existing activities at considerable risk. The submitters sought a discretionary activity status for the destruction or modification of wetlands.

- 4.366 Officers have considered this issue, and accept that moving from a currently permitted activity status, to a non-complying activity status for these existing operators is a significant change, and they are rightly concerned about their ability to continue to operate their existing activities. Officers do not consider continuing permitted activity status to be appropriate, but consider discretionary activity status, where there is clear evidence of existing commercial peat harvesting could be appropriate. This would maintain the protection of a noncomplying activity status over other wetlands.
- 4.367 The new rule recommended is:
(X) The use of land within a wetland is a discretionary activity provided the following conditions are met:
(i) the applicant can show, by way of aerial photographs, or other documentary evidence, that a commercial peat harvesting operation occurred within the wetland at some time during the period from June 2006 to June 2016; and
(ii) there is no establishment of pest plant species that:
(1) is listed in the Regional Pest Management Strategy for Southland; or
(2) may damage existing biodiversity values of the wetland; or
(3) will form the dominant vegetation type in the wetland.⁴⁵⁶
- 4.368 A list of regionally significant wetlands was included in the pSWLP as Appendix A. Submissions received on this included parties seeking that additional wetlands be included within the appendix. L & M, G & R Cockburn and M & T Willans also requested that the spatial extent of some of the identified wetlands be clarified or more accurately identified. As set out in the memorandum contained in Appendix G of this Reply Report, mapping of the wetlands identified in Appendix A was not included in the notified version of the pSWLP, nor in the Regional Water Plan from which Appendix A was taken.
- 4.369 The memo in Appendix G outlines the process and criteria used for how the requested additional wetlands were analysed to determine if they should be included. A map series was then produced to align with the identified list of wetlands (including both the wetlands notified in Appendix A, as well as those requested to be added). Following the production of the map series, which was included as part of the Section 42A report, some potential discrepancies in the extent and location of the maps were identified by Environment Southland staff. This resulted in further analysis and checks to ensure accuracy, which are outlined in the memo. In particular, the process has involved refining the spatial extent of the mapping to ensure it accurately captures the areas of regionally significant wetlands, such as revising previous straight line boundaries, to more reflective shapes.
- 4.370 The revised Appendix A and revised map series is now recommended by Officers for inclusion in the pSWLP, as it more accurately reflects the area and extent of wetlands that have been identified as being regionally significant. The map series addresses the concerns raised by L & M, G & R Cockburn and M & T Willans regarding clearer identification of particular wetland areas, and ensures that the additional areas requested for inclusion are clearly identified.

Financial Contributions⁴⁵⁷

- 4.371 At the hearing on the pSWLP, the Panel asked whether the amendments to section 108 of the RMA, by the Resource Legislation Amendment Act 2017 (RLAA), in relation to financial contributions will

⁴⁵⁶ 897.1 TNZ Growing Products

⁴⁵⁷ This section prepared by counsel

mean that any provisions in the pSWLP in relation to financial contributions will cease to be valid upon commencement of the amendment.

- 4.372 The RLAA provides that section 108(2)(a), which sets out the power to impose financial contribution conditions on resource consents, will be repealed⁴⁵⁸ on the date 5 years after the RLAA receives Royal assent, being 18 April 2022.⁴⁵⁹
- 4.373 Any plan (or proposed plan) may include financial contribution provisions until 18 April 2022.⁴⁶⁰ However, if provisions on financial contributions are contained in a plan or proposed plan, the Council would be required to change the plan (or proposed plan) prior to 18 April 2022 to remove the ability to impose financial contribution conditions.⁴⁶¹ This change does not need to be done in accordance with Schedule 1 of the RMA, the Council must simply give public notice of the change as soon as practicable after it has been made.⁴⁶²
- 4.374 Any resource consents lodged before 18 April 2022 may contain a condition requiring a financial contribution in accordance with the relevant plan/proposed plan,⁴⁶³ regardless of whether the condition is directly connected to adverse effects of the activity or an applicable rule in a plan or national environmental standard.⁴⁶⁴
- 4.375 As the pSWLP may contain provisions on financial contributions up until 18 April 2022, and the Council may impose financial contribution conditions on resource consents during that time, it is considered that the financial contribution provisions should remain within the pSWLP at this point in time (to be removed prior to 18 April 2022).

Appendices

Appendix E Water Quality Standards

- 4.376 Numerous submitters presented evidence regarding the Appendix E Water Quality Standards seeking amendments. Fish and Game and Forest and Bird sought the inclusion of additional parameters and amendments to the limits to align with the NPSFM National Objectives Framework. Meridian sought to exempt waterbodies from complying with the Appendix E standards where those waterbodies have been significantly altered by infrastructure such as the Manapouri Power Scheme and to revise certain limits. Dairy NZ sought amendments to Appendix E to align the terminology used with the NPSFM, specifically regarding periphyton.
- 4.377 Appendix E is referred to in Policy 15 and in a number of rules. The standards included have been carried over from the current RWP. Officers requested advice from Mr Roger Hodson, Environment Southland, Environmental Scientist-Surface Water Quality regarding the suggested amendments by submitters. Mr Hodson has prepared a memorandum on the possible changes which is attached as Appendix E to this Reply Report.
- 4.378 Regarding DairyNZ's request to align the periphyton terminology used in Appendix E with the NPSFM, Mr Hodson considers that the changes requested will have substantial impacts and may not be

⁴⁵⁸ RLAA, s 175.

⁴⁵⁹ RLAA, s 2(2); RMA, Sch 12, cl 11 at 'commencement'.

⁴⁶⁰ RLAA, s147; RMA, s 108AA(5).

⁴⁶¹ RLAA, Sch 4; RMA, Sch 12, cl 18(2).

⁴⁶² RLAA, Sch 4; RMA, Sch 12, cl 18(3).

⁴⁶³ RLAA, Sch 4; RMA, Sch 12, cl 17(1).

⁴⁶⁴ RLAA, s 147.

appropriate at a FMU scale. The changes proposed by DairyNZ also do not acknowledge values, other than human health risk, that waterbodies may hold. Based on Mr Hodson's advice, Officers consider it is not appropriate at this stage to amend the periphyton limits in Appendix E as any changes should be determined via the FMU limit setting process. Mr Hodson has raised a minor issue with the wording of biomass standards for the Lowland Hard Bed water quality class. This has been addressed in the revised version of Appendix E.

- 4.379 Meridian sought to increase the lake-fed water quality class limits for periphyton and temperature. Mr Hodson considers it is not appropriate to amend these values. In relation to Meridian's request to exempt waterbodies from Appendix E limits where significant infrastructure alters natural flow, Officers agree that such waterbodies ought to be exempted from compliance with the water quality limits. Officers have reflected this exemption in the revised version of Appendix E.
- 4.380 Fish and Game sought to reduce the maximum temperature limits and increase the clarity distance for rivers and streams and introduce a fine sediment cover limit. Mr Hodson disagrees with the suggestions of Fish and Game as many waterbodies would not meet the proposed limits. Officers consider that it is more appropriate for changes to these limits to be determined during the FMU limit setting processes. Mr Hodson has however agreed that a change in sediment cover limit, rather than an absolute threshold on bed sediment cover would be advantageous. Mr Hodson has proposed a change in fine sediment cover of no more than 10% is included in Appendix E as a limit for assessing the relative effects of discharges. Officers' agree with Mr Hodson's recommendation and Appendix E has been revised to include this new standard.
- 4.381 Finally, Officers recommend displaying the Appendix E Water Quality Standards in a table for ease of interpretation. The attached version of the pSWLP includes the insertion of this table.

Appendix J - Drinking Water Protection Zones

- 4.382 R Moseby raised concerns that Appendix J, pertaining to drinking water protection zones, includes the Waikana Stream. The submitter was concerned that the supply in question, is only an emergency backup town supply for Matura, and that the installation on the submitter's farm has never been formalised. In his view, the take is "rarely used", and he provided a water log for the take which indicates that it has not been used since 2013. However, previously, the log indicates that the take has been relied on over the summer period.
- 4.383 While in recent years the take has not been utilised, Officers note that the supply is included on the Register of Drinking Water Suppliers for New Zealand (April 2017), as one of the sources for the Matura Community Water Supply and may still be relied on for this in future. While acknowledging Mr Moseby's concerns about the legal arrangements surrounding the water supply, Officers are of the view that the formalising of the arrangement is a private matter between the submitter and the Gore District Council. Officers are therefore hesitant to recommend the removal of this supply from Appendix J. In coming to this conclusion, Officers have also taken into account the effect of its inclusion, namely that there are limitations on what activities can occur within 250m of the abstraction point of the supply as a permitted activity. As noted by R Moseby, the Gore District Council has previously agreed to a lesser setback of 100m for a consent obtained by the submitter. While accepting that the requirements will impose a potential consenting requirement on the submitter for new activities within 250m, from a practical point of view, Officers are of the view that a lesser setback could again be consented if the agreement of the District Council is forthcoming. On balance, given that the supply is included on the Register, Officers consider this approach more appropriate than deleting the supply from Appendix J.
- 4.384 Alliance also sought that two additional water supply takes be included in Appendix J, the effect of which would be a number of activities, such as various discharges and silage, would be restricted

from occurring, as permitted activities, within 250m of the abstraction point. In response to a request from the Hearing Panel, Ms C Hunter provided supplementary planning evidence regarding the request. Officers have reviewed the information supplied and note that limited, and only anecdotal information, has been provided about the effect the inclusion of the two additional sites would have on other users, and this seems to be based on the premise that the relevant rules only apply to activities located within a distance of 250m of the upstream point of the abstraction sites. However, the applicable rules apply to anywhere within 250m of a drinking water supply abstraction point identified in Appendix J. As a result, Officers are of the view that the effect of the additions on existing users are still largely unknown.

- 4.385 Further, on reflection, Officers are of the view that the inclusion of these takes would extend the application of the rule beyond what was intended in the pSWLP. In particular, the Appendix, as reflected in its title, is intended to relate to, and protect drinking water supplies, not supplies used for other activities. This is reflected in Policy 13, which directs that land use and discharge activities are managed to protect (amongst other things) the health of humans.

Appendix L - Groundwater allocations

- 4.386 Several submitters have questioned the justification for revising the unconfined aquifer groundwater allocations in Appendix L.5. The Section 42A Report recommended the adoption of the revised appendix as requested by Environment Southland staff, who sought that Table Y.4 (within Appendix L.5), which sets out the groundwater zone primary allocation limits, be amended (as set out in the submission). Almost all of the amendments to Table Y.4 seek to increase the groundwater allocation volume set out in the pSWLP, as notified, with one change sought being a decrease, and one unchanged. In addition, other changes to the appendix were sought, including clarifying terminology in Table Y.5, deleting the management regime for the Garvie Aquifer and revising the minimum groundwater level cut-off in Table Y.7 for the North Range Aquifer.
- 4.387 The Environment Southland staff submission seeks the amended volumes in Table Y.4 on the basis that the volumes are based on 35% of the land surface recharge estimated for each groundwater management zone using figures calculated by Chanut (2014), with adoption of a figure of 35% of recharge as the primary allocation volume being consistent with the proposed Environmental Standard on Ecological Flows and Water Levels, as well as other approaches to groundwater allocation in New Zealand.
- 4.388 The evidence of Mr Murray on behalf of the Director-General of Conservation dated 12 May 2017 states as follows:
- [101] I therefore seek the decline of the Environment Southland submission to increase the total allocation from all aquifers.
- 4.389 The primary reasons for this conclusion include as follows:
- [82] The reasons for the Director-General for opposing the increases in groundwater primary allocation is that it fails to consider the effects of groundwater takes with a high connection to rivers. The increased primary allocation also fails to consider aquifer heterogeneity such as strata with low storativity and transmissivity and fails to consider the effects of the increased groundwater abstraction on the volume [of] water taken from rivers which discharge into aquifers and spring fed creek flows from aquifers and their ecosystems. Primary allocation should also include permitted activities to manage the cumulative effects of groundwater takes on surface water bodies. In the Tiwai aquifer there is an increased risk of salt water intrusion.⁴⁶⁵

⁴⁶⁵ Statement of Evidence of Ken Murray on behalf of the Director-General of Conservation dated 12 May 2017,

- 4.390 DOC discussed the case *South Otago Holdings Ltd v Southland Regional Council* as an example of how the groundwater allocations do not protect surface water bodies. This case involved the appeal on the decision of Southland Regional Council to decline a water permit to abstract groundwater. The consent application was declined on the basis that the effects, including cumulative effects, on surface water flows would be unacceptable. The proposed water take was within the Riversdale groundwater allocation zone and on its own was considered to have less than minor effects on stream flows.
- 4.391 The Environment Court upheld the Council's decision. The Environment Court agreed that the take would result in cumulative effects on a spring-fed stream that was habitat to the Gollum galaxias, a threatened species. The Environment Court concluded that any further reduction in flows would result in high impacts on this fish population.
- 4.392 Officers consider that there is sufficient information to support the revisions to Table Y.4 as requested in the Environment Southland staff submission. Mr Brydon Hughes has provided a report documenting the technical background to the groundwater provisions of the pSWLP. This report includes a description of the methodology to revise the Regional Water Plan groundwater allocations and highlights the differences between the operative plan and the pSWLP.
- 4.393 The methodology adopted to set the new groundwater allocations is based on the proposed National Environmental Standard for Ecological Flows and Water Levels. The proposed NES states that for aquifers other than shallow, coastal aquifers, interim allocation limits shall be set at the greater of 35% of the average annual rainfall recharge, or the total allocation from the groundwater resource on the date the standard comes into force. The proposed allocation limits in Table Y.4 are based on 35% of the mean annual rainfall recharge. The revisions requested in the Environment Southland staff submission are due to updated estimates of mean annual rainfall recharge and were intended to be included in the notified version of the pSWLP.
- 4.394 Officers consider that the technical report provided by Mr Hughes provides sufficient support for the revisions to Table Y.4. The methodology adopted is consistent with the requirements of the proposed NES and represents the best available information on which to set groundwater allocations. Further refinements to the allocations may occur, where necessary, during the FMU limit setting process. The Officers note that for the Riversdale Groundwater Zone, the total allocation is reduced from 7.3 m³ (x10⁶) in the operative Regional Water Plan to 6.53m³ (x10⁶) in the proposed revised table. Based on the suitability of the allocation method adopted and the management of stream depleting takes, Officers consider that groundwater allocations will safeguard the life-supporting capacity of ecosystems and avoid over-allocation.

Appendix L – Stream Depletion

- 4.395 Commissioner van Voorthuysen has asked if there is scope to amend Appendix L.2, specifically the table within it, to simplify the methodology and address inaccuracies. A revised Table L.2 that addresses these concerns is set out below. The revisions change the calculation method from using maximum rates to average pumping rates, amend the hydraulic connection categories and the classification criteria and revise the management approach for moderate takes.
- 4.396 Submissions received on Table L.2 sought the inclusion of a note on the ability to consider any offsetting component of non-consumptive takes, the requirement for moderate connection takes to be subject to minimum flow restrictions, to increase the 2 litres per second threshold and to amend the calculation timeframes.

- 4.397 There may also be scope to consider these changes under Clause 16 of Schedule 1 of the RMA which allows an amendment to a proposed plan to alter information where the alteration is of minor effect or corrects minor errors.
- 4.398 The changes identified will largely reduce the rates of stream depletion. The change from maximum pumping rates to average rates, in addition to revising the averaging period for seasonal takes from the maximum authorised by the seasonal volume to 90 days, will result in a slight reduction in the calculated rate of stream depletion for individual takes. Most irrigation water permits have seasonal volumes which would not allow pumping at the maximum rate for 90 days. Over a 90-day averaging period the assumed pumping rate would typically be 85-100% of the maximum permitted instantaneous rate, therefore the calculated stream depletion rate for most takes may be reduced by up to 10%.
- 4.399 The sub-set of irrigation takes most affected by the suggested changes to the pumping rates and time period would be horticultural takes such as for bulb growing. These permits have a seasonal volume that allows the maximum rate to be taken continuously for 45-60 days. Averaging these volumes over a 90-day period could therefore almost half the calculated stream depletion rate. The implications of this reduced depletion rate will be minor as these activities generally occur in areas where there is a naturally low degree of hydraulic connection, therefore these takes are unlikely to have any significant stream depletion effects.
- 4.400 The revised table also reduces the 7-day depletion effect threshold from 80% to 60%. It is considered this too will have limited impacts as such takes captured by the 7 day restriction are also likely to be captured by the 90 or 150-day assessment.
- 4.401 Although there will be a slight reduction in the calculated stream depletion rates, the revised methodology better reflects the way water is taken and the effects that occur.
- 4.402 The recommended replacement Table L.2 is:

Table L.2: Classification and management of ~~stream~~ surface water depletion effects

<u>Hydraulic Connection</u>	<u>Classification</u>	<u>Management Approach</u>
<u>Riparian</u>	<u>The groundwater take is located within 5 metres of a surface waterbody.</u> ^A	<u>The groundwater take will be managed as an equivalent surface water take unless there is clear hydrogeological evidence that demonstrates that pumping will not impact on the surface waterbody.</u> ^A
<u>High</u>	<u>The surface water depletion effect is assessed as:</u> (i) <u>60% or greater of the average groundwater pumping rate^B after 7 days of pumping; or</u> (ii) <u>60% or greater of the average groundwater pumping rate^C after 90 or 150 days of pumping; and</u> (iii) <u>greater than 2 L/s.</u>	<u>The calculated loss of surface water is included in the surface water allocation regime determined in accordance with Appendix K with the remainder of the allocation included in the allocation volume for the relevant groundwater zone.</u> <u>The groundwater take ceases when the surface water minimum flow determined in accordance with Appendix K is reached.</u>
<u>Moderate</u>	<u>The surface water depletion effect is assessed as:</u> (i) <u>30% or greater and less than 60% of the average groundwater pumping</u>	<u>The calculated loss of surface water is included in the surface water allocation regime determined in accordance with Appendix K with the remainder of the</u>

	<u>rate^c after 90 or 150 days of pumping;</u> <u>or</u> <u>(ii) greater than 5 L/s.</u>	<u>allocation included in the allocation volume for the relevant groundwater zone.</u> <u>No surface water minimum flow restrictions are imposed on the groundwater take.</u>
Low	<u>The ground water take is not classified as Riparian or as having a High or Moderate hydraulic connection.</u>	<u>The calculated loss of surface water is not included in the surface water allocation regime.</u> <u>No surface water minimum flow restrictions are imposed on the groundwater take.⁴⁶⁶</u>

A Includes, rivers, streams, lakes and wetlands.

B The average groundwater pumping rate is based on the lesser of the daily rate assuming pumping occurs for 24 hours per day or the 7 day volume averaged over 7 days and assuming pumping occurs for 24 hours per day.

C The average groundwater pumping rate is based on the seasonal volume averaged over 90 days for seasonal takes (i.e. irrigation), assuming pumping occurs for 24 hours per day for a period of 90 days. For takes which operate for the full year (i.e. industrial or municipal supply), the average groundwater pumping rate is calculated on the basis of the annual volume averaged over 365 days), assuming pumping occurs for 24 hours per day for a period of 150 days.

Note: The assessment of stream depletion effects will take into account any non-consumptive component of the groundwater take.

Errors in Section 42A Report / pSWLP

4.403 Paragraph 6.120 on page 143 of the Section 42A Report should refer to the ‘Riverine physiographic zone’ rather than the ‘Central Plains physiographic zone’.

