

Proposed Canterbury Land & Water Regional Plan

Volume 4

Officer's Reply

For Council Reply Hearing

Prepared under the Resource Management Act 1991

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Everything is connected



Cover photo

***The Rakaia River, one of the
region's braided rivers***

Credit: Nelson Boustead NIWA

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Introduction

This report has been written to sit alongside and explain the “marked up” version of the final recommendations on the pLWRP. It responds to many, but not all issues raised in submissions and evidence. Many of the issues are addressed in the three Section 42A reports that have been prepared for the hearing, and the content of these reports is not reanalysed in this report. Essentially, this report addresses the further changes from the earlier Section 42A recommendations. In that sense, it is very much a “reply” document, and does not set out to restate the Regional Council's earlier reports.

The authors of the reports have previously stated their qualifications, experience and potential conflicts of interest, and these are not restated here.

The recommended changes set out in this final version show changes from the notified version of the Plan. Hereafter this final set of recommendations to the pLWRP are referred to as the “Reply Recommendations”. The underlined elements are suggested additions, while strikeout shows deletions. These have been inserted manually, rather than using the “tracked changes” functions of word processing software, which tend to show up differently depending on software versions and user settings.

Many are similar to changes recommended in the various Section 42A Reports. However, the Reply Recommendations here are a complete and standalone version, and the existing Section 42A report versions should be treated as a product of their time.

All recommended changes are shown with underlining and strikeout. Footnotes are also included with submission references for most recommended changes. 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 or a recommended change under Clause 16 of the First Schedule to the RMA.

These “Clause 16” changes often relate to changes in the use abbreviations, grammatical changes and wording changes that do not affect the meaning of the rule or policy. Mr Maw has made comment in his legal submissions on the issues with Clause 16 changes. If the Hearing Commissioners prefer, a more general submission seeking improved wording could be referenced. An example is the Poultry Industry Assn of NZ (Inc) & Egg Producers Fed of NZ (Inc), who sought (at para 2.6): *Although the policy direction of the proposed LWRP is generally supported by the submitters, it appears that in the attempt to streamline the plan provisions and reduce the consent requirements, some important clarifying detail has been omitted, particularly in relation to land discharge and water take. In addition, the submitters consider that there are several suggested wording changes that could provide greater clarity and further strengthen the proposed provisions in achieving the objectives of the LWRP.*

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 below.

Changes throughout the Plan

There are a number of recommended changes to the text of the pLWRP that appear consistently throughout the Reply Recommendations. These matters are addressed here, and are not individually addressed under each provision in the analysis below.

These changes include:

- numbering;
- typographical and grammatical corrections and improvements; and
- re-ordering of provisions.

The numbering of the sections within the pLWRP is consistent between the notified version and the Reply Recommendations. Within the sections, there are additional objectives, policies and rules, and some objectives, policies and rules have been shifted within their respective sections. For example, the rules relating to stock exclusion from waterbodies have been shifted to be adjacent to the other provisions that relate more closely to rural activities. The additional provisions and the re-ordering of the provisions have led to some significant numbering changes.

In all instances, the policy or rule starts with the original number, crossed out, and the new number underlined. This means that all existing policy and rule references that are used in submissions and earlier analysis are still retained, while the revised rule numbering enables cross-referencing, notes and cascading rule provisions to function. Rule references within notes, cross-references and other rules are the correct numbers for the Reply Recommendations, rather than to the original rule provision. To aid clarity, these changes are generally not shown with underline and strikeout.

Some parts of the objectives, policies and rules have been re-ordered, to enable a better flow and for related activity areas to sit together. This restructuring does not change any particular provisions of itself, and is not analysed on a provision by provision basis. Any additions or deletions are shown through underlining and strikeout.

There are a large number of grammatical and typographical corrections. These are often in the nature of adding “and” to the end of each provision, minor corrections such as of typographical errors, and changes to the text so that it reads with more certainty or with a better sentence structure. “Coode” has been used as a touchstone for improved wording¹.

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. Minor recommended changes often have no reference. More substantial recommended changes with no supporting submission are noted as “Clause 16” minor amendments.

Submitter Reference Acronyms

The full name of submitters referenced in the Reply Recommendations are:

Abbreviated Name	Full Submitter Name
Aggregate Group	The Canterbury Aggregate Producers Group (Aggregate Group)
ANZCO Foods Ltd	ANZCO Foods Limited, CMP Canterbury Limited, & Five Star Beef Limited
Ashburton DC	Ashburton District Council
Beef & Lamb	Beef and Lamb New Zealand Limited
Castle Ridge Station Ltd	Castle Ridge Station Limited
C&PH ChCh	Community & Public Health, Christchurch
CCC	Christchurch City Council, Strategy & Planning
Chorus & Telecom	Chorus New Zealand Limited & Telecom New Zealand Limited

¹ Coode, G., *On Legislative Expression, or, The Language of the Written Law*, William Benning & Co, 1845

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Abbreviated Name	Full Submitter Name
Corrections	Department Of Corrections, Wellington
DairyNZ	DairyNZ Incorporated
Deer Farmers Assn (Canty)	New Zealand Deer Farmers Association, Canterbury Branch
Deer Ind & Deer Farmers	Deer Industry New Zealand & New Zealand Deer Farmers' Association
DOC	Director General of Conservation
CRC	Canterbury Regional Council
EDS	Environmental Defence Society Incorporated
Eel Industry Assn	South Island Eel Industry Association Incorporated.
Ellesmere ISI	Ellesmere Irrigation Society Incorporated
Fed Farmers (Banks Pen)	Federated Farmers Of New Zealand Inc, Banks Peninsula Branch
Fed Farmers (Combined Canty)	Combined Canterbury Provinces, Federated Farmers of New Zealand
Fed Farmers (High Country)	Federated Farmers Of New Zealand Inc, High Country Branch
Fed Farmers (Mackenzie)	The Mackenzie Branch of Federated Farmers of NZ
Fed Farmers (Temuka)	Federated Farmers Of New Zealand Inc, Temuka Branch
Fertiliser Assn	The Fertiliser Association of New Zealand Incorporated
Fish & Game	Fish & Game New Zealand (Nelson/Marlborough, North Canterbury & Central South Island)
Fonterra	Fonterra Co-Operative Group Limited (Auckland)
Fulton Hogan	Fulton Hogan Canterbury Ltd, Canterbury
Genesis	Genesis Power Limited, Wellington
Holcim	Holcim (New Zealand) Limited
HWPL	Hurunui Water Project Limited..
Institute for Plant & Food Research	The New Zealand Institute for Plant & Food Research Ltd – Christchurch
Irricon	Irricon Resource Solutions Limited (Geraldine)
Irrigation NZ	Irrigation New Zealand Inc, Christchurch
KiwiRail	New Zealand Railways Corporation (trading as KiwiRail)
LINZ	Land Information New Zealand (LINZ) - Wellington
Mackenzie DC	Mackenzie District Council
Mainpower	Mainpower New Zealand Limited
Meridian	Meridian Energy Limited
Ngā Rūnanga	Ngā Rūnanga of Canterbury & Te Rūnanga o Ngāi Tahu
NZ Deer Farmers Assn (Sth Canty & Otago)	New Zealand Deer Farmers Association South Canterbury North Otago Branch
NZAAA	NZ Agricultural Aviation Association
NZDF	New Zealand Defence Force, Upper Hutt
NZHPT	New Zealand Historic Places Trust Pouhere Taonga
NZTA	New Zealand Transport Agency.
Pork Industry Board	New Zealand Pork Industry Board..
Ravensdown	Ravensdown Fertiliser Co-Operative Limited
Rayonier	Rayonier New Zealand, Bay of Plenty
RDRML	Rangitata Diversion Race Management Limited
RFBPS (Canty West Coast)	Royal Forest & Bird Protection Society of NZ Inc, Canterbury/West Coast Regional Office
RFBPS Ashburton	Royal Forest & Bird Protection Society of NZ Inc, Ashburton Branch
SCIRT	Stronger Christchurch Infrastructure Rebuild Team.

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Abbreviated Name	Full Submitter Name
Sth Rakaia Bach Owners	South Rakaia Bach Owners Association Incorporated
The Fuel Companies	Mobil New Zealand Limited, BP Oil New Zealand Limited, and Z-Energy Energy Limited
Transpower	Transpower New Zealand Limited, Wellington
TrustPower	TrustPower Limited
Waitaki DC	Waitaki District Council
Whitewater	Whitewater New Zealand & Whitewater Canoe Club
Winstone Aggregates	Winstone Aggregates - A Division of Fletcher Concrete & Infrastructure Ltd.