4.404 Appendix B18 should include the following reference:

Vibart R, Vogeler I, Dennis S, Kaye-Blake W, Monaghan R, Burggraaf V, Beutrais J, Mackay A 2015. A regional assessment of the cost and effectiveness of mitigation measures for reducing nutrient losses to water and greenhouse gas emissions to air from pastoral farms. Journal of Environmental Management 156: 276–289.

⁴⁶⁶ Clause 16(2) amendment

5. Final Tracked-changes Version of the pSWLP

- 5.1 The recommended changes discussed in this Reply Report are set out in a final version of the pSWLP, showing changes from the notified version. The underlined elements are suggested additions, while ~~strikeout~~ shows deletions. This document is attached as Appendix B.
- 5.2 Many are similar to changes recommended in the Section 42A Report. However, the Reply Report recommendations here are a complete and standalone version, and the existing Section 42A Report versions should be treated as a product of their time.
- 5.3 Some tracked changes are not discussed in any detail in this Reply Report – some are clear and obvious in nature, and usually result from matters discussed in detail at the hearing.
- 5.4 For the avoidance of doubt, in the event of any inconsistency between the recommended provisions in this Reply Report and the tracked changes version of the pLWRP, the tracked changes version prevails.
- 5.5 Footnotes are also included with submission references for most recommended changes. The references to submitters is usually by way of some acronym of the submitter's name, particularly in the case of companies and organisations. A complete list of the submission acronyms is included in the Section 42A Report.
- 5.6 For those recommended changes that do not have a specific submission reference, they are noted as either a consequence of changes due to another submission (per clause 10(2)(b) of the 1st Schedule to the RMA) or a recommended change under clause 16 of the 1st Schedule.
- 5.7 These "clause 16" changes often relate to changes in the use of abbreviations, grammatical changes and wording changes that do not affect the meaning of the provision.
- 5.8 There are a small number of additional policies and rules recommended for inclusion within the pSWLP, and a small number are recommended to be deleted. In order to keep the numbering of the policies and rules within the final tracked changes version consistent with the pSWLP, there are some numbering gaps and the occasional use of "A" following the previous policy or rule number when a policy or rule is inserted. As further changes are likely, these numbering issues can be resolved for the final 'operative' version of the SWLP.
- 5.9 There are a small number of grammatical and typographical corrections. These are often of a minor nature such as typographical errors, and changes to the text so that it reads with more certainty or with a better sentence structure. The majority of these recommended changes, in particular the grammatical corrections and improved wording, do not have any particular submission or further submission to reference the changes that have been recommended. Very minor recommended changes often have no reference.

Appendix A – State and Trend



Memorandum *For Your Information*

To: Matthew McCallum-Clark

From: Roger Hodson - Environmental scientist - Surface Water Quality

Date: Thursday, 19 October 2017

File Reference: State and Trend evidence

Subject: *pSWLP*

Message:

Following the conclusion of the hearings for the proposed Southland Water and Land Plan, the hearings officers have asked that I provide additional record of my interpretation of state and trend information and of any other state and trend matters raised by submitters which appear to be unresolved.

I confirm that my views on state and trend in physio-chemical properties and ecosystem health of Southland's rivers, lakes, groundwater and estuaries remain as set out in the Section 42A Report and opening presentation.

I reinforce the importance of being very clear about the question to be answered, in order to determine the appropriate aspect of environmental monitoring (state indicator or trend time period) to utilise. In general, I consider it is important and most appropriate to ask questions about state i.e. does current condition meet the desired expectation for use or support identified values in an area, before asking questions about trends.

With respect to the evidence submitted by Mr Heller, I consider that his evidence has taken a narrow focus on the assessment of state and trend. Mr Heller has not discussed or mentioned important water quality and ecosystem health indicators, such as periphyton biomass, macroinvertebrate community index, and has limited the scope of his consideration of estuaries and coastal lakes to a summary statement. Mr Heller has chosen to address the short term 5 year trend period largely in isolation from the longer 10 and 17 year periods included in the Environment Southland 2017 report⁴⁶⁷, despite the dominant conclusion of trend tests for the 5 year period being indeterminate. In my opinion, the large proportion of indeterminate test results suggests that more data (i.e. a longer time period) would be more likely to provide a confident determination of trend direction. Further, Mr Heller limits the scope of his evidence to the latest report, and does not consider or discuss a number of historical reports and past monitoring results.

With respect to the interpretation of trend direction, Mr Heller has, in my opinion, inappropriately used the terms "no trend" or "stable" where a trend direction has been unable to be determined with confidence. Dr Kitson has provided what I consider to be an accurate and detailed description of the appropriate interpretation of trend analysis results.

⁴⁶⁷ Environment Southland (2017) Water Quality in Southland: Current State and Trends. Publication No 2017-04

Mr Heller considers there is a need to focus on the management of riparian and overland contaminants, including of phosphorus, as a priority over nitrogen, due to nutrient limitation. However, owing to the limited scope of environmental indicators considered in Mr Heller's evidence, this conclusion fails to acknowledge the risk that nitrogen poses to ecosystem health and eutrophication in lakes and estuaries, which are commonly nitrogen limited. Furthermore, Dr Kitson has provided what I consider to be a detailed and accurate commentary of the aspects of Mr Heller's methodology used for assessing and interpretation of DIN:DRP nutrient ratios and the risks of focusing on phosphorus management instead of nitrogen. Further to Dr Kitson's comments, I note that Mr Heller's analysis of nutrient limitation is based on the 5-year median concentrations in ES 2017⁴⁶⁸ is inconsistent with the approach he references of McDowell et al 2009, where mean DIN:DRP concentrations are used.

⁴⁶⁸ Environment Southland (2017) Water Quality in Southland: Current State and Trends. Publication No 2017-04

Appendix B – Physiographic Zone Challenges



Memorandum *For Your Information*

To: Matthew McCallum-Clark (Director, Incite)

From: Karen Wilson (Senior Science Co-ordinator)

Date: 24th October 2017

File Ref: pSWLP

Subject: *Review of submitters evidence on the mapping of the physiographic zones*

Purpose

This memo has been prepared in response to a request by Environment Southland's planning team to review submitter's evidence relating to the mapping of the physiographic zone classification. The purpose is to review whether submitter's evidence is sufficient to justify reclassifying a physiographic zoning. The submissions reviewed are those identified by the planning team.

Reviews

The physiographic zone classification system used in the proposed Southland Water and Land Plan (pSWLP) delineates the landscape into areas that share similar water quality risks. Each zone is characterised by a combination of attributes that are described in a series of technical sheets published by Environment Southland (<http://waterandland.es.govt.nz/southland-science/physiographic-zones/physiographics-and-farm-management>). The following reviews have been carried out using the key characteristics described in the technical sheets, the mapping rules (described in Hughes *et al*, 2016) and expert knowledge of the physiographic zone classification system. Each review contains a brief description of the evidence presented by the submitter and my assessment of the evidence. For the purposes of consistency, my assessment falls into one of three categories:

- The evidence is **irrelevant** as it does not address the key characteristics of the physiographic zone;
- The evidence is **not substantiated** or it is insufficient to determine whether it is a valid challenge;
- The evidence is **possibly valid but insufficient** in itself to reclassify the physiographic zone and/or amend the physiographic zone map.

None of the submissions reviewed had sufficient evidence to fully support reclassifying the physiographic zones or demonstrate how the reclassification should be mapped.

Submitter 55 - GJ and VR Beaton Family Trust

This submitter proposes the Peat Wetlands physiographic classification within their farm boundary is incorrect. They have not proposed an alternative classification although comments indicate the Gleyed zone may be more appropriate.

The evidence they have provided includes soil testing results, consultant technical comments on soil description, soil pit photographs and paddock photographs. Of this information, the key pieces of evidence relevant to the Peat Wetlands classification are soil testing demonstration that the anion storage capacity (ASC) is greater than 10%, the consultant comments that classify the soil as sedimentary and confirm that there is unlikely to be organic soil prone to P loss and soil pit photographs consistent with this.

I have assessed this evidence as being **possibly valid but insufficient** because the evidence supplied is at single points only and soil remapping of the entire area would be required. Although no alternative physiographic classification was proposed, it is likely that soils remapping in this area would provide sufficient information to assign the area to a new physiographic zone. The Peat Wetlands physiographic zone classification applies to the aquifer and soil zone, and it is currently unclear whether there is peat or high organic matter below the top soil profile.

Submitter 564 - Mid Aparima Catchment Group

The submitter proposes the inaccuracies exist within the physiographic mapping and use a specific area of Bedrock/Hill Country zoned land as an example. They have not proposed an alternative classification.

The evidence they have provided includes soil cutting and soil pit photographs although the exact location of these is not specified.

I have assessed this evidence as being **irrelevant** because they have not provided evidence relevant to the key characteristics of the Bedrock/Hill Country zone. This zone is characterised as having bedrock or glacial till beneath the soil profile and no evidence regarding geology has been provided. Photographs of the soil profile up to about 2 metres deep are not evidence of exclusion from Bedrock/Hill Country zone.

Submitter 716 - M and T Shallard

The submitter proposes the Old Mataura characteristics do not correspond to what they observe on their property. They describe their soils as being *"clay-based, wet and unmanageable without tiles and mole-ploughing"*. They have not provided any evidence to support this claim.

I have assessed this evidence as being **not substantiated** because there is no supporting material to illustrate their description of the soil.

Submitter 603 – Nithdale Station

In their submission, the submitter questions the accuracy of the physiographic zone and variant mapping. Specifically, why an area mapped as Bedrock/Hill Country – Overland Flow variant is not mapped as Bedrock/Hill Country – Artificial Drainage variant due to many tiles being installed, and why areas with the same soil type have been mapped as Bedrock/Hill Country – Overland Flow variant and Oxidising – Overland Flow variant. No supporting evidence has been provided.

I have assessed this evidence as being **not substantiated** because there is no supporting material to support the claims in the submission.

The water quality risk framework that supports the physiographic zone classification system considers overland flow to have greater water quality risk than artificial drainage because contaminants are transported more rapidly to receiving environments and there is less opportunity for attenuation to occur in the soil zone in overland flow. For this reason, in area where overland flow and artificial drainage may occur, the area has been conservatively mapped as having overland flow risk if there is equal risk of both

occurring. It is not clear from the evidence provided whether artificial drainage is the *predominant* contaminant pathway which would be required to support a change in the variant classification.

Bedrock/Hill Country is characterised as having bedrock or glacial till beneath the soil profile while the Oxidising zone is characterised by oxic soils and geology. No comment has been made in the submission on underlying geology and having the same soil type being mapped as two different physiographic zones does not mean the physiographic zonation is incorrect.

Submitter 499 - J Mann

In their submission, the submitter seeks to remove the Old Mataura physiographic classification from their property area at 127 Riordan Road, Waipounamu. They have not proposed an alternative classification.

The submission states that the area should not be mapped as Old Mataura because the property has a clay pan and is not free draining. No supporting evidence has been provided.

I have assessed this evidence as being ***not substantiated*** because there is no supporting material to support the claims in the submission. The lateral extent and regularity of the clay pan would need to be demonstrated. The existence of a clay pan does not necessarily mean the Old Mataura zonation is incorrect as the pan may be laterally discontinuous or contain fractures that allow bypass of drainage water.

Submitter 467 – Lawrence Farms Ltd

In their submission, the submitter considers the key characteristics of the Old Mataura physiographic classification do not represent their property at 898 Riversdale Waikaia Road. They have not proposed an alternative classification.

The submission states that the area should not be mapped as Old Mataura because the property has a clay pan and is not free draining. Supporting evidence for this is a photo of ponded surface water in the area mapped as Old Mataura and an S-map report of the Morvenf soil which describes the “rooting barrier” as being “Pan – discontinuous”.

I have assessed this evidence as being ***not substantiated*** because the lateral extent and regularity of the clay pan would need to be demonstrated. The existence of a clay pan does not necessarily mean the Old Mataura zonation is incorrect as the pan may be laterally discontinuous or contain fractures that allow bypass of drainage water. The S-map soil report provided by the submitter describes the soil as having unlimited aeration, rapid permeability, and no slowly permeable horizon (the permeability of the slowest horizon is classed as rapid (> 72 mm/h)).

Submitter 844 – Waitea Dairies Ltd

The submitter contests the physiographic zonation on the basis of questionable science, but has not provided any written explanation as what they believe to be questionable or why. In their oral presentation, they state that the map shows a Riverine classification despite having coal seams under their property.

I have assessed this evidence as being ***irrelevant*** because they have not addressed the key characteristics of the Riverine zone; specifically that the area contains water that is diluted by runoff from alpine areas. The existence of coal seams does not discount the area from being classified as Riverine.

The inference from this submission is that the area should be mapped as Lignite/Marine Terraces however it is unclear what depth the coal seams occur at. Much of the Southland Plains are underlain by Gore Lignite Measures within the East Southland Group sediments, however these are only included in the Lignite/Marine Terraces zone where they occur at or near the land surface (i.e. are sufficiently shallow to influence water quality risk).

Submitter 322 – Glenlapa Station

The submitter strongly disagrees with the classification of their property as Old Mataura as it does not reflect their soil type. They propose that the land should be reclassified as the Gleyed zone.

The submission states that Old Mataura should be reclassified to Gleyed due to the submitter's knowledge of their soil structure, the clay based soils and lack of natural drainage. No supporting evidence is provided.

I have assessed this evidence as being **not substantiated** because no supporting evidence has been provided.

Submitter 651 – Pullar Logan Trust

The submitter proposes an area of Peat Wetland classification on the property is incorrectly identified. They have not proposed an alternative classification.

The evidence provided includes a description and photos of the land area and photos of a soil profile.

I have assessed the evidence as being **possibly valid but insufficient** because the evidence supplied is at a single point and soil remapping of the entire area would be required along with soil testing. Although no alternative physiographic classification was proposed, it is likely that soils remapping in this area would provide sufficient information to assign the area to a new physiographic zone. The Peat Wetlands physiographic zone classification applies to the aquifer and soil zone, and it is currently unclear whether there is peat or high organic matter below the top soil profile.

Submitter 189 – Dairy Holdings Ltd

The submitter proposes an area of Peat Wetland classification on the property is incorrectly identified. They have not proposed an alternative classification.

The evidence provided includes a qualitative description of the soil up to 20 cm depth at three locations (by Sarah Smith) and photographs of the soil (shovel depth).

I have assessed the evidence as being **possibly valid but insufficient** because the evidence supplied is at a single point and soil remapping of the entire area would be required along with soil testing. Although no alternative physiographic classification was proposed, it is likely that soils remapping in this area would provide sufficient information to assign the area to a new physiographic zone. The Peat Wetlands physiographic zone classification applies to the aquifer and soil zone, and it is currently unclear whether there is peat or high organic matter below the top soil profile.

Submitter 667 – Riverfield Farms Ltd

The submitter proposes an area of Peat Wetland classification on the property is incorrectly identified. They have not proposed an alternative classification. They have identified a small area which they consider to be correctly mapped as Peat Wetland.

The only evidence provided is an aerial photograph showing a grassed paddock.

I have assessed this evidence as being **irrelevant** because they have not provided evidence relevant to the key characteristics of the Peat Wetlands zone. This zone is characterised as having high organic carbon content in soils and underlying geology. Soils in this zone are acidic and have low anion storage capacity. No evidence regarding soil properties has been provided by the submitter.

It appears that the submitter considers the Peat Wetlands zone to only refer to permanent wetland areas however, the zone includes areas which have been extensively drained to support land development. The areas with modified drainage may no longer appear to be wetlands but they have been mapped in this zone because they are strongly reducing and have enhanced phosphorus mobility.

Submitter 597 – M Napper & A Findlay

The submitter proposes an area of Peat Wetland classification on the property is incorrectly identified. They have not proposed an alternative classification and have not provided supporting evidence.

I have assessed this evidence as being **not substantiated** because no supporting evidence has been provided.

Submitter 868 – Wilkins Farming Ltd

The submitter challenges the Old Mataura classification on the Wendonside Terrace. The basis of the challenge is based on the state of the receiving environment rather than providing evidence the physiographic classification is incorrect.

I have assessed this evidence as being **irrelevant** because the physiographic zones identify water quality *risk* and are not a tool for predicting water quality outcomes. The realisation of actual water quality is dependent on land use and the assimilative capacity of specific receiving environments.

Submitter 843 – Waikaia Plains Ltd

The submitter seeks clarification of the complex zoning of their property and requests confirmation of the classification by an expert. The submitter has Oxidising (21 ha), Old Mataura (260 ha), Bedrock/Hill Country (87 ha), Gleyed (56 ha) and Riverine (92 ha) on their property. No supporting evidence has been provided.

I have assessed this evidence as being **irrelevant** in the context of challenges to the accuracy of the physiographic zonation boundaries however; I acknowledge that the request to verify the zonation is reasonable particularly when there are a large number of zones on one property.

Submitter 409 – Independent Forestry Services Ltd

The submitter contests the physiographic zonation of their property but has not provided any additional information on what they believe to be incorrect or why.

I have assessed this evidence as being *irrelevant* because they have not provided any explanation or evidence as to what the issue is.

Concluding Remarks

In summary, of the 15 submissions reviewed, the majority presented evidence that was irrelevant or not substantiated. Only 3 of the 15 submitters presented evidence that may have been valid to challenging the physiographic zone classification, however, more information would be required to support re-zonation.

Assessment	Number of submissions
Irrelevant	6
Not substantiated	6
Possibly valid but insufficient	3
Total reviewed	15

The primary observation from this is that many submitters have misunderstood the physiographic classification and that the underlying principles of the physiographic zones are not well understood. For instance, there appears to be a prevailing belief that the physiographic zones are mapped and identified solely on the basis soil properties which is untrue for many zones. The zone names may have also contributed to general confusion. For instance, the Peat Wetlands zone includes areas which are now drained and developed, but were historically wetlands. A key characteristic of Peat Wetlands zone is not that they are, or once were wetland, but rather that the soils and underlying geology have low anion storage capacity making them prone to phosphorus loss however, some submitters appear to believe this zone only refers to areas that are currently swampy.

The physiographic zonation could be improved with better data and field surveys by relevant experts. For example, higher resolution soil and geological mapping would improve the accuracy and resolution of the physiographic zonation map. The type of information required to improve mapping accuracy varies depending on the physiographic zone.

Appendix C – Market Value of Land



Memorandum *For Your Information*

To: Matthew McCallum-Clark (Incite)
From: Emma Moran (ES)
Date: 30th October 2017
Subject: *Market Value of Rural Land*

Background

The proposed Southland Water and Land Plan (pSWLP) will introduce a new land management system to address water quality issues in the region. However, some submitters have raised concerns that the proposed rule framework for farming activities will impact on rural land values. These concerns focus on two aspects of the farming rules. First, the costs of mitigations to manage discharges of waste substances (or contaminants) from farm production systems will reduce current profitability. Second, land use controls on the development of new or expanded dairy farms or intensive winter grazing will constrain the land's potential profitability.

In general, there are three main drivers of market value of rural land (Allan and Kerr, 2014):

1. Productive value
2. Amenity value; and
3. Option value

There are also other factors, such as tax incentives, which can affect market value. Submitters' concerns around the impact of the farming rules on land values largely relate to productive value and option value. The productive value of land is its current profitability under the existing land use. The option value is its potential for more profitability under an alternative land use. The purpose of this memo is to give an overview of land values with respect to water quality in response to these concerns.

First, it will review the small body of New Zealand literature on land values and water quality. Secondly, it will outline the relationship between the market value of land and its true value, focusing on market failure, and the difference between profitability and sustainability. Third, it will consider the role of policy and science in influencing land values.

Literature review

Although there is a growing body of literature on the potential economic impacts of managing land use for water quality in New Zealand, there is only a limited amount of research in respect to land values, even though it is a topic of real concern for many land owners.

- Journeaux (2015) considered the impact of environmental constraints on land prices.

- Craven (2015) considered the impact of a reduction in nitrogen load on land values in the Rotorua area and the Lake Rotorua catchment.

Journeaux (2015) identified the three basic drivers of land value as productive value (or profitability), consumptive value (i.e. amenity and lifestyle factors), and speculative value (or capital gains). Of these three drivers, profitability was identified as the most important, and is determined by a wide range of factors that are summarised here as financial, built, human and natural capital. It was also highlighted that land price is not the same as market valuations of land. The author concluded that environmental constraints will have two main impacts:

1. Increase costs and so decrease profitability (productive value); and
2. Reduce the opportunity to intensify production (speculative value).

Craven (2015) reported on recent farm sales (volumes and prices) and bank lending criteria for the Lake Rotorua catchment (where a nitrogen load reduction was being introduced) in comparison to elsewhere in the Rotorua area. The author concluded that there is a correlation between market values and on-farm nitrogen benchmarks. It was noted that certainty is important, and it enables the market to operate efficiently, while uncertainty creates a greater price differential and is likely to influence decisions to buy or sell.

In addition to these two papers, Duhon et al. (2015) considered market values for land as part of their review of the Lake Taupo nitrogen market. They found that a cap on nitrogen, which had limited the nitrogen leaving agricultural land, had reduced the ability to intensify production and decreased land values among other impacts. They concluded that all of these “trade-offs” were necessary to address the environmental problem of excessive pollution. In this case the government provided funding to reduce the impacts on farmers.

At a local level, Muller (in press) has recently completed research on the impact of nutrient regulations on dairy farm land values in Southland. This research is yet to be published but it found that the market value of agricultural land is strongly linked to environmental factors (climate, slope, soil and location), and noted that environmental factors also influence nutrient losses. The author argued that while new policy requiring increased management of nutrient is likely to impact on land values, these impacts are unlikely to be uniform because of variation in environmental conditions.

Land Values and Market Failure

While there are many factors that influence the market value of rural land, profitability is a central part of the equation. In general terms, profitability is calculated using the prices and quantities of both a farm’s output and the set of inputs needed to produce it, while considering a farm’s size. There are many measures of profitability and specific measures suit particular industries. For example, DairyNZ use “earnings before interest and tax” (EBIT), Beef + Lamb New Zealand use “earnings before interest tax and rent” (EBITR), and the Foundation for Arable Research use “gross margins” (GM). Profitability is a *relative* measure and is usually expressed per effective hectare.

A farm’s output consists of one or more products, and it is determined by the productivity of land and other inputs used in the production system. Land productivity is variable and classification tools such as land use capability (LUC) and S-map Online have been developed over the years to guide rural land use. In producing its products, a farm also creates waste substances, some of which are lost as discharges to the environment. Many of the factors that influence land productivity, such as high rainfall and well drained soils, also play a part in the discharges. However, these discharges are usually excluded from standard calculations of profitability and market value because they are unpriced.

In economic terms, discharges of waste substances are “environmental externalities”, and are a market failure (i.e. a suboptimal or inefficient use of natural resources). Their existence signals a gap between the market value of rural land and its true value (i.e. when all of a production system’s inputs and outputs are accounted for). Policy intervention is designed to correct market failure and the use of mitigations is one way of accounting for externalities within a production system. The level of mitigations needed on a farm to

manage its waste substances is an indication of the extent of market failure, and so the gap between the market value of land and its true value. For the farm business to be sustainable, it will need to effectively manage its discharges while remaining profitable.

The Organisation for Economic Cooperation and Development (OECD) highlighted issues around intensive agriculture and water quality in its latest review of New Zealand's Environmental Performance (2017). It showed that New Zealand's nitrogen balance, in particular, has worsened more than in any other OECD country, primarily because of the expansion and intensification of farming. This report underlined the importance of putting a price on "environmental externalities" and encouraging the efficient use of natural resources.

Over two reports, the Parliamentary Commissioner for the Environment (PCE) investigated the land use and nutrient pollution in relation to water quality in New Zealand (2013 and 2015). In these reports the PCE highlighted the positive relationship between productivity and losses of nutrients for intensive land uses (i.e. increases in productivity tends to increase nutrient losses). The second report concluded that mitigation practices have struggled to keep up with increased nutrient losses from increasing productivity.

Correcting Market Failure

The pSWLP is the first step towards a new land and water management system in Southland. In essence, this new system will be designed to correct market failures that are causing water quality issues across many parts of the region. In terms of the farming rules, the pSWLP seeks to:

1. Require some discharges to be managed through the use of specific mitigations; and
2. To match controls on new or expanded dairy farms and intensive winter grazing to the mitigation effort needed to manage their discharges.

In both cases, the farming rules will change profitability for some farms and provide new signals for future investment decisions. The impacts of the rules on market values for land are likely to be highly variable across the region because of differences in land use, environmental conditions, and the extent to which mitigations are already being used on-farm. For example, there may be higher demand for existing dairy farms, and lower demand for pastoral farms with unfenced waterbodies. Environmental conditions, in particular, are likely to be seen in a new light because the factors that are suited to agricultural productivity, such as reliable rainfall and well drained soils, may also increase discharges from farms.

Knowledge of the relative susceptibility of different types of soils, geology, and climatic factors has been around for a long time. It is now being refined through new tools, such as those being developed within the *Our Land and Water* National Science Challenges. The Physiographic Environments of New Zealand will explain some of the variation in water quality across a landscape, and give more clarity to what controls the system, which will allow more targeted mitigations. The Land Use Suitability classification system will shift land management and land evaluation from its traditional focus on production to a broader view that includes effects on receiving environments (Larned, 2017). Such tools will improve understanding of the real value of rural land in the future.

Nationally, there is some evidence to show that market values of rural land are going through a period of adjustment in response to volatility in commodity prices and management of water quality issues (for example Hutching, 2017). However, market value is a complex topic and extremely difficult to isolate specific factors that are responsible for this adjustment.

Uncertainty is an important consideration for market values of land from at least two angles. First, there are a large number of possible factors that directly and indirectly affect market values, from changes in tax policy through to climate change. As well, policy intervention can be a stimulus for more improving mitigations and technological change is now occurring faster than ever before. As a result, it is extremely challenging to predict medium to longer-term impacts. Second, uncertainty around future policy direction, such as limit-setting under that National Policy Statement for Freshwater Management (2017), can itself impact on market

values. Overall, any impacts from policy are most likely to occur during the transition period as farmers adapt to change. Where the market signals reflect the true value of land these impacts will be relatively limited, all other things being equal.

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Appendix D – Wendonside



Memorandum *For Your Information*

To: Matthew McCullum-Clark (Incite)
From: Karen Wilson (ES) and Brydon Hughes (LWP)
Date: 24th October 2017
Subject: *Hydrogeology and groundwater quality of the Wendonside Terrace*

Message:

1 Purpose

The purpose of this memo is to provide a summary of current scientific knowledge on groundwater resources under the Wendonside terrace to provide context for addressing issues raised by submitters through the proposed Southland Water and Land Plan (pSWLP) hearings process.

2 Outline

This memo is set out into two main sections:

- Section 3 summarises the current state of knowledge on the hydrogeological setting and quality of groundwater resources under the Wendonside terrace; and,
- Section 4 addresses specific issues raised by submitters to the pSWLP relating to the Wendonside groundwater management zone.

Section

3. Physical setting

3.1 Hydrogeology

3.1.1 Initial development

3.1.2 Geological setting

3.2 Groundwater quality

3.2.1 Introduction

3.2.2 Methods

3.2.3 Results

3.3 Discussion of results

3.4 Key points

4. Proposed Southland Water and Land Plan hearing submissions

4.1 Submitter 419 – J R and D M Smith

4.2 Submitter 868 – Wilkins Farming Ltd

4.3 Submitter 386 – Simon Hopcroft

3 Physical setting

3.1 Hydrogeology

The following sections on the development of understanding and geological setting are primarily adapted excerpts from (Hughes, 2017a).

3.1.1 Initial Development

During 2002, drilling on a property adjacent to Wendonside Church Road indicated the presence of a highly permeable water-bearing layer a depth (~>50 m below ground level (bgl)). This water-bearing layer exhibited significantly different water levels and higher well yields than bores located across the northern section of the Wendonside Terrace. As a result of further exploratory drilling, four resource consents for large-scale groundwater abstraction were granted between 2006 and 2010 across the southern section of the Wendonside Terrace. Aquifer test information showed that these production bores were screened at similar depths (~40 to 60 m bgl) in a highly permeable water-bearing layer which exhibited semi-confined to confined aquifer characteristics.

Following the 'staged management approach' outlined in the Regional Water Plan for Southland 2010 (RWP) the water bearing later intercepted by deeper bores along a north-west south-east orientation toward the southern boundary of the Wendonside Groundwater Management Zone (WGMZ) was classified as a confined aquifer (referred to as the 'Garvie Aquifer') which was, at least in part, hydraulically separate from the overlying shallow groundwater within the northern part of WGMZ. Following RWP Rule 23, allocation for the Garvie Aquifer was established on the basis of a conservative estimate of aquifer through-flow which was intended to be updated as improved information became available to characterise the hydrogeology of the aquifer system.

Over recent years, further drilling has indicated that the spatial extent of the 'Garvie' aquifer system extends south of the terrace riser along the southern edge of the Wendonside Terrace and toward the eastern boundary of the Wendonside Terrace (specifically toward the south-eastern margin of the terrace). Additional aquifer test data at some locations also shows appreciable vertical leakage between individual water-bearing layers (i.e. a series of semi-confined characteristics) in response to groundwater abstraction.

These developments in understanding resulted in changes to the boundary of the WGMZ so that it extended beyond the Wendonside Terrace to include the observed lateral extent of hydraulically connected groundwater and incorporated water-bearing alluvial deposits in the Washpool Creek and Dome Burn catchments to the north. These changes (Figure 1) were included in the proposed Southland Water and Land Plan notified in 2016 (pSWLP). Recognising the potential hydraulic connection between water-bearing layers at varying depths, the pSWLP also specifies single allocation volume for all water-bearing layers in the Quaternary sediments within the revised WGMZ boundary, rather than the separate volumes for unconfined and semi-confined aquifers specified under the RWP.

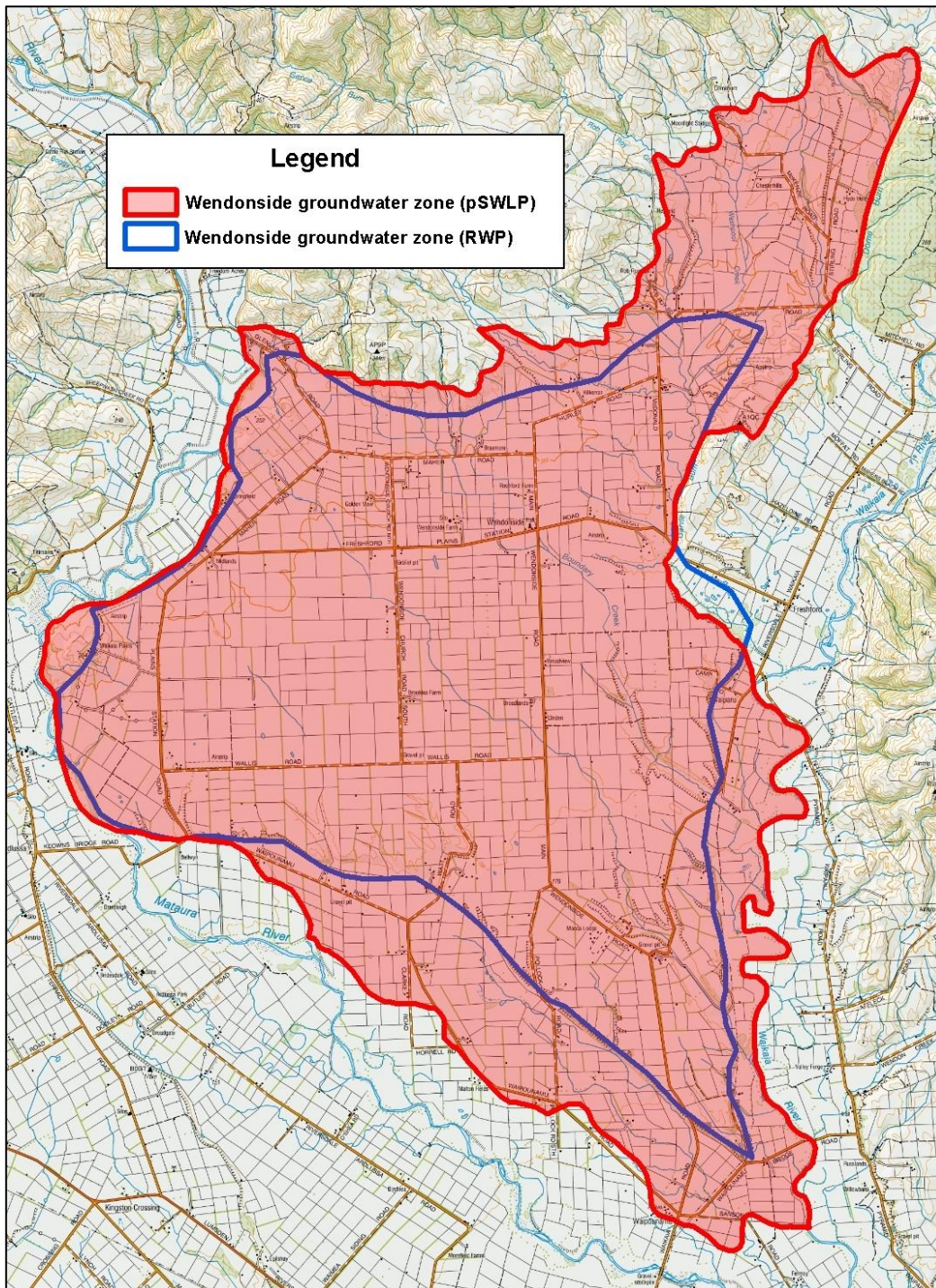


Figure 1: The Wendonside Groundwater Management Zone boundary in the Regional Water Plan for Southland, 2010 (blue line) and the proposed Southland Water and Land Plan, 2016 (red shaded area).

3.1.2 Geological Setting

The Wendonside Terrace consists of a relatively thin sequence of alluvial gravel materials. These materials are interpreted to represent fluvioglacial outwash materials deposited (and locally reworked) by the Mataura River which interfinger with an alluvial fan sequence fronting the foothills of the Garvie Mountains. These alluvial deposits are mapped as Q6, correlating with deposition during the Waimea glacial period (~180,000 to 125,000 years BP) Although the surface of the Wendonside terrace is relatively flat-lying, bore logs in the area indicate the depth of the Quaternary alluvial deposits varies significantly across the area from less than 20 metres to in excess of 60 metres. It is uncertain if the observed variation in gravel thickness reflects

paleotopography (i.e. historical river channels eroded into the older, underlying lignite measure sequence) or occurs in response to structural deformation (i.e. faulting and/or folding) of the underlying materials.

Given the complex geological environment, four relatively distinct, yet hydraulically connected hydrostratigraphic domains have been identified within the Wendonside Groundwater Zone area. The spatial extent and physical characteristics of these domains are described below and an approximation of the areal extent of these areas is shown in Figure 2. (Note: the domains are identified to reflect local geological and hydrogeological variation within the larger groundwater management unit and are not suitable for any other use).

- **Northern Domain**

Across the northern section of the Wendonside Terrace the aquifer system comprises a sequence of relatively undifferentiated 'claybound' gravels which host a spatially extensive unconfined aquifer system. These alluvial deposits are relatively shallow (< 30 metres thick) and overlie Tertiary sediments (predominantly mudstone) of the East Southland Group and most likely interfinger with alluvial fan deposits at the base of the Garvie Mountain foothills to the north. Groundwater recharge in this area occurs via infiltration of rainfall and runoff from the Garvie Mountain foothills to the north;

- **Garvie Domain**

Across the south-western quadrant of the Wendonside Terrace the thickness of the alluvial materials increases (> 60 metres) along a NW-SE alignment and layers of highly permeable gravel (previously referred to as the 'Garvie Aquifer') host a complex confined/semi-confined aquifer system which is overlain by a thick sequence of 'claybound' alluvium. The degree of confinement of the deeper water-bearing layers appears to vary spatially, from locally well confined to relatively leaky. Water-bearing layers at depths less than 35 metres are generally absent toward the southern margin of the Wendonside terrace;

- **Floodplain Domain**

This area between the terrace risers and the Mataura and Waikaia rivers represents a transitional zone where, in some places, water-bearing layers at similar elevations to those under the Garvie Domain extend out beneath the floodplain. Here, these water-bearing layers are only ~>15 mbgl and less confined as much of the overlying alluvial materials have been removed by the action of the Mataura and Waikaia rivers. It is inferred that a majority of groundwater discharge from the WGMZ occurs via seepage through the Floodplain domain into the lower reaches of the Waikaia River upstream of the Mataura River confluence.

- **Basement Domain**

This block in the western corner of the WGMZ is primarily characterised by Caples Terrane basement rock at shallow depths resulting in limited groundwater resource potential.

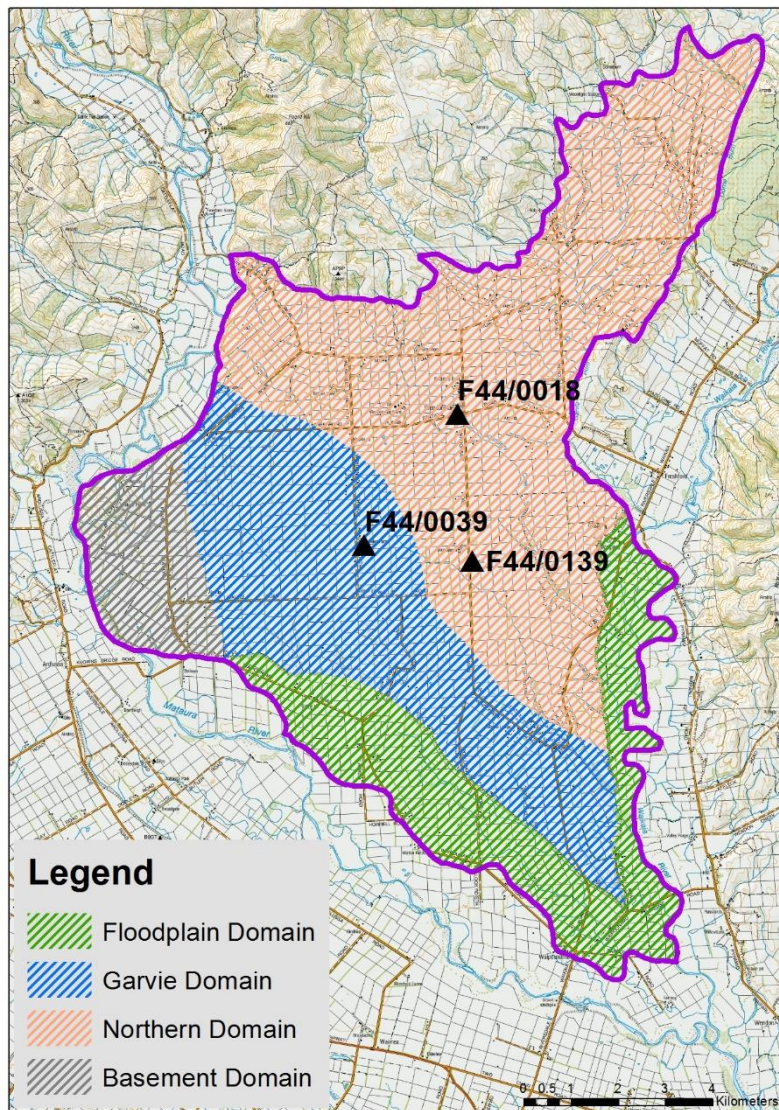


Figure 2: Approximate areal extent of the four hydrostratigraphic domains within the WGMZ (Note: these domains are identified for information purposes only and are not suitable for any other use). Also shown are the locations of currently operational long-term groundwater quality monitoring sites (referred to in the next section).

As previously noted, while these domains exhibit different subsurface geology and hydraulic properties, it appears they function as a single (albeit complex) flow system which is recharged by infiltration of local rainfall and runoff from the foothills to the north with a majority of groundwater throughflow discharging to the Waikaia River upstream of the Matura River confluence. In terms of the overall water balance, one significant observation is that much of the WGMZ (outside the Washpool Creek and Dome Burn catchments to the north) lacks significant surface drainage features. This means that land surface infiltration to underlying groundwater is the primary pathway for the export of seasonal excess soil water.

3.2 Groundwater Quality

3.2.1 Introduction

Since May 1998, 294 samples of groundwater have been collected from 41 separate bores located within the current pSWLP Wendonside groundwater management zone boundary. Environment Southland currently monitors groundwater quality in three bores in the WGMZ on an ongoing quarterly basis. This long-term monitoring began in September 2001 with sites added in March 2002, October 2002 and March 2009 (one site, bore F44/0040, being discontinued in 2012). These sites form part of the regional groundwater monitoring network and collectively 70 percent of all samples in the WGMZ have been collected at these four sites. Details of the long-term groundwater quality monitoring sites in the WGMZ are listed in Table 1.

Table 1: Long-term groundwater quality monitoring sites in the WGMZ.

Bore ID	Depth (m)	Sample period	Domain
F44/0039	35	2001 - Current	Garvie
F44/0139	27	2002 - Current	Northern
F44/0018	10	2009 - Current	Northern
F44/0040	9.23	2002 - 2012	Floodplain

In 2009, Environment Southland undertook a one-off investigation of groundwater quality on the Wendonside Terrace in response to the elevated nitrate concentrations observed in the area. Elevated nitrate concentrations (>75% of MAV) were observed in 8 of the 15 bores sampled, with concentrations consistently elevated (i.e. close to or above 75% MAV) toward the eastern side of the terrace. Since this time additional monitoring has been undertaken to develop understanding of hydrogeology and water quality within the WGMZ. Relative to most other parts of the region there is a large amount of groundwater quality data for this area which reflects the complex hydrogeology setting.

The sections below summarise groundwater quality state and trends for the WGMZ.

3.2.2 Methods

3.2.2.1 Groundwater quality state

To assess the current state of groundwater quality within the WGMZ all available data was accessed from the Environment Southland Science and Compliance division datasets. The assessment was limited to nitrate-nitrite nitrogen ($\text{NO}_3\text{-N} + \text{NO}_2\text{-N}$), also referred to as total oxidised nitrogen (TON). Both phosphorus and microbiological contaminants have been identified as not being contaminants of significant concern for groundwater quality within the WGMZ (Hodson et al., 2017; Hughes et al., 2016) and are therefore not included in this assessment.

Key points for the analysis of groundwater quality state in the WGMZ include:

- Of the 290 samples where TON was analysed, only one sample returned a value less than the method detection limit (<0.002 mg/L)⁴⁶⁹
- The number of TON measurements per site varied from 65 to 1.
- All sites were included to increase the spatial coverage. At sites where only one measurement has is available this has been used as the “median” value. This limits the statistical robustness of these sites.
- Three of the sites sampled were groundwater collected from surface springs at variable distances from the spring source.
- Bore depth measurements were obtained from Environment Southland’s “Wells” database.

⁴⁶⁹ In this case this value was halved to 0.001 mg/L for inclusion in the analysis.

- The use of TON in assessments against nitrate-nitrogen numeric objectives is based upon the assumption that all nitrogen occurs in the nitrate form (i.e. nitrite concentrations are assumed to be negligible)
- Samples were screened by comparison of relative potassium, bromide, chloride, calcium, conductivity and *E.coli* values for evidence of point source contamination. No samples were removed⁴⁷⁰.

The data used for analysis is displayed in Appendix 1.

Groundwater quality state has been assessed using the classification for oxidised Southland groundwater applied by Rissmann et al. (2011). This classification is based on the degree of anthropogenic alteration of ‘naturally occurring’ groundwater nitrate concentrations. As outlined in Table 2, the upper class in this classification is consistent with the New Zealand Drinking Water Standard (NZDWS) for nitrate of 11.3 mg/L (MOH, 2008). Regional plans require groundwater quality in Southland to be compliant with the NZDWS standard (exception for where groundwater quality naturally breaches the NZDWS).

Table 2: Classification of Southland groundwater adapted from Rissmann (2011) including reference to the NZDWS (MOH, 2008).

NO ₃ -N Class (mg/L)	Description
0.01 – 0.4	Pristine, pre-european groundwater showing no impact from human activity
0.4 – 1.0	Modern day background showing only diffuse low level inputs from human activity
1.0 – 3.5	Minor to moderate anthropogenic impacts from intensive land use
3.5 – 8.5	Moderate to high anthropogenic impact
8.5 – 11.3	Groundwater with NO ₃ -N in excess of 75 percent of the MAV in the NZDWS
> 11.3	Groundwater exceeding the NZDWS

In addition to managing groundwater quality for drinking water purposes, the RWPS and pSWLP also require groundwater to not adversely impact on surface water quality. The National Objectives Framework (NOF) in the National Policy Statement for Freshwater Management 2014 (NPSFM) establishes water quality bands and a national bottom line for nitrate toxicity for fish.

Although not directly applicable to management of groundwater quality, the NOF has been included in this assessment for comparative purposes to indicate the potential risk accumulation of TON in groundwater may pose to ecosystem health where groundwater contributes a high proportion of baseflow to surface waterbodies. Previous studies have shown that groundwater contributes a significant proportion of regional baseflow in many area of Southland (Liquid Earth, 2010; Liquid Earth, 2012, Hughes et al., 2016). It is however noted that actual concentrations measured in groundwater may not be realised in connected surface waterways due to in-stream assimilation processes (e.g. uptake by aquatic plants). Table 3 summarises the NOF bands for nitrate toxicity in surface water.

⁴⁷⁰ It is noted that 12 samples tested positive for *E.coli* contamination. Given none of the other parameters were abnormally elevated or showed evidence of point source contamination, these samples were not removed from the analysis.

Table 3: National Objectives Framework (NOF) for nitrate toxicity in rivers and streams

NOF Band	Narrative Objective	Numeric Objective (median NO ₃ -N mg/L)
A	High conservation value system. Unlikely to be effects even on sensitive species	≤ 1.0
B	Some growth effect on up to 5% of species.	> 1.0 and ≤ 2.4
C	Growth effects on up to 20% of species (mainly sensitive species such as fish). No acute effects	> 2.4 and ≤ 6.9
D	Impacts on growth of multiple species, and starts approaching acute impact level (ie risk of death) for sensitive species at higher concentrations (>20 mg/L)	> 6.9

3.2.2.2 Groundwater quality trends

Trend analysis is derived from the recent report by Hodson et al. (2017)⁴⁷¹. Data from bores with longer term collection periods are presented in graph form to give a visual indication of change over time; however no additional statistical trend analysis has been performed on these data.

3.2.3 Results

3.2.3.1 Groundwater quality state

The analysis of the state of groundwater quality is limited to TON and split into three sections. These sections are:

- 1) Analysis of long-term data for the last 5 years (2012 – 2017) (each site having 16 or greater data points giving a more robust assessment of recent state);
- 2) Analysis of data from all sites for the last 5 years (2012 – 2017); and
- 3) Analysis of data from all sites for the 19 year period (1998 – 2017).

Long-term sites for the last 5 years (2012 – 2017)

Table 4 and Figure 3 below summarise the assessment of TON against the Southland groundwater classification and the surface water NOF fish toxicity concentration objectives. This analysis includes 3 sites.

⁴⁷¹ The report includes documentation of the data analysis methodology utilised

Table 4: Assessment of TON in long-term monitoring bores against the Southland classification (left) and the NOF fish toxicity concentration objectives (right) for the 5 year period 2012 – 2017.

Southland groundwater classification		NOF toxicity for rivers and streams	
Class	Number of sites	Class	Number of sites
0.1-0.4		A	
0.4-1.0		B	
1.0-3.5		C	1
3.5-8.5	1	D	2
8.5-11.3			
>11.3	2		

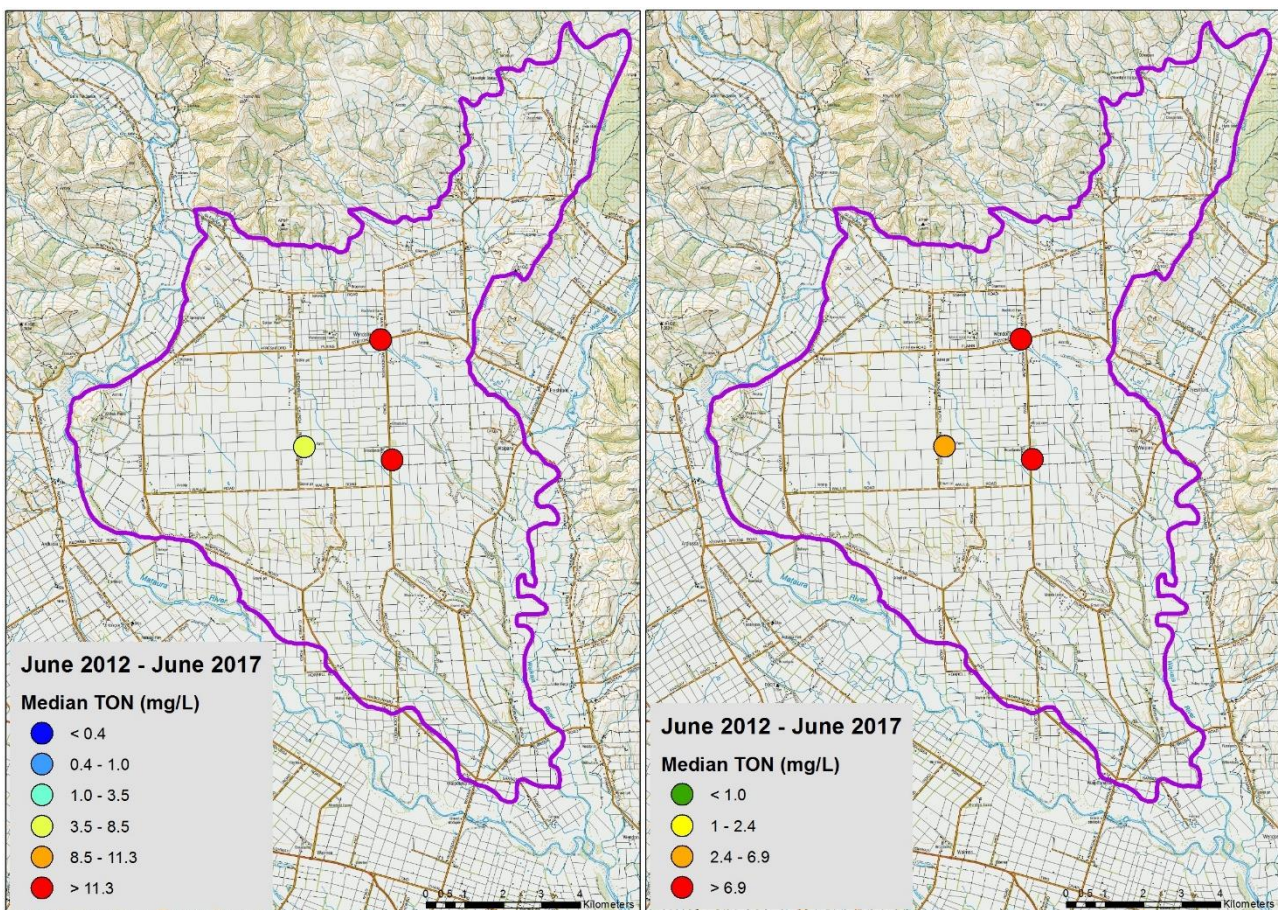


Figure 3: Assessment of TON at long-term sites against a classification of Southland groundwater (left) and the NOF fish toxicity objective (right) for the 5 year period 2012 – 2017.

All sites for the last 5 years (2012 – 2017)

Table 5 and Figure 4 below summarise the assessment of TON against the Southland groundwater classification and surface water NOF fish toxicity concentration objectives. This analysis includes all available data from 23 sites. Note that the individual sites shown were sampled between 1 and 20 times and the median value for each is utilised for the analysis.

Table 5: Assessment of TON at all sites against the Southland classification (left) and the NOF fish toxicity concentration objectives (right) for the 5 year period 2012 – 2017.

Southland groundwater classification		NOF toxicity for rivers and streams	
Class	Number of sites	Class	Number of sites
0.1-0.4	3	A	5
0.4-1.0	2	B	3
1.0-3.5	6	C	5
3.5-8.5	3	D	10
8.5-11.3	6		
>11.3	3		

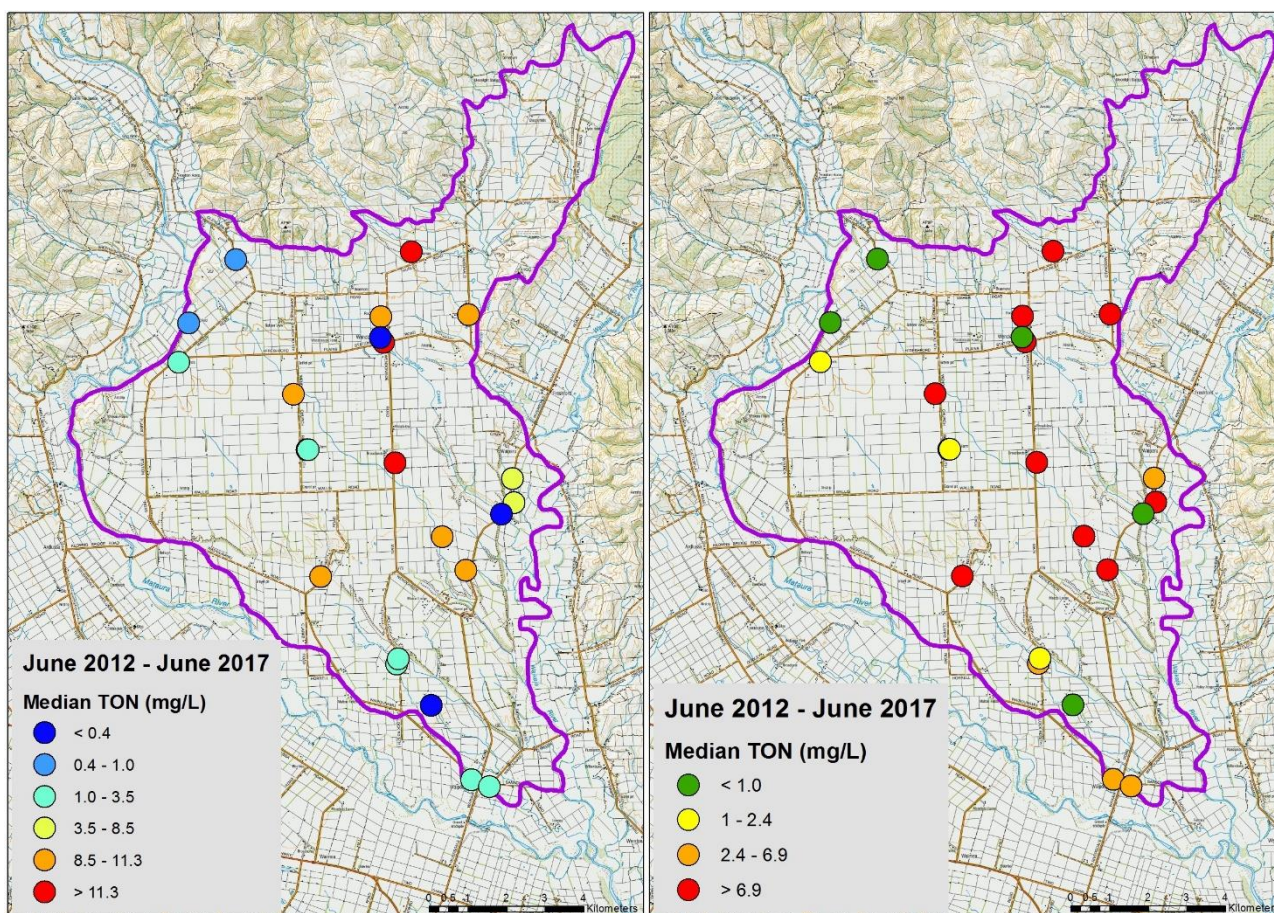


Figure 4: Assessment of TON at all sites against a classification of Southland groundwater (left) and the NOF fish toxicity objective (right) for the 5 year period 2012 – 2017.

All sites, any data collected in the last 19 years (1998 – 2017)

Table 6 and Figure 5 below summarise the assessment of TON against the Southland groundwater classification and the surface water NOF fish toxicity concentration objectives. This includes a total of 41 sites which have been sampled between 1 and 65 times, with the median value for each site used for the analysis.

Table 6: Assessment of TON at all sites against the Southland classification (left) and the NOF fish toxicity objective (right) for the 19 year period 1998 – 2017.

Southland groundwater classification		NOF toxicity for rivers and streams	
Class	Number of sites	Class	Number of sites
0.1-0.4	3	A	9
0.4-1.0	6	B	6
1.0-3.5	14	C	13
3.5-8.5	7	D	13
8.5-11.3	9		
>11.3	2		

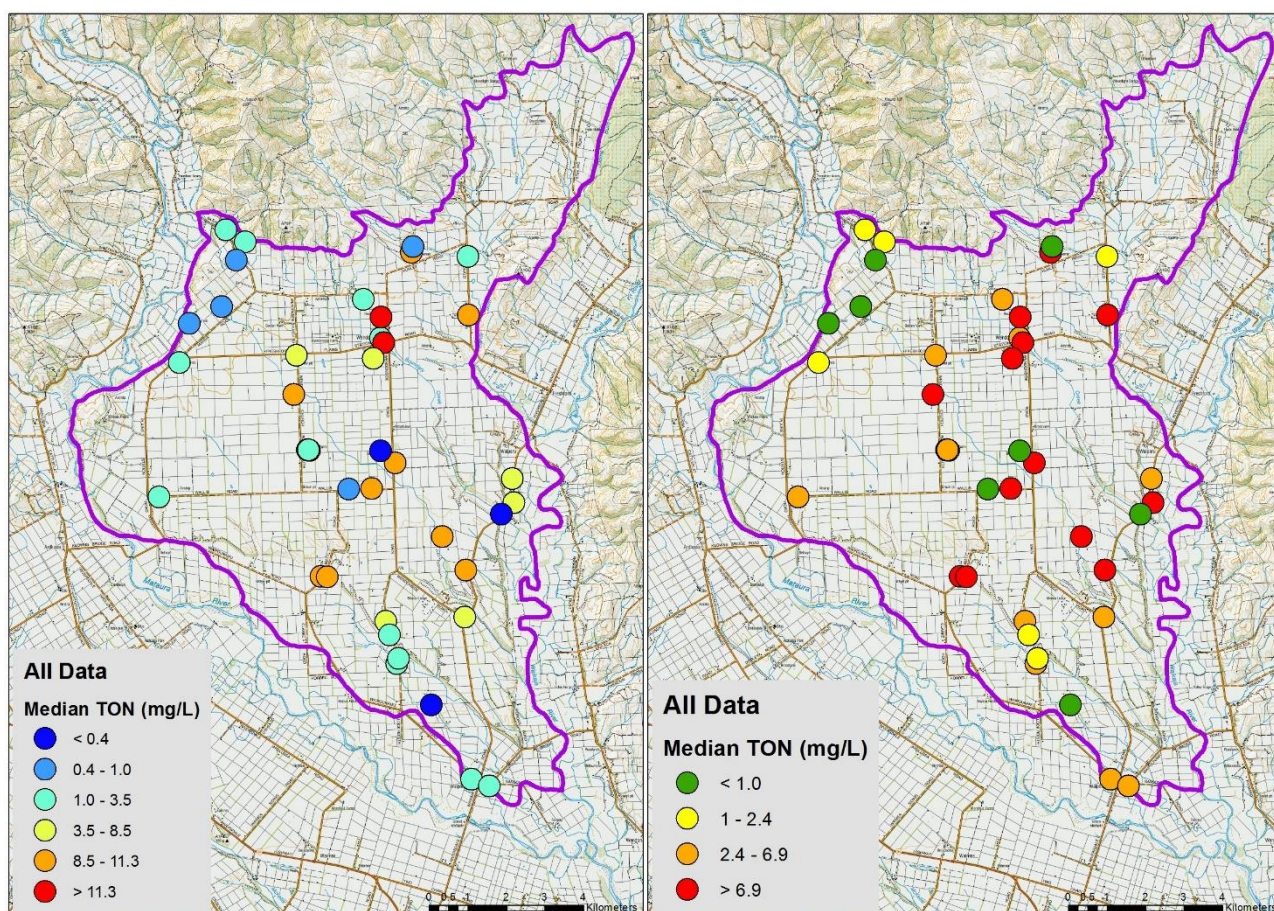


Figure 5: Assessment of TON at all sites against a classification of Southland groundwater (left) and the NOF fish toxicity objective (right) for the full 19 year period 1998 – 2017.

3.2.3.2 Groundwater quality trends

Trends in DRP and TON for the 17 year time period 2000 – 2016 at two long-term monitoring sites are presented in Table 7 below and shown on Figure 6.

Trend analysis indicates TON at both F44/0039 and F44/0139 show a statistically significant increasing trend (Hodson et al., 2017). For DRP site F44/0039 shows an improving trend and there was insufficient data to calculate a trend for F44/0139⁴⁷².

Table 7: Summary of trend assessment for sites that met the defined criteria within the WGMZ (Hodson et al., 2017).

Variable	F44/0039	F44/0139
TON	Increase	Increase
DRP	Decrease	Insufficient Data

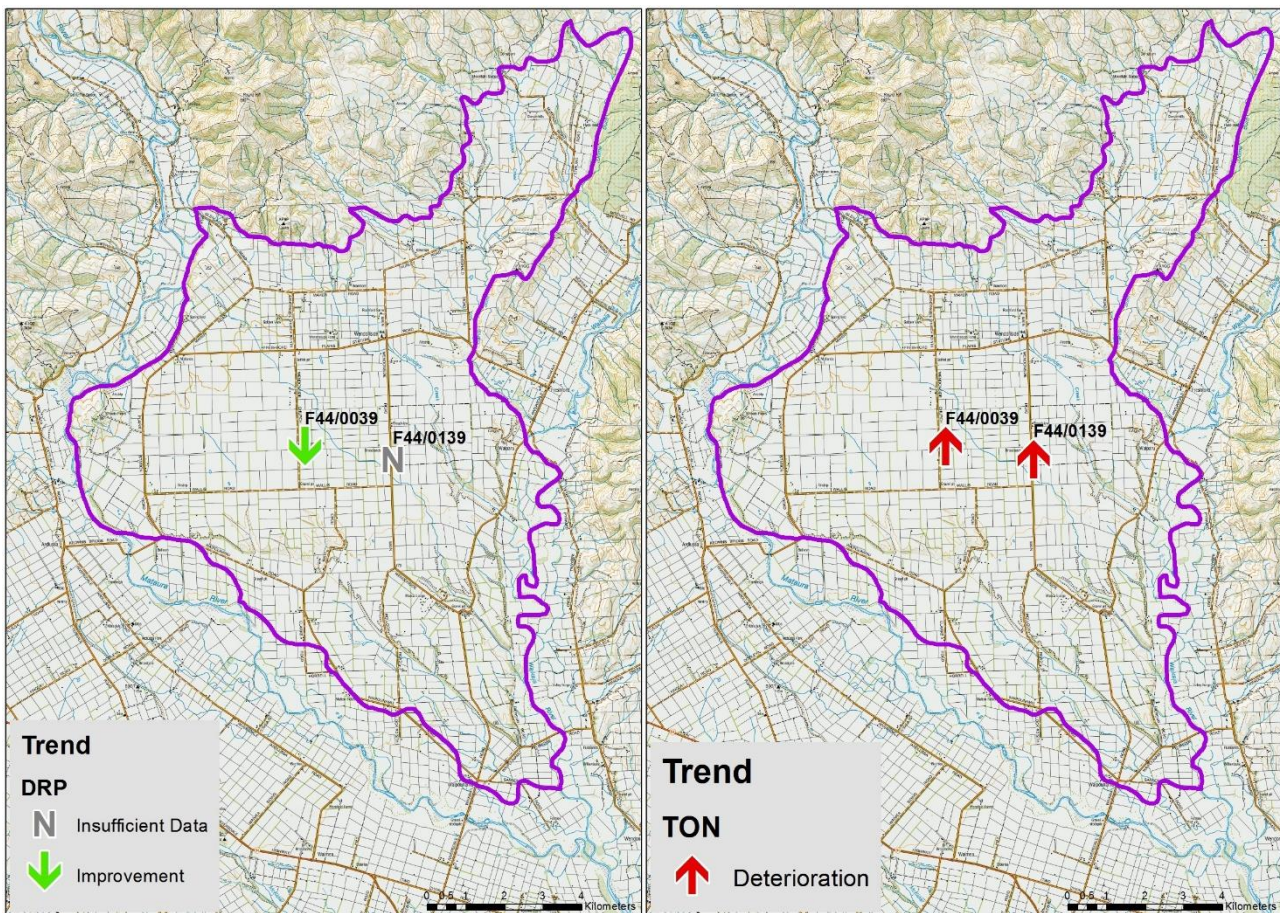


Figure 6: Trend in DRP (left) and TON (right) for the 2000 – 2016 period. This period is used as it is the most statistically robust trend calculation. The TON trends are the same for the shorter 2012 – 2016 analysis period (not displayed) (Hodson et al., 2017).

⁴⁷² As previously noted, DRP is not a groundwater quality parameter of particular concern in this area but is included as supplementary information.

Data for 6 longer term monitoring sites are shown in Figure 7. The data TON concentrations are elevated at most sites with 4 of the 6 sites sample consistently exhibiting concentrations in excess of the NZDWS MAV for nitrate-nitrogen⁴⁷³ of 11.3 mg/L (MOH, 2008).

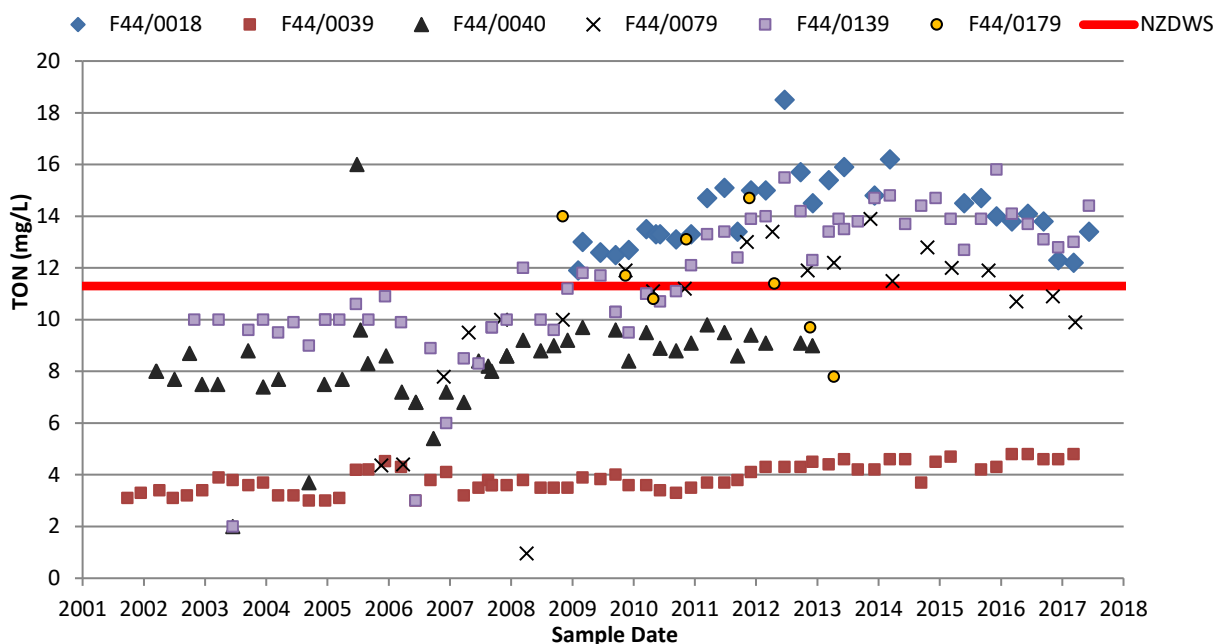


Figure 7: TON data from all sites in the WGMZ with long term data records.

3.3 Discussion of Results

The concentrations of TON across the WGMZ are variable and dependent on a range of factors such as depth of the sampled groundwater, relationship to impermeable or semi-permeable confining layers, proximity of groundwater to underlying (reducing) Tertiary sediments, and the degree of dilution from recharge water. Significant areas within the WGMZ appear to be underlain by groundwater which exhibits elevated TON concentrations at shallow to medium depths (5 to 28 m). These areas appear to primarily be within the Northern and Floodplain domains where the water table is shallow and relatively well hydraulically connected to the land surface.

Within the Garvie and Basement domains the water table is deeper and water-bearing layers are often separated from the land surface by intervening low permeability layers. As a consequence, groundwater in these areas is less well connected to the land surface and a component of recharge may be derived from distal sources (such as infiltration in the alluvial fans along the northern margin of the Wendonside Terrace) which contain low nutrient inputs.

Table 8: Summary of median TON concentration for each domain using data from all sites over a 19 year period.

Domain	Median TON (mg/L)
Northern	5.34
Floodplain	4.83
Garvie	3.47
Basement	3.40

⁴⁷³ The data was checked to ensure that the NO₂ component of TON is negligible therefore TON is comparable to NO₃-N.

The results of the trends analysis from Hodson et al. (2017) indicate increasing TON concentrations at two sites over the last 16 years. The annual percentage concentration increases are 2.4% and 4.0% at sites F44/0039 and F44/0139 respectively.

3.4 Key points

Summary of key points from the above sections:

- The understanding of groundwater resources under the Wendonside terraces has evolved as more information has become available.
- The hydrogeology is complex, consisting of multiple layers of water bearing layers that appear to be hydraulically connected both laterally and vertically. In places these layers extend beyond the terrace riser.
- Management of groundwater resources has adapted based on available knowledge.
- The groundwater quality state assessment is summarised in the table below with respect to the NZDWS MAV and the NOF national bottom line.

Table 9: Summary of groundwater quality results for the Wendonside groundwater zone.

Time period and number of sites	Exceed NZDWS maximum acceptable value (>11.3 mg/L)	Exceed NOF national bottom line for nitrate toxicity in rivers and streams (>6.9 mg/L)
Long term sites 2012-2017 n=3	2 (66.7%)	2 (66.7%)
All sites 2012-2017 n=23	3 (13%)	10 (43.5%)
All sites 1998-2017 n=41	2 (4.9%)	13 (31.7%)

- Trend analysis shows with regard to TON both F44/0039 and F44/0139 show deteriorating trends (Hodson et al., 2017) for the 2000 – 2016 period.

4 Proposed Southland Water and Land Plan hearing submissions

The following section addresses specific issues raised by submitters to the pSWLP hearings relating to groundwater resources in the Wendonside Groundwater Management Zone (WGMZ).

4.1 Submitter 419 – J R and D M Smith

This submission identifies a TON concentration of 1.41 mg/L has been measured at a bore (F44/0134) on their property near Plains Station Road, Wendonside. They propose that the low nitrate (NO₃-N) concentration measured in a sample taken July 2016 (1.41 mg/L) is inconsistent with groundwater being degraded in the WGNZ.

Environment Southland’s Wells database shows that bore F44/0134 was drilled to a depth of 41 mbgl and is likely in one of the semi-confined layers as opposed to the water table (unconfined) aquifer. The location of this bore also places it within the Garvie Domain. Because groundwater in this bore is unlikely to be directly exposed to overlying land use (i.e. some degree of hydraulic separation due to aquitard(s)), it is not surprising the nitrate concentration is relatively low and would be classed as showing minor to moderate anthropogenic impacts from intensive land use (Rissmann, 2011). This result is consistent with our understanding of groundwater resources under the Wendonside terrace.

4.2 Submitter 868 – Wilkins Farming Ltd

This submission states:

- 1) The current long-term monitoring sites do not adequately characterise the groundwater quality in the WGMZ;
- 2) The potential lag time in the system means the degradation observed is in fact a legacy effect from prior land use and not representative of current land use; and
- 3) Poor bore wellhead protection may be the cause of the observed degradation observed in bore F44/0018 (Wendonside School).

These points are addressed in order.

Given the complex hydrogeological setting of the WGMZ, it is unrealistic to expect three long-term monitoring sites to adequately characterise groundwater quality within the zone to a farm scale or similar. The purpose of the long-term monitoring sites is for regional-scale state and trend reporting. The sites cover 2 of the 3 domains under the WGMZ including the shallow unconfined Northern Domain (monitoring bores at 10 and 27 m bgl) and the semi-confined Garvie Domain (bore depth 35 m bgl). In addition to the long-term monitoring, groundwater quality monitoring data is also collected through investigation and compliance monitoring which improves the spatial resolution of available data.

All groundwater systems have time lags between land use and observed effects in groundwater quality due to the travel time of contaminants moving through the unsaturated zone and aquifer. The amount of time lag varies according to hydrogeological setting (e.g. aquifer transmissivity and type), thickness of the unsaturated zone and anthropogenic activities (e.g. water use). In the WGMZ, the thickness of the unsaturated zone varies from 2 to 25 metres below ground level. Nitrate lag times have been modelled at a regional scale by Wilson et al. (2014). This analysis assessed the unsaturated vadose zone transit time and shallow aquifer mixing time to give a combined total time lag. The study indicates that time lags under the Wendonside terrace vary from 5 to 10 years in the Northern Domain and 10 to 27 years in western part of the WGMZ. Age-dating of bore F44/0139 (in the Northern Domain) found a mean residence time of 14 years. A study of land use and land management changes over the last 15 years would be required to predict future groundwater quality, including the effect of current land use on groundwater quality. Regional data from Pearson & Caudrey (2016) suggests there has been some land use intensification in this area since 1996; however, site-specific information would be required to predict future groundwater quality.

Samples from F44/0018 have returned elevated (>1 MPN/100ml) *E.coli* results on 6 of 21 occasions; however this is likely due to the sampling point (water sampled from an inflow into a large storage tank). All other chemical parameters suggest that the elevated nitrate-nitrogen concentrations are due to a diffuse rather than point source. Recently the sampling point has been altered so that water is now sampled directly from the bore.

4.3 Submitter 386 – Simon Hopcroft

This submission questions the inclusion of the Garvie Aquifer within Appendix L.5 of the pSWLP. The inclusion of the Garvie Aquifer in the pSWLP reflected the management of groundwater resources as two separate aquifers at that time (as discussed in Section 3.1.1). Since the pSWLP was notified, management of groundwater resources through the consent process has been adapted to reflect advances in scientific understanding, with the various water bearing layers treated as one resource. The removal of the Garvie Aquifer from Appendix L.5 has been recommended in the S42a report.

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6 Appendices

6.1 Appendix 1 – Groundwater Data

Site Name	Easti ng	Nort hing	Time	Bromide (mg/L)	Calcium (Dissolved) mg/L	Chloride (mg/L)	Conductivity (Lab) us/cm	E-Coli (MPN)	Nitrogen (Nitrate Nitrite) (mg/L)	Nitrogen (Nitrate)(mg/L)	Nitrogen (Total)mg/L	Potassium (Dissolved)mg/L	Sodium (Dissolved)(mg/L)	pH (Lab)	DEP TH
F44/0038	1266 394	4923 692	1998- 05-01				127.3		5.8	5.8				7.4	38. 1
F44/0041	1270 746	4916 911	1998- 05-01				121.7		5.2	5.2				7.9	36. 6
F44/0032	1262 829	4920 026	1998- 05-01				112.3		3.4	3.4				7.6	
F44/0039	1266 680	4921 235	2001- 09-26		8.8	4	107	<1.00	3.1			0.88	6.5	7	35
F44/0039	1266 680	4921 235	2001- 12-14		9	4	106	<1.00	3.3			0.81	5.7	6.6	35
F44/0040	1267 023	4917 959	2002- 03-15						8						9.2 3
F44/0040	1267 023	4917 959	2002- 03-18						8						9.2 3
F44/0039	1266 680	4921 235	2002- 04-04		9.2	3.7	104	<1.00	3.4			1.3	7.1	6.6	35
F44/0039	1266 680	4921 235	2002- 06-24		8.94	3.8	104	<1.00	3.1			1.4	6.8	6.7	35
F44/0040	1267 023	4917 959	2002- 07-03						7.7						9.2 3
F44/0039	1266 680	4921 235	2002- 09-17		8.8	4	103	<1.00	3.2			0.73	6.2	6.6	35
F44/0040	1267 023	4917 959	2002- 10-02						8.7						9.2 3
F44/0139	1268 956	4920 903	2002- 10-31			6.9	155	<1.00	10					6.6	27
F44/0040	1267 023	4917 959	2002- 12-16						7.5						9.2 3
F44/0039	1266 680	4921 235	2002- 12-17		9.4	3	107	<1.00	3.4			1	6.5	6.7	35
F44/0188	1264 569	4926 934	2003- 02-18			36			1.08	1.08				7	10. 2
F44/0040	1267 023	4917 959	2003- 03-18						7.5						9.2 3
F44/0139	1268 956	4920 903	2003- 03-25			7.5	155	<1.00	10					6.2	27
F44/0039	1266 680	4921 235	2003- 03-25		10	4.5	112	<1.00	3.9			0.89	6.8	6.6	35
F44/0040	1267 023	4917 959	2003- 06-16						2						9.2 3
F44/0039	1266 680	4921 235	2003- 06-17		9.1	4	113	<1.00	3.8			1	6.8	6.5	35
F44/0139	1268 956	4920 903	2003- 06-17			7.1	156	<1.00	2					6.2	27
F44/0040	1267 023	4917 959	2003- 09-16						8.8						9.2 3
F44/0139	1268 956	4920 903	2003- 09-18			8.3	151	<1.00	9.6					6.5	27
F44/0039	1266 680	4921 235	2003- 09-18		9.3	5.4	110	<1.00	3.6			0.81	6.3	6.6	35
F44/0139	1268 956	4920 903	2003- 12-15			6.9	148	3	10					6.6	27
F44/0040	1267 023	4917 959	2003- 12-15						7.4						9.2 3
F44/0039	1266 680	4921 235	2003- 12-15		8.9	4.9	110	<1.00	3.7			0.87	6.5	6.6	35
F44/0139	1268 956	4920 903	2004- 03-15			8	150	<1.00	9.5					6.2	27

F44/0039	1266 680	4921 235	2004- 03-15		9.2	4	110	<1.00	3.2			1.1	7	6.5	35
F44/0040	1267 023	4917 959	2004- 03-16						7.7						9.2 3
F44/0139	1268 956	4920 903	2004- 06-14			8.5	151	<1.00	9.9					6.3	27
F44/0039	1266 680	4921 235	2004- 06-14		8.9	4.5	106	<1.00	3.2			0.8	6.4	6.7	35
F44/0139	1268 956	4920 903	2004- 09-14			8.3	148	<1.00	9					6.4	27
F44/0040	1267 023	4917 959	2004- 09-14						3.7						9.2 3
F44/0039	1266 680	4921 235	2004- 09-14		8.8	4.4	107	<1.00	3			0.9	6.6	6.6	35
F44/0040	1267 023	4917 959	2004- 12-16						7.5						9.2 3
F44/0139	1268 956	4920 903	2004- 12-20			8.8	156	<1.00	10					6.2	27
F44/0139	1268 956	4920 903	2004- 12-20			8.8	156	<1.00	10					6.2	27
F44/0039	1266 680	4921 235	2004- 12-20		8.3	5.7	104	<1.00	3			0.8	6.6	6.6	35
F44/0226	1265 060	4926 633	2005- 02-22			6			1.12	1.12				6.7	25
F44/0225	1270 827	4926 246	2005- 03-09			4			1.02	1.02				6.3	16
F44/0139	1268 956	4920 903	2005- 03-15		9.6	7.8	159	<1.00	10			1.1	13	6.3	27
F44/0039	1266 680	4921 235	2005- 03-15		8.7	23	105	<1.00	3.1			0.9	7	6.5	35
F44/0040	1267 023	4917 959	2005- 04-01						7.7						9.2 3
F44/0139	1268 956	4920 903	2005- 06-22		9.3	7.4	156	<1.00	10.6			1	13	6.8	27
F44/0039	1266 680	4921 235	2005- 06-22		9.1	3.2	109	1	4.19			0.9	7.3	6.6	35
F44/0040	1267 023	4917 959	2005- 06-28						16						9.2 3
F44/0133	1267 190	4917 946	2005- 07-19						10						7.3
F44/0040	1267 023	4917 959	2005- 07-19						9.6						9.2 3
F44/0078	1269 411	4926 500	2005- 08-15				11.1	<1.00	0.72						18
F44/0040	1267 023	4917 959	2005- 09-02		8.9	13	162	<1.00	8.3			1	13	6.5	9.2 3
F44/0139	1268 956	4920 903	2005- 09-06		8.8	7.6	158	<1.00	10			0.9	13	6.4	27
F44/0039	1266 680	4921 235	2005- 09-06		8.8	4.5	115	<1.00	4.2			0.8	7.1	6.9	35
F44/0079	1269 364	4926 364	2005- 11-21				156	1	4.36						10. 5
F44/0139	1268 956	4920 903	2005- 12-13		9.3	7.6	156	<1.00	10.9			1	13	6.6	27
F44/0039	1266 680	4921 235	2005- 12-13		9.2	5.3	113	<1.00	4.53			0.9	7.1	7.4	35
F44/0040	1267 023	4917 959	2005- 12-19		9.2	13	157	<1.00	8.6			0.95	12	6.6	9.2 3
F44/0139	1268 956	4920 903	2006- 03-20		9.6	8.1	152	<1.00	9.9			1	12	6.5	27
F44/0039	1266 680	4921 235	2006- 03-20		9.9	5.3	114	<1.00	4.3			0.9	7.2	6.8	35

F44/0040	1267 023	4917 959	2006- 03-23					7.2						9.2 3
F44/0079	1269 364	4926 364	2006- 03-30			170	<1.00	4.4						10. 5
F44/0120	1268 126	4925 140	2006- 04-27			130	<1.00	2.7						
F44/0276	1268 575	4924 133	2006- 04-27			130	<1.00	2.7						
F44/0039	1266 680	4921 235	2006- 06-14	10	5.6	102	<1.00	3			1.1	5.8	6.5	35
F44/0139	1268 956	4920 903	2006- 06-14	10	7.7	140	<1.00	3			0.6	9.2	7.3	27
F44/0040	1267 023	4917 959	2006- 06-15	9.9	14	157	<1.00	6.8			1	13	6.7	9.2 3
F44/0040	1267 023	4917 959	2006- 06-16	9.9	14	157	<1.00	6.8			1	13	6.7	9.2 3
F44/0139	1268 956	4920 903	2006- 09-11	9.1	7.8	151	<1.00	8.9			1.1	13	6.5	27
F44/0039	1266 680	4921 235	2006- 09-11	9.6	5.2	114	<1.00	3.8			1	7.3	6.7	35
F44/0040	1267 023	4917 959	2006- 09-28	9.2	16	157	<1.00	5.4			1.2	13	6.8	9.2 3
F44/0079	1269 364	4926 364	2006- 11-28			235	<1.00	7.8						10. 5
F44/0276	1268 575	4924 133	2006- 11-28			129	<1.00	2.3					6.6	
F44/0040	1267 023	4917 959	2006- 12-15	9.4	13	160	<1.00	7.2			1	12	6.5	9.2 3
F44/0139	1268 956	4920 903	2006- 12-15	9.4	8.3	160	2	6			1	12	6.4	27
F44/0039	1266 680	4921 235	2006- 12-15	9.1	5.3	120	<1.00	4.1			0.9	6.9	6.7	35
F44/0139	1268 956	4920 903	2007- 03-29	9.5	7.8	155	<1.00	8.5			1.1	12	6.4	27
F44/0040	1267 023	4917 959	2007- 03-29	9.3	12	160	<1.00	6.8			1.1	12	7	9.2 3
F44/0039	1266 680	4921 235	2007- 03-29	9.2	4.7	111	<1.00	3.2			0.9	6.8	7.3	35
F44/0079	1269 364	4926 364	2007- 04-27			229	<1.00	9.5						10. 5
F44/0276	1268 575	4924 133	2007- 04-27			130	<1.00	2.9					6.6	
F44/0040	1267 023	4917 959	2007- 06-26	9.5	31	161	<1.00	8.4			1.1	12	6.9	9.2 3
F44/0139	1268 956	4920 903	2007- 06-26	9.1	15	154	<1.00	8.3			1	12	6.7	27
F44/0039	1266 680	4921 235	2007- 06-26	9.1	31	111	<1.00	3.5			0.9	6.6	6.8	35
F44/0040	1267 023	4917 959	2007- 08-21	9.7	13	162		8.2			1.1	12	6.5	9.2 3
F44/0039	1266 680	4921 235	2007- 08-21	9.3	4.2	109		3.8			0.9	7	6.6	35
F44/0139	1268 956	4920 903	2007- 09-12	9.2	9.2	150	<1.00	9.7			1.2	13	6.2	27
F44/0040	1267 023	4917 959	2007- 09-12	10	14	163	<1.00	8			1.1	14	7.4	9.2 3
F44/0039	1266 680	4921 235	2007- 09-12	9.2	6	109	<1.00	3.6			1		7.2	35
F44/0139	1268 956	4920 903	2007- 09-13	9.2	9.2	150	<1.00	9.7			1.2	13	6.2	27
F44/0039	1266 680	4921 235	2007- 09-13	9.2	6	109	<1.00	3.6			1	7.8	7.2	35

F44/0079	1269 364	4926 364	2007- 11-07			244	<1.00	10							10. 5
F44/0276	1268 575	4924 133	2007- 11-07			129	<1.00	2.9							
F44/0139	1268 956	4920 903	2007- 12-10	8.8	8.4	145	<1.00	10			1.1	12	7.1		27
F44/0040	1267 023	4917 959	2007- 12-10	9.6	13	158	<1.00	8.6			1.1	13	7.2	9.2 3	
F44/0040	1267 023	4917 959	2007- 12-10	9.6	13	158	<1.00	8.6			1.1	13	7.2	9.2 3	
F44/0039	1266 680	4921 235	2007- 12-10	8.7	4.9	104	<1.00	3.6			1.1	7.1	7.4		35
F44/0139	1268 956	4920 903	2008- 03-17	9.7	8.6	148	<1.00	12			1.1	13	6.3		27
F44/0040	1267 023	4917 959	2008- 03-17	9.9	12	157	<1.00	9.2			1.2	13	6.8	9.2 3	
F44/0039	1266 680	4921 235	2008- 03-17	8.9	4.5	101	<1.00	3.8			0.9	6.9	6.6		35
F44/0120	1268 126	4925 140	2008- 04-07			131	<1.00	2.8							
F44/0078	1269 411	4926 500	2008- 04-07			113	<1.00	0.96							18
F44/0079	1269 364	4926 364	2008- 04-07			113	<1.00	0.96							10. 5
F44/0139	1268 956	4920 903	2008- 06-30	10	8.5	150	<1.00	10			1	13	6.6		27
F44/0040	1267 023	4917 959	2008- 06-30	9	13	170	<1.00	8.8			0.98	12	7	9.2 3	
F44/0039	1266 680	4921 235	2008- 06-30	9.2	4.4	100	<1.00	3.5			0.86	7	6.7		35
F44/0261	1269 404	4926 501	2008- 08-22		4			0.41	0.41				7.4		24
F44/0280	1264 454	4924 946	2008- 08-25		4			0.69	0.69				6.2		18
F44/0139	1268 956	4920 903	2008- 09-16	8.3	8.8	143	<10.0	9.6			1	12	6.3		27
F44/0040	1267 023	4917 959	2008- 09-16	8.7	13	160	<10.0	9			1	11	6.5	9.2 3	
F44/0039	1266 680	4921 235	2008- 09-16	7.8	4.4	101	<10.0	3.5			0.84	6.3	6.6		35
F44/0179	1268 589	4924 672	2008- 11-10			213	<1.00	14					5.7	6.1 3	
F44/0079	1269 364	4926 364	2008- 11-10			249	<1.00	10							10. 5
F44/0139	1268 956	4920 903	2008- 12-09	9.3	9.1	162	<1.00	11.2			0.96	12	6.6		27
F44/0040	1267 023	4917 959	2008- 12-09	9.6	13	167	4	9.2			1	13	6.9	9.2 3	
F44/0039	1266 680	4921 235	2008- 12-09	8.2	4.6	104	<1.00	3.5			0.84	6.6	6.9		35
F44/0256	1266 731	4921 225	2009- 01-21	8.9	4.7			3.3			0.77	6.5	6.6		57
F44/0069	1268 567	4921 216	2009- 01-21	4.7	6.1			0.0069			0.49	11			26
F44/0069	1268 567	4921 216	2009- 01-21	4.7	6.1			0.006			0.49	11	6.7		26
F44/0297	1268 334	4920 235	2009- 01-22	23	8			8.7			1.1	13	6.5		45
F44/0235	1268 703	4916 796	2009- 01-22	9.2	8.9			6			1.1	11	6.8		36
F44/0235	1268 703	4916 796	2009- 01-22	9.2	11			6			1.1	11	7.7		36

F44/0301	1267 748	4920 223	2009- 01-22		5.1	2			0.51			0.51	3.2	7.7	54
F44/0018	1268 651	4924 011	2009- 02-09						11.9						10
F44/0308	1268 799	4916 442	2009- 02-13			7			2.21	2.21				7.2	29.5
F44/0018	1268 651	4924 011	2009- 03-09						13						10
F44/0139	1268 956	4920 903	2009- 03-09		9.5	9	166	<1.00	11.8			0.9	11	6.6	27
F44/0040	1267 023	4917 959	2009- 03-09		9.4	13	166	<1.00	9.7			0.98	12	6.6	9.2 3
F44/0039	1266 680	4921 235	2009- 03-09		8.8	4.7	107	1	3.9			0.8	6.4	6.7	35
F44/0018	1268 651	4924 011	2009- 06-22						12.6						10
F44/0018	1268 651	4924 011	2009- 06-23						12.6						10
F44/0139	1268 956	4920 903	2009- 06-23		10	9	157	<1.00	11.7			0.97	12	5.7	27
F44/0039	1266 680	4921 235	2009- 06-23		21		149	<1.00	3.83			0.83	7	8.8	35
F44/0077	1266 707	4921 242	2009- 06-23		9.4	3.9	100	<1.00	2.5			0.77	6.4	6.2	55.93
F44/0018	1268 651	4924 011	2009- 09-22		12	17	183	<1.00	12.5			0.87	10	5.7	10
F44/0139	1268 956	4920 903	2009- 09-22		8.8	8.7	145	<1.00	10.3			0.88	11	6.2	27
F44/0139	1268 956	4920 903	2009- 09-22		8.8		145	<1.00	10.3			0.88	11	6.2	27
F44/0040	1267 023	4917 959	2009- 09-22		9.2	13	159	<1.00	9.6			0.92	11	6.2	9.2 3
F44/0039	1266 680	4921 235	2009- 09-22		8.4	4.3	105	<1.00	4			0.79	6.3	6.5	35
F44/0079	1269 364	4926 364	2009- 11-19				241	<1.00	11.9						10.5
F44/0179	1268 589	4924 672	2009- 11-19				177	35	11.7						6.1 3
F44/0018	1268 651	4924 011	2009- 12-08						12.7						10
F44/0139	1268 956	4920 903	2009- 12-08		9.5	9.2	150	<1.00	9.5			0.95	12	6.2	27
F44/0040	1267 023	4917 959	2009- 12-08		10	13	162	<1.00	8.4			0.95	13	6.5	9.2 3
F44/0039	1266 680	4921 235	2009- 12-08						3.6						35
F44/0018	1268 651	4924 011	2010- 03-23						13.5						10
F44/0139	1268 956	4920 903	2010- 03-23		9.8	8.8	151	<1.00	11			1	13	6.3	27
F44/0139	1268 956	4920 903	2010- 03-23		9.8		151	<1.00	11			1	13	6.3	27
F44/0040	1267 023	4917 959	2010- 03-23		11	13	161	<1.00	9.5			1.1	14	6.5	9.2 3
F44/0039	1266 680	4921 235	2010- 03-23		9.2	4.6	103	<1.00	3.6			0.89	7	6.6	35
F44/0079	1269 364	4926 364	2010- 05-03				252	<1.00	11.1						10.5
F44/0179	1268 589	4924 672	2010- 05-05				170	4	10.8					6	6.1 3
F44/0018	1268 651	4924 011	2010- 05-20						13.3						10

F44/0219	1268 380	4923 615	2010- 05-20					7.6							32
F44/0018	1268 651	4924 011	2010- 06-14					13.3							10
F44/0139	1268 956	4920 903	2010- 06-14		9.3	9.1	151	<1.00	10.7			0.98	11.9	6.3	27
F44/0040	1267 023	4917 959	2010- 06-14		9.4	12.1	160	<1.00	8.9			1.01	11.8	6.6	9.2 3
F44/0039	1266 680	4921 235	2010- 06-14		8.7	4.5	104	<1.00	3.4			0.84	6.5	6.7	35
F44/0018	1268 651	4924 011	2010- 09-17						13.1						10
F44/0139	1268 956	4920 903	2010- 09-17		10	8.7	148	<1.00	11.1			1.02	13.1	6.5	27
F44/0040	1267 023	4917 959	2010- 09-17		10.5	12.5	160	<1.00	8.8			1.06	12.6	6.8	9.2 3
F44/0039	1266 680	4921 235	2010- 09-17		9.2	4.5	101	<1.00	3.3			0.86	6.6	6.9	35
F44/0079	1269 364	4926 364	2010- 11-08				26.2	<1.00	11.2						10. 5
F44/0179	1268 589	4924 672	2010- 11-18				20.4	<1.00	13.1	13.1					6.1 3
F44/0018	1268 651	4924 011	2010- 12-16						13.3	13.3					10
F44/0139	1268 956	4920 903	2010- 12-16		10.4	9	171	<1.00	12.1	12.1		1.03	13.1	6.4	27
F44/0040	1267 023	4917 959	2010- 12-16		10.4	13	172	<1.00	9.1	9.1		1.05	12.8	6.7	9.2 3
F44/0039	1266 680	4921 235	2010- 12-16		9.1	4.4	110	<1.00	3.5	3.5		0.85	6.9	6.9	35
F44/0018	1268 651	4924 011	2011- 03-22			17.3	188	15	14.7	14.7					10
F44/0139	1268 956	4920 903	2011- 03-22		10.6	9	162	<1.00	13.3	13.3		1.06	13.8	6.4	27
F44/0040	1267 023	4917 959	2011- 03-22		9.8	12.7	162	<1.00	9.8	9.8		1.05	13.2	6.6	9.2 3
F44/0039	1266 680	4921 235	2011- 03-22		8.8	4.2	104	<1.00	3.7	3.7		0.84	6.7	6.9	35
F44/0077	1266 707	4921 242	2011- 04-27		9.3	3.6	99	<1.00	2.2	2.2		0.8	6.8	6.9	55. 93
F44/0018	1268 651	4924 011	2011- 07-04			17.8	195	<1.00	15.1	15.1					10
F44/0139	1268 956	4920 903	2011- 07-04	0.062	10.4	8.9	171	<1.00	13.4	13.4		1.03	14.1	6.4	27
F44/0040	1267 023	4917 959	2011- 07-04	0.05	10.4	12.5	168	<1.00	9.5	9.5		1.09	14.3	6.6	9.2 3
F44/0039	1266 680	4921 235	2011- 07-04	0.023	9.1	4.3	108	<1.00	3.7	3.7		0.87	7.3	6.7	35
F44/0018	1268 651	4924 011	2011- 09-20			18	199	<1.00	13.4	13.4					10
F44/0139	1268 956	4920 903	2011- 09-20	0.06	11.3	9.4	168	<1.00	12.4	12.4		1.09	13.7	6.2	27
F44/0040	1267 023	4917 959	2011- 09-20	0.048	10.8	13	166	<1.00	8.6	8.6		1.09	13.1	6.5	9.2 3
F44/0039	1266 680	4921 235	2011- 09-20		9.4	4.6	107		3.8	3.8		0.89	6.9	6.6	35
F44/0077	1266 707	4921 242	2011- 09-20	0.015	9.2	3.6	100	<1.00	2.4	2.4		0.84	6.5	6.8	55. 93
F44/0079	1269 364	4926 364	2011- 11-15	0.069		37	266	<1.00	13						10. 5
F44/0179	1268 589	4924 672	2011- 11-30	0.046		19.5	205	<1.00	14.7	14.7					6.1 3

F44/0018	1268 651	4924 011	2011- 12-09			17.4	208	<1.00	15	15				10	
F44/0139	1268 956	4920 903	2011- 12-09	0.064	11.7	9.2	175	<1.00	13.9	13.9		1.12	13.8	6.2	27
F44/0040	1267 023	4917 959	2011- 12-09	0.053	10.8	12.5	170	<1.00	9.4	9.4		1.13	13.5	6.6	9.2 3
F44/0039	1266 680	4921 235	2011- 12-09	0.028	9.9	4.6	113	<1.00	4.1	4.1		0.96	7.6	6.7	35
F44/0077	1266 707	4921 242	2011- 12-09	0.019	10	4	107	<1.00	2.8	2.8		0.91	7.1	7.1	55. 93
F44/0018	1268 651	4924 011	2012- 03-07			18.1	207	<1.00	15	15					10
F44/0139	1268 956	4920 903	2012- 03-07		11.1	9.9	184	<1.00	14	14		1.03	13.1	6.4	27
F44/0040	1267 023	4917 959	2012- 03-07		9.7	13.1	173	<1.00	9.1	9.1		1.01	12.4	6.6	9.2 3
F44/0039	1266 680	4921 235	2012- 03-07		8.9	4.8	114	<1.00	4.3	4.3		0.82	6.5	6.7	35
F44/0077	1266 707	4921 242	2012- 03-07		8.5	3.7	104	10	2.5	2.5		0.81	6.6	6.9	55. 93
F44/0079	1269 364	4926 364	2012- 04-16			39	287	<1.00	13.4	13.4					10. 5
F44/0179	1268 589	4924 672	2012- 04-27				194	<1.00	11.4	11.4					6.1 3
F44/0018	1268 651	4924 011	2012- 06-28						18.5	18.5					10
F44/0139	1268 956	4920 903	2012- 06-28		12.4	9.5	182	<1.00	15.5	15.5		1.16	13.9	6.5	27
F44/0039	1266 680	4921 235	2012- 06-28		9.7	5	111	<1.00	4.3	4.3		0.92	6.9	7.6	35
F44/0077	1266 707	4921 242	2012- 06-28		9	3.8	101	<1.00	2.3	2.3		0.85	6.4	7.7	55. 93
F44/0018	1268 651	4924 011	2012- 10-01	0.06		17.1	218	<1.00	15.7	15.7					10
F44/0139	1268 956	4920 903	2012- 10-01	0.062	11.3	9.4	183	<1.00	14.2	14.2		1.06	13.8	6.6	27
F44/0040	1267 023	4917 959	2012- 10-01	0.049	10.4	12.2	169	<1.00	9.1	9.1		1.07	13	6.7	9.2 3
F44/0039	1266 680	4921 235	2012- 10-01	0.025	9.3	5.7	112	<1.00	4.3	4.3		0.85	7	6.9	35
F44/0079	1269 364	4926 364	2012- 11-13			36	284	<1.00	11.9	11.8					10. 5
F44/0179	1268 589	4924 672	2012- 11-27				157	<1.00	9.7	9.7					6.1 3
F44/0139	1268 956	4920 903	2012- 12-11	0.1	13.2	10.6	177	108	12.3	12.3		1.25	15.5	6.6	27
F44/0040	1267 023	4917 959	2012- 12-11	0.09	10.7	14	163	<1.00	9	9		1.1	13	6.8	9.2 3
F44/0039	1266 680	4921 235	2012- 12-11	0.07	9.9	5.4	105	<1.00	4.5	4.5		0.92	7.2	6.9	35
F44/0018	1268 651	4924 011	2012- 12-13			19.2	212	<1.00	14.5	14.5					10
F44/0018	1268 651	4924 011	2013- 03-19	0.15	16.2	18.4	215	259	15.4	15.4		1.05	11.5	6.6	10
F44/0139	1268 956	4920 903	2013- 03-19	0.1	11.7	10.6	181	<10.0	13.4	13.4		1.1	13	6.5	27
F44/0039	1266 680	4921 235	2013- 03-19	0.07	10	5.6	116	<10.0	4.4	4.4		0.9	7	6.7	35
F44/0079	1269 364	4926 364	2013- 04-19			37	294	<1.00	12.2	12.2					10. 5
F44/0179	1268 589	4924 672	2013- 04-19				157	<1.00	7.8	7.8					6.1 3

F44/0139	1268 956	4920 903	2013- 05-16	0.1	12.4	10	182		13.9	13.9		1.15	13.9	6.7	27
F44/0018	1268 651	4924 011	2013- 06-18	0.1	16.2	18.1	220	1	15.9	15.9		1.06	12.7	6.4	10
F44/0139	1268 956	4920 903	2013- 06-18	0.1	11.6	10.5	186	<1.00	13.5	13.5		1.12	13.8	6.6	27
F44/0039	1266 680	4921 235	2013- 06-18	0.06	9.7	5.1	114	<1.00	4.6	4.6		0.92	7.5	6.8	35
F44/0139	1268 956	4920 903	2013- 09-09	0.06	11.9	10	186	<1.00	13.8	13.8	13.8	1.15	14.8	6.6	27
F44/0039	1266 680	4921 235	2013- 09-09	<0.0500	9.3	5	110	<1.00	4.2	4.2	4.3	0.94	7.2	7	35
F44/0079	1269 364	4926 364	2013- 11-22			37	292	<1.00	13.9	13.9					10.5
F44/0018	1268 651	4924 011	2013- 12-17	0.05	16.3	18.9	214	<1.00	14.8	14.8	14.8	1.1	12.4	6.5	10
F44/0139	1268 956	4920 903	2013- 12-17	0.06	12.7	11.3	193	<1.00	14.7	14.7	14.7	1.17	14.8	6.7	27
F44/0039	1266 680	4921 235	2013- 12-17	0.05	9.8	5.3	112	<1.00	4.2	4.2	4.2	0.95	7.4	7.1	35
F44/0018	1268 651	4924 011	2014- 03-18	0.1	16	17.7	214	921	16.2	16.1	16.2	1.08	12.1	6.7	10
F44/0139	1268 956	4920 903	2014- 03-18	0.1	12	10.4	188	>2420	14.8	14.8	14.8	1.17	14.2	6.6	27
F44/0039	1266 680	4921 235	2014- 03-18	0.05	9.8	4.5	114	<1.00	4.6	4.6	4.6	0.97	7.4	7	35
F44/0079	1269 364	4926 364	2014- 04-03			36	289	<1.00	11.5	11.5					10.5
F44/0139	1268 956	4920 903	2014- 06-18	0.09	11.5	10.7	186	<1.00	13.7	13.7	13.7	1.17	13.5	6.8	27
F44/0039	1266 680	4921 235	2014- 06-18	0.05	9.7	4.9	115	<1.00	4.6	4.6	4.6	0.94	7.2	7.1	35
F44/0112	1270 933	4912 713	2014- 07-25	<0.0500	9.4	4.6	106	<1.00	2.8	2.8	2.9	1.17	5.5	7.1	5.7 2
F44/0139	1268 956	4920 903	2014- 09-23	0.09	11.7	10.6	186	<1.00	14.4	14.4	14.5	1.1	13.7	6.6	27
F44/0039	1266 680	4921 235	2014- 09-23	<0.0500	9.3	4.9	111	<1.00	3.7	3.7	3.8	0.84	7	7	35
F44/0079	1269 364	4926 364	2014- 10-28			36	281	<1.00	12.8	12.8					10.5
F44/0139	1268 956	4920 903	2014- 12-18	0.08	13.7	11.3	211	<1.00	14.7	14.7	14.7	1.16	15	6.6	27
F44/0039	1266 680	4921 235	2014- 12-18	<0.0500	9.9	4.5	118	<1.00	4.5	4.5	4.5	0.88	7.2	7	35
F44/0139	1268 956	4920 903	2015- 03-18	0.09	12.6	11.1	193	<1.00	13.9	13.9	13.9	1.17	14.5	6.7	27
F44/0039	1266 680	4921 235	2015- 03-18	0.05	10.3	4.6	120	<1.00	4.7	4.7	4.7	1.07	8.7	7.1	35
F44/0079	1269 364	4926 364	2015- 03-24			33	279	<1.00	12	12					10.5
F44/0018	1268 651	4924 011	2015- 06-05	0.09	15	17.7	216	<1.00	14.5	14.5	14.5	1.01	11.4	6.8	10
F44/0139	1268 956	4920 903	2015- 06-05	0.08	10.7	11.5	185	<1.00	12.7	12.7	12.7	1.04	13	7	27
F44/0214	1271 391	4912 537	2015- 07-09	<0.0500	11.4	6.2	119	<1.00	2.5	2.5	2.6	1.12	5.8	7.1	9
F44/0018	1268 651	4924 011	2015- 09-15	0.09	15.2	17.6	211	<1.00	14.7	14.7	14.7	1.09	13.6	6.5	10
F44/0139	1268 956	4920 903	2015- 09-15	0.08	12.1	10.7	188	<1.00	13.9	13.9	13.9	1.19	16	6.6	27
F44/0039	1266 680	4921 235	2015- 09-15	0.05	10	4.5	113	<1.00	4.2	4.2	4.2	0.97	7.9	6.9	35

F44/0079	1269 364	4926 364	2015- 10-29	0.09		36	274	<1.00	11.9	11.9	11.9				10.5
F44/0139	1268 956	4920 903	2015- 12-17	0.09	12.9	11.4	200	<1.00	15.8	15.8	15.8	1.19	13.7	7.3	27
F44/0018	1268 651	4924 011	2015- 12-17	0.09	14.6	17.2	201	<1.00	14	13.9	14	1.01	10.5	7.1	10
F44/0039	1266 680	4921 235	2015- 12-17	0.05	9.5	4.4	113	<1.00	4.3	4.3	4.4	0.9	6.7	7.6	35
F44/0139	1268 956	4920 903	2016- 03-17	0.08	12.1	11.5	191	<1.00	14.1	14.1	14.1	1.17	14.4	6.6	27
F44/0018	1268 651	4924 011	2016- 03-17	0.09	14.9	17.3	202	28	13.8	13.8	13.8	1.06	11.7	6.6	10
F44/0039	1266 680	4921 235	2016- 03-17	0.05	9.9	4.6	116	<1.00	4.8	4.8	4.8	0.91	7.2	7	35
F44/0430	1268 990	4915 702	2016- 04-11			5.8	124	<1.00	2.3	2.3					
F44/0428	1269 884	4914 637	2016- 04-11	0.05		3.9	93	<1.00	0.004	0.002	1.11				
F44/0079	1269 364	4926 364	2016- 04-12	0.07		30	259	<1.00	10.7	10.7	10.7				10.5
F44/0429	1264 828	4926 157	2016- 04-12			7.9	131	<10.0	0.66	0.66					
F44/0008	1272 024	4919 870	2016- 05-05	0.12	9.1	22	171		8	8	8	0.83	17	6.3	6.5
F44/0018	1268 651	4924 011	2016- 06-20	0.08	15.5	17.4	204	<1.00	14.1	14.1	14.1	1.01	12.1	6.6	10
F44/0139	1268 956	4920 903	2016- 06-20	0.08	12	11.4	185	<1.00	13.7	13.7	13.7	1.11	14.8	6.5	27
F44/0039	1266 680	4921 235	2016- 06-20	0.05	10.5	4.9	118	<1.00	4.8	4.8	4.9	0.92	7.4	6.9	35
F44/0140	1266 329	4922 678	2016- 07-20	0.06	11.6	9.9	160		9	9	9.1	1.06	13.3	6.7	
F44/0134	1263 358	4923 503	2016- 07-20	<0.0500	8.2	3	85		1.41	1.41	1.54	1.05	5.2	6.9	41.05
F44/0276	1268 575	4924 133	2016- 07-20	0.05	8.8	7.3	119		0.07	0.07	0.14	1.28	12.3	7.6	
F44/0143	1270 166	4918 994	2016- 08-05	0.08	10.2	10	168		10.8	10.8	10.9	1.14	12.9	7.1	
F44/0145	1270 850	4924 730	2016- 08-05	0.09	12.2	14.6	177		10.7	10.7	10.8	1.09	13.4	6.5	
F44/0062	1270 784	4918 128	2016- 08-05	0.07	10.2	8.6	156		9.4	9.4	9.4	1.08	11.3	7	
F44/0163	1263 611	4924 514	2016- 08-05	<0.0500	7	2.8	77		0.84	0.84	0.9	0.82	4.8	7	
F44/0018	1268 651	4924 011	2016- 09-22	0.08	14.9	17.7	201	<1.00	13.8	13.8	13.8	1.03	13	6.6	10
F44/0139	1268 956	4920 903	2016- 09-22	0.08	11.6	11	180	3	13.1	13.1	13.1	1.17	15.5	6.5	27
F44/0039	1266 680	4921 235	2016- 09-22	<0.0500	9.6	4.6	115	<1.00	4.6	4.6	4.7	0.98	7.8	6.9	35
F44/0430	1268 990	4915 702	2016- 10-27			8.1	137	<1.00	3.1	3.1					
F44/0428	1269 884	4914 637	2016- 10-27	<0.0500		3.8	94	<1.00	0.004	0.003	0.85				
F44/0079	1269 364	4926 364	2016- 11-17	<0.0500		32	259	<1.00	10.9	10.9	10.9				10.5
F44/0429	1264 828	4926 157	2016- 11-18			8.2	134	<1.00	0.77	0.77					
F44/0139	1268 956	4920 903	2016- 12-20	0.09	12.3	11.7	192	<1.00	12.8	12.8	12.8	1.18	14.3	6.6	27
F44/0018	1268 651	4924 011	2016- 12-20	0.09	15	18	200	<1.00	12.3	12.3	12.6	1.05	11.7	6.7	10

F44/0039	1266 680	4921 235	2016- 12-20	0.05	9.9	4.9	117	<1.00	4.6	4.6	4.6	0.96	7.6	6.9	35
F44/0139	1268 956	4920 903	2017- 03-22	0.07	12.2	11.8	194	<1.00	13	13	13	1.15	14.5	7.1	27
F44/0018	1268 651	4924 011	2017- 03-22	0.07	14.1	18	203	17	12.2	12.2	12.2	0.96	10.8	7.3	10
F44/0039	1266 680	4921 235	2017- 03-22	<0.0500	9.6	5	118	<1.00	4.8	4.8	4.8	0.91	7.4	7.3	35
F44/0079	1269 364	4926 364	2017- 03-31	0.07		28	249	<1.00	9.9	9.9	10				10. 5
F44/0428	1269 884	4914 637	2017- 04-04	<0.0500		3.3	91	<1.00	<0.00200	<0.00200	0.85				
F44/0430	1268 990	4915 702	2017- 04-04			5.7	126	<1.00	2.8	2.8					
F44/0429	1264 828	4926 157	2017- 04-05			9.1	133	<1.00	0.94	0.94					
Waiparu Spring at Riversdale Waikaia Road	1271 985	4920 488	2017- 04-12	0.07	11.2	11.5	173		6.7	6.7	7.2	1.83	14.1	7.5	
Waiponamu Spring at Pollock Road	1269 035	4915 836	2017- 04-12	<0.0500	12.9	7.3	141		2.1	2.1	4	2.5	6.3	7.7	
Boundary Creek at Riversdale Waikaia Road	1271 697	4919 580	2017- 04-12	0.05	11.8	11.1	129		0.013	0.008	0.75	1.77	8.9	7.6	
F44/0139	1268 956	4920 903	2017- 06-22	0.09	12.5	11.6	195	<1.00	14.4	14.4	14.4	1.25	14.7	7.3	27
F44/0018	1268 651	4924 011	2017- 06-22	0.09	15.2	18	205	<1.00	13.4	13.4	13.4	1.12	11.8	7.2	10

Appendix E – Appendix E Changes



Memorandum *For Your Information*

To: Matthew McCallum-Clark
From: Roger Hodson
Date: Tuesday, 3 October 2017
File Reference: Appendix E changes
Subject: *Draft Appendix E changes*

Message:

I have been asked by the Reporting Officers' to comment on potential changes to Appendix E of the proposed Southland Water and Land Plan, specifically:

1. Changing the format to a table;
2. Requests by Dairy NZ to amend specific water quality standards;
3. Requests by Meridian Energy to amend the lake-fed periphyton standard;
4. Temperature standards;
5. Clarity limits;
6. Defining a conspicuous change;
7. Sediment cover limits; and
8. Alignment with the NPSFM.

It is important to remain cognisant of the intention of the Appendix E standards to be applied to discharges following reasonable mixing and not as a broader State of Environment classification and reporting. It appears that a number of the requested changes to Appendix E may be in the context of setting objectives for a freshwater management unit rather than specifically in the context of a discharge.

1. Changing Appendix E to a table format

I do not see any issues with changing the format of Appendix E to a table.

2. Requests by Dairy NZ for changes

Dairy NZ (DNZ) have requested substantial changes to the Lowland Hard Bed, Hill, Mountain, Lake Fed and Spring Fed Water Quality standards in Appendix E, pertaining specifically to the wording of

periphyton standards. The requested changes include generic changes to the specific text of each surface water body class:

- a. Removal of % cover filamentous periphyton;
- b. Re wording of the % cover for diatoms and cyanobacteria mats;
- c. Removal of Ash Free Dry Weight (AFDW) biomass; and
- d. Re wording of the respective benthic chlorophyll a standard to achieve consistency with the NPSFM.

In my opinion, the request seeks to a) create alignment with the NPSFM periphyton attribute and b) recognise the risk high density cyanobacteria mats present to human health.

The rationale for the changes described in paragraph 9.2 of J Kitto Evidence, that Environment Southland does not collect data consistent with Appendix E (i.e. percentage cover) is incorrect. Environment Southland does observe percentage cover of filamentous algae and diatoms and cyanobacteria (mats). However, owing to the relatively short duration of data records, Environment Southland has not reported this information. Furthermore, percentage cover is commonly used by consent holders and their consultants to assess the localised receiving environment and/or effects from a discharge.

The proposed changes to periphyton cover, to include the NOF framework, incorporating reference to the percentage of time a threshold is exceeded are not, in my opinion, warranted at this stage because the thresholds suggested by DNZ may be inappropriate at the FMU scale. For example, in some Lowland Hard Bed streams chlorophyll a of 120 mg/m² is currently expected to be exceeded and achieving 120 mg/m² could be unrealistic or unacceptably expensive, or alternatively, 120 mg/m² may be worse than the current state.

To change the wording of percent cover to relate to cyanobacteria only, as in J Kitto's suggested wording, only acknowledges human health risk presented by cyanobacteria cover. The combination of the two proposed changes to percent cover assessment mean the intent of those standards to protect aesthetic/recreation and trout habitat and angling values (MEF 2000 and Ryder 2004) are not achieved. Furthermore, the suggested level of cover (60%) is inconsistent with draft guidance related to thresholds for public health risk associated with cyanobacteria cover (MfE and MOH, 2009). Environment Southland currently use the MfE and MOH (2009) guidelines to make notifications to the public when elevated levels of cyanobacteria are present, i.e. at 20 % and 50 % cover.

I recommend that periphyton percent cover standards are retained as currently worded in the pSWLP.

The removal of the Ash Free Dry Weight (AFDW) standards from Lowland Hard Bed, Hill and Mountain classes is inconsistent with the submitters request (paragraph 9.2 J Kitto evidence) to reflect total biomass. AFDW is a measure of the total organic material and is complementary to chlorophyll a biomass. When combined to calculate the autotrophic index can be used to identify a periphyton community affected by organic pollution.

I recommend that Biomass standards are retained in the pSWLP. However there is a minor issue with wording and consistency of application which should be addressed, that is the removal of the words "either" and "or", from the Lowland Hard Bed, in practice sampling is of all periphyton biomass filamentous independently of cyanobacteria. Suggested wording is: "Biomass shall not exceed 35 grams per square meter for ~~either~~ filamentous algae ~~or~~, diatoms and cyanobacteria".

3. Meridian Requests to change lake fed periphyton standard from 50-200 $\mu\text{g m}^{-2}$

Meridian have requested the lake fed periphyton standard be changed from 50 to 200 mg m^{-2} . I understand the justification for such a change is because *since the 2004 Didymo incursion the level of 50 mg m^{-2} is routinely breached.*

It is my opinion that 200 mg m^{-2} (the national bottom line) would be inappropriate for all lake fed rivers. Environment Southland's initial assessment of periphyton state in the Waiau is of a C band i.e < 200 mg m^{-2} , so setting the limit at 200 mg m^{-2} could result in a limit which is worse than the current state and thus not achieve maintaining water quality.

For that reason, and because there is some uncertainty as to the exact state of periphyton in lake fed rivers, including the Waiau River, changing the lake fed periphyton standard now would achieve little in the interim period prior to limit setting and the community defined objectives being identified. I do acknowledge the presence of *didymo* and its propensity to grow to high biomass in the Waiau system. At the same time, the Waiau River is the only river in Southland where at least conceptually, the flow regime can be altered to manage the accrual of undesirable levels of periphyton in the main stem, so in my opinion, setting the standard at the national bottom line would be inappropriate at this time.

4. Water Temperature standards

Fish and Game request to reduce maximum temperature to 19 degrees

Reducing the maximum temperature from 23 degrees in water plan classes: Lowland Hard Bed; Lowland Soft Bed; Hill; Lowland coastal lakes and wetlands; and Hill lakes and wetlands and from 21 degrees in plan classes: Mountain; Lake fed; spring fed would increase the proportion of time that many monitoring locations breach the requested standard of 19 degrees. Water temperature less than 19 degrees has not been achieved historically in the main stem of the Aparima, Oreti, Makarewa or Mataura rivers and will not be achieved in the future without considerable shade being provided to the stream and river network. I certainly acknowledge the body of literature regarding trout feeding behaviour in waters over 19 degrees and would expect to see such ambitions for water quality reflected through the catchment limit setting work in a more spatially and temporally targeted manner.

In the future, assessment of temperature would ideally utilise an index approach, for example the Cox Rutherford Index which accounts for diurnal variation in water temperature using daily average and daily maximum temperature as recommended by Davies-Colley et al (2013).

I recommend the maximum temperatures are retained as currently worded in the pSWLP.

Meridian request to increase lake fed maximum to 22.5 degrees or use a 95th percentile of 21 degrees

From the evidence of M James, I understand the request to be motivated by the inability/unlikelihood of the lower Waiau River to meet the 21 degree lake fed standard, based on 3 months of data from a number of locations in the Waiau River during the 2012/2013 summer.

Environment Southland have a c.a. 17 year (c.a. 2000 – present) water temperature record for the Waiau River at Sunnyside (at the road bridge into Monowai). From inspection of that record (Fig 1.0) there are several years during the record where a maximum temperature has exceeded 21 degrees. However none of these have occurred in the last 5 years.

Source is \\esfile\src_groups\Environmental_Info_Data\MAIN ARCHIVE\Environmental Data Archive.hts
From 28-Sep-2000 12:40:00 to 1-Oct-2017 00:00:00
Non detect rules:- Less than is not used. Greater than is not used.

Year	Min	Max	Mean	Std Dev	L.Q.	Median	U.Q.
*2000	6.7	18.8	12.0	2.5	10.0	11.7	14.0
2001	4.1	19.5	10.9	3.8	7.1	11.1	14.1
*2002	5.2	20.7	11.1	3.6	8.0	10.5	14.0
2003	4.9	19.9	10.8	3.6	7.6	10.4	14.1
2004	3.8	20.3	10.8	3.4	7.7	10.5	13.4
2005	4.9	21.4	11.4	3.8	7.9	11.0	14.4
*2006	4.0	21.2	10.8	3.6	7.7	10.6	13.4
2007	2.9	20.6	10.9	4.1	7.4	10.4	14.4
2008	3.3	22.1	11.0	4.1	7.3	10.1	14.4
2009	4.1	19.2	10.5	3.5	7.3	10.4	13.5
2010	3.9	21.3	10.8	4.0	6.8	11.3	14.1
2011	2.4	21.0	10.5	4.1	7.0	10.0	14.0
*2012	5.2	20.4	10.6	3.5	7.2	10.1	13.2
*2013	4.2	20.4	11.0	3.7	7.8	10.2	14.5
*2014	4.0	19.7	10.8	3.6	7.9	9.8	14.2
0.0	19.7	0.0	0.0	0.0	0.0	0.0	0.0
*2016	4.1	18.0	10.0	3.2	7.0	10.3	12.4
*2017	4.5	18.7	10.0	3.6	6.7	8.9	13.4
All	2.4	22.1	10.8	3.7	7.5	10.4	13.9

Figure 1.0, Summary statistics for water temperature in the Waiau River at Sunnyside. Yellow highlights those where a maximum temperature has exceeded 21 degrees. Note missing data during the 2015 calendar year.

I recommend the maximum temperature in the Lake fed class is retained as currently worded in the pSWLP. There are a number of reasons for the recommendation including:

- a) The suggested new standard of 22.5 degrees could result in a deterioration of current water quality;*
- b) A 95th percentile of 21 degrees is considerably greater than the existing 95th percentile of 17.0 degrees; and*
- c) There are possible options to manage high water temperature in the Waiau. E.g. release of additional lake water to the river during periods of high temperature, and increasing the amount of shade along the river and its tributaries*

5. Fish and Game Requests for increased clarity in Hill, Mountain, lake fed and spring fed to 5 m and lowland hard bed and lowland soft bed to 3.5 m

The requested limits are unlikely to be achieved in many cases, and assume that drift feeding for trout is a primary value in all waterways. Specific improvement in water clarity or objective should be determined during FMU processes.

I recommend the clarity standards are retained as currently worded in the operative plan.

6. Fish and Game request for definition of conspicuous change in appearance

Paragraphs 59 and 60 of Mr Moss's (Southland Fish and Game Council) evidence requests a definition of conspicuous change of a 20-30% reduction. Reference is made to MfE 1994 to support this. Supplementary evidence, Table 1 of Southland Fish and Game Council on 6 October 2017, details proposed clarity and deposited sediment standards by river classification.

The national colour and clarity guidelines (MfE 1994) are based on Davies-Colley and Smith (1990) and Davies-Colley (1991) (cited in MfE 1994), who reported on levels at which people can detect changes in colour and clarity. They proposed that “conspicuous” could be defined as “detectable by most of the population” and recommended that a reduction in visual clarity should not exceed 20%.

For the assessment of acceptable change in visual clarity the first guideline in MfE (1994) states:

“For Class A waters (where visual clarity is an important characteristic of the waterbody): The visual clarity should not be changed by more than 20%.

“For other waters: The visual clarity should not be changed by more than 33-50% depending on site conditions”.

I recommend the MfE’s 1994 guidance is used to provide a definition for the term “conspicuous change”. Consideration should be given to the application of maximum 20% reduction in clarity in areas of high amenity value: Mountain, Hill, Lowland Hard bed, Lake Fed, Lowland coastal Lakes and Wetlands, Hill Lakes and Wetlands, Maitai, Maitai 2, Maitai 3, and Spring Fed. With a maximum 33% reduction in clarity applied to Lowland Soft Bed areas.

7. Sediment cover limits request for sediment cover limits of less than 20%

Nationally 20% fine sediment cover is emerging as a potential bottom line, as clear environmental effects occur with greater than 20% fine sediment cover. In Southland, there is a limited body of deposited fine sediment cover data available to assess the natural spatial and temporal variation. There is a considerable ongoing scientific investigation led by MFE, NWA and Cawthron, with support from regional councils, to collect data to be used define appropriate sediment attributes for inclusion in NPSFM.

In Southland, a standard of 20% cover standard across all river classifications would not maintain water quality in locations where there is currently less than 20% fine sediment cover and conversely is unlikely to be able to be achieved in areas which are naturally high in soft sediment. Differential spatial application of sediment standards less than 20% would be ideal to protect the ecosystem health of areas where sediment cover is low, where fine sediment has the potential to cause significant adverse effect e.g. trout spawning areas, or other areas where the natural character, or amenity value of a waterway are high.

Supplementary evidence submitted by Southland Fish and Game Council request deposited fine sediment standards by river classification from 5% in Natural State Waters to 30% in lowland soft bed. Deposited sediment is recognised as an important sediment related attribute for the protection of ecosystem health and there is a need to prioritise further investigation into its applicability as an attribute and development of attribute state bands nationally and for the Southland region. This should be done in line with results from current national research. For this reason, rather than applying a threshold standard at this stage I recommend the adoption of a change in sediment cover to be assessed between an upstream and downstream location relative to a discharge or consented activity.

I recommend the use of a standard related to a change in fine sediment cover, which can be used to illustrate an adverse effect occurring as a result of a discharge or activity. 10% change in fine sediment cover has been recommended by Clapcott and Hay (2014) and adopted in other regions. I recommend a maximum increase in fine sediment cover of 10% be used.

8. Other amendments to Appendix E

I recommend the introductory paragraph 3 to Appendix E is edited to read:

“Plan users should contact Environment Southland for guidance on standard methodologies for collecting water quality data. Monitoring requirements imposed as consent conditions require sample collection, preservation and analysis to be carried out in accordance with the most recent edition of American Public Health Association (APHA) “Standard Methods for the Examination of Water and Wastewater” or National Environmental Monitoring Standard (NEMS) ~~and monitoring~~ and analyses to be carried out by a laboratory with International Accreditation New Zealand (IANZ) registration or equivalent.”

References

Clapcott, J.E., Young, R.G., Harding, J.S., Matthaei, C.D., Quinn, J.M. and Death, R.G. (2011) Sediment Assessment Methods: Protocols and guidelines for assessing the effects of deposited fine sediment on in-stream values. Cawthron Institute, Nelson, New Zealand.

Clapcott, J. and Hay, J. 2014. Recommended water quality standards for review of Marlborough’s Resource Management Plans. Report No. 2522 prepared for Marlborough District Council. Cawthron Institute, Nelson, New Zealand.

Davies-Colley R., Franklin P., Wilcock B., Clearwater S., Hickey C. (2013) "National Objectives Framework - Temperature, Dissolved Oxygen & pH. Proposed thresholds for discussion". NIWA Client Report No: HAM2013-056; NIWA Project: MFE13504, NIWA: Hamilton.

Ministry for the Environment (1994). *Water quality guidelines No 2. Guidelines for the management of water colour and clarity*. Wellington, Ministry for the Environment, 1994. 60 p.

Ministry for the Environment (2000) Periphyton Guidelines. Published by the New Zealand Ministry for the Environment.

Ministry for the Environment and Ministry of Health. (2009). *New Zealand Guidelines for Cyanobacteria in Recreational Fresh Waters – Interim Guidelines*. Prepared for the Ministry for the Environment and the Ministry of Health by SA Wood, DP Hamilton, WJ Paul, KA Safi and WM Williamson.

Ryder, G. (2004) Environment Southland Water Quality and the Draft Regional Water Plan. An examination of possible water quality standards.

Appendix F – Waikato PC1 – IASM Criteria

Schedule 2 - Certification of Industry Schemes/Te ĀpitiHanga 2 – Te whakamana i ngā tohu o ngā Kaupapa Ahumahi

The purpose of this schedule is to set out the criteria against which applications to approve an industry scheme will be assessed.

The application shall be lodged with the Waikato Regional Council, and shall include information that demonstrates how the following requirements are met. The Waikato Regional Council may request further information or clarification on the application as it sees fit.

Approval will be at the discretion of the Chief Executive Officer of the Waikato Regional Council subject to the Chief Executive Officer being satisfied that the scheme will effectively deliver on the assessment criteria.

Assessment Criteria

A. Certified Industry Scheme System

The application must demonstrate that the Certified Industry Scheme:

1. *Is consistent with:*
 - a. *the achievement of the water quality targets referred to in Objective 3; and*
 - b. *the purposes of Policy 2 or 3; and*
 - c. *the requirements of Rules 3.11.5.3 and 3.11.5.5.*
2. *Has an appropriate ownership structure, governance arrangements and management.*
3. *Has documented systems, processes, and procedures to ensure:*
 - a. *Competent and consistent performance in Farm Environment Plan preparation and audit.*
 - b. *Effective internal monitoring of performance.*
 - c. *Robust data management.*
 - d. *Timely provision of suitable quality data to Waikato Regional Council.*
 - e. *Timely and appropriate reporting.*
 - f. *Corrective actions will be implemented and escalated where required, including escalation to Waikato Regional Council if internal escalation is not successful.*
 - g. *Internal quality control.*
 - h. *The responsibilities of all parties to the Certified Industry Scheme are clearly stated.*
 - i. *An accurate and up to date register of scheme membership is maintained.*
 - j. *Transparency and public accountability of Certified Industry Schemes*
 - k. *The articles of the scheme are available for public viewing.*

B. People

The application must demonstrate that:

1. *Those generating and auditing Farm Environment Plans are suitably qualified and experienced.*
2. *Auditing of Farm Environment plan requirements is independent of the Farm Environment Plan preparation and approval.*

C. Farm Environment Plans

The application must demonstrate that Farm Environment Plans are prepared in conformance with Schedule 1.

Appendix G – Regionally Significant Wetlands



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Memorandum

For Your Information

To: Matthew McCallum-Clark

From: Anita Dawe
Policy and Planning Manager

Date: Monday, 30 October 2017

File Reference: RSW

Subject: ***Regionally Significant Wetlands***

Message:

This memo outlines the process to validate the map series that corresponds to Appendix A –Regionally Significant Wetlands in the proposed Southland Water and Land Plan, and Appendix B in the Regional Water Plan for Southland.

History

The Regional Water Plan (RWP) for Southland contained a list of regionally significant wetlands (Appendix B) compiled with assistance from the Department of Conservation, when the RWP was notified. This list was carried through when the RWP was made operative in 2010. For some reason, no map series to accompany Appendix B was ever produced and to date, Appendix B has simply been a list of sites, without any detail outlining their extent, location or scale.

When the proposed Southland Water and Land Plan was notified in June 2016, the same Appendix was carried through (as Appendix A). There were submissions received to add additional wetlands, and requests to identify the location or extent of some of the wetlands.

Map Series

As part of the section 42A recommending report, any requested additional wetlands were analysed to determine if they should be included, and a map series was produced to spatially identify the extent of each wetland, including both those in notified Appendix A, and those recommended to be added. The wetlands work was done through a consultant ecologist. The criteria used to determine if a wetland should be listed were:

- *The wetland had already been through a public process by being listed in the 2010 Regional Water Plan for Southland;*

- *Whether the wetland was in Appendix 2 of the Regional Policy Statement 2017 Schedule of Threatened, At Risk and Rare Habitat Types; or*
- *The wetland has been assessed and reported as to its extent, composition and location, and that assessment is consistent with the criteria in Appendix 3 of the RPS to determine significance; or*
- *The wetland has been identified as being significant through on-the-ground assessments.*

Following the production of the map series, some potential discrepancies in the extent and location of the maps were identified by Environment Southland staff. This resulted in an additional layer of analysis and checks to ensure accuracy.

The following additional process was then followed:

- *The list of regionally significant wetlands contained in the proposed Appendix A was checked to confirm their inclusion was appropriate. This was done with the consultant ecologist referred to above, as well as Environment Southland staff (Biodiversity Programme Leader, Principal Land Sustainability Officer, Senior Science Co-ordinator; and GIS analyst); then*
- *The spatial extent of the wetlands was checked. Some alterations were made to boundaries based on field staff knowledge, and aerial photography for all but four wetlands; then*
- *Four wetlands were ground truthed by Environment Southland's Principal Land Sustainability Officer and Biodiversity Programme Leader and recommendations made on three of those; then*
- *The consultant ecologist undertook a more extensive site survey of the remaining wetland to determine if it should be included, using the criteria from the RPS.*

The information was collated, and the final map series updated to ensure that the spatial extent of the identified wetlands is accurate.

For completeness, the above process only assessed those wetlands that were located on private land. Any wetlands located on Department of Conservation land were not subject to the same scrutiny.

Appendix H – Farm Plan Comparison

pSWLP Appendix N	Dairy NZ Sustainable Milk Plans	Beef and Lamb, NZ Deer Farmers Ass Land and Environment Plans	Foundation for Arable Research Farm Environment Plans
1. Requirement to prepare and review management plan	Voluntary	Voluntary	Voluntary
2. Property details recorded	Included	Included	Included
3. Maps or aerial photographs			
Identification of boundaries	Included	Included	Included
Identification of farm infrastructure	Included	Included	Included
Identification of physiographic zone and variant	Not included	Not included	Not included
Identification of critical source areas	Partially included	Partially included	Included
Identification of rivers, wetlands, watercourses	Included	Included	Included
Identification of riparian vegetation and fences adjacent to waterways	Included	Included	Included
Identification of stock crossings	Included	Included	Included
Identification of subsurface drainage	Partially included	Included	Not included
Identification of heritage sites	Partially included	Included	Not included
Identification of significant biodiversity	Included	Included	Included
4. Nutrient Budget			
OVERSEER nutrient budget	Partially included	Included	Included
Nutrient budget prepared where material change in land use occurs at end of year	Partially included	Partially included	Partially included
Nutrient budget prepared every three years where no material change in land use	Partially included	Partially included	Partially included
Annual review of input data	Partially included	Included	Partially included
5. Good Management Practices			
Good Management Practice to be undertaken over 12 months	Partially included	Included	Included
Identification of physiographic zones and variants within property	Not included	Not included	Not included
Identification of key pathways and contaminants	Not included	Not included	Not included
Good Management Practices for relevant pathways	Not included	Partially included	Partially included
12 monthly review of Good Management Practices	Not included	Partially included	Partially included
Range of Good Management Practices implemented yearly	Partially included	Included	Included
6. Riparian Management Plan			
Prepare and implement Riparian Management Plan	Partially included	Partially included	Included
Include methods to exclude stock	Partially included	Partially included	Included
Sheep mitigation measures for critical source areas	N/A	Partially included	Included

Identify mitigation to minimise overland flow	Partially included	Partially included	Partially included
Include type of vegetation planted	Partially included	Partially included	Partially included
Grazing of riparian margins for weed control	Partially included	Not included	Not included
Copy of plan provided to Environment Southland on request	Not included	Not included	Not included
7. Cultivation			
Cultivation map	Not included	Not included	Not included
Identification of waterbodies	Partially included	Not included	Not included
Identification of buffer strips	Not included	Not included	Not included
Proposed cultivation Good Management Practices	Partially included	Partially included	Included
8. Intensive winter grazing			
Good Management Practices to minimise discharge of contaminants	Partially included	Partially included	Partially included
Avoid discolouration/sediment	Partially included	Not included	Included
Identify intensive winter grazing areas, slopes and buffer zones along waterways	Not included	Not included	Not included
9. Effluent Management Plan			
Effluent system checked annually	Partially included	Not included	Included
Records kept	Included	N/A	Partially included
Avoid application if soil temperature <5 degrees	Not included	N/A	Not included
10. Irrigation Management			
Meets Code of Practice	Partially included	N/A	Included
Irrigation application depth self checked annually	Partially included	N/A	Included
Soil moisture monitoring undertaken	Partially included	N/A	Included
Records kept and provided to Environment Southland	Not included	N/A	Partially included