1 Section 1

Section 1 of the pLWRP sets out the introduction to the Plan, and identifies the issues and the major responses. It also has a significant section on Ngai Tahu values, as well as identifying the other statutory relationships and how the Plan fits within the regional planning framework.

There were relatively few submissions on this section of the Plan, and these submissions and a small range of recommended changes were addressed in the Hearing Group 1 Section 42A report. These recommended changes are included in this final set of Reply Recommendations, with only very minor adjustment. Any adjustments to the previous recommendations are only in order to improve clarity or readability, and none is of significance.

2 Section 2

Section 2 of the pLWRP sets out how the Plan works and it includes definitions and abbreviations. There are a number of adjustments in this final set of Reply Recommendations, particularly in the first part of Section 2. This relates particularly to how the Sub-regional Sections of the Plan interact with the region-wide provisions, how the Sub-regional Sections of the Plan will be developed and how limits and over-allocation are addressed.

The majority of these changes are to improve clarity and certainty of the way the Plan works, and are also a consequence of how limit setting and management of over-allocation are recommended to be addressed.

There are some significant adjustments to the recommended set of definitions and abbreviations. These fall into two main categories:

- Removal of redundant definitions and abbreviations; and
- Additional changes to definitions or new definitions that are required to effectively implement revised Plan provisions.

Examples of redundant definitions are the significant reduction in the number of definitions that are copied directly from the RMA. A number of these definitions were used only sparingly in the pLWRP or are commonly understood RMA terms. There remain a small number of definitions direct from the RMA in the Reply Recommendations. The remaining RMA definitions are considered to be critical to the effective functioning and understanding of the LWRP.

A number of the changes to the definitions have been addressed in the Hearing Group 1 Section 42A report, and are not re-addressed here. The significant changes in the Reply Recommendations include:

- The definition of “bed” is recommended to be adjusted, so that there is more certainty. Many submitters requested an “active bed” definition, which may be appropriate for some rivers, but often less so for braided rivers. The Canterbury Regional Council has been through a process of identifying a reasonable riverbed boundary. This has occurred through a recent Bylaw process (the Flood Protection and Drainage Bylaw 2013) which includes mapping of riverbed boundaries, and therefore has been through a public process and has a degree of certainty. It is important to recognise that large parts of the Canterbury region have been built up through the actions of braided rivers that have not stayed within any defined bed. Many Canterbury rivers do not have a defined “bank” other than that artificially constructed. On this basis, rules such as stock exclusion can be difficult to administer when there are often large parts of farms within what could be considered the “bed” under the RMA definition. The revised definition is considered to be more pragmatic in its approach.
- Removal of the definition of “changed” and introduction of new definitions of “nitrogen baseline” and “nitrogen loss calculation”. The suggested amendments to the rules relating to nutrient discharges recommend a shift to a process of establishing the existing nitrogen discharges (the baseline) and therefore the definition of “changed” is no longer appropriate. The definition of nutrient baseline also enables the continuation of conversion where there are dairy farms that have been established or are substantially towards establishment during the development of the LWRP. If this provision was not included, there would be a number of significant dairy investments that would not be able to be realised and considerable hardship.

- The definition of “diversion” has been adjusted, in line with discussion at the hearing.
- A definition of “farming enterprise” has been added, as it is also required under the revised recommended set of nutrient rules.
- A definition of “irrigation scheme” has been added, to ensure certainty with respect to rules around water transfer and the re-consenting and consenting of water takes and discharges under the nutrient rules. This term is generally used alongside the recommended definition of “principal water supplier”, as sought by RDR.
- The definition of “natural wetland” has been deleted, and a new definition of “wetland” included. It became apparent through the hearing process that definition of wetland in the RMA is very broad, somewhat uncertain and does not have a significance threshold. The new definition of “wetland” is almost identical to the definition of “wetland” in the Canterbury Water Management Strategy (CWMS). This definition was chosen as it has been through a public process, and is understandable to all parties. The definition of “wetland” specifically excludes artificial or constructed wetlands, unless they are specifically identified in the Sub-regional Sections of the Plan. Therefore the definition of “natural wetlands” was no longer required. This has also required a change to all policies and rules that referred to “natural wetlands”.
- The definition of “outdoor intensively farmed stock” has been adjusted in order to remove potential overlaps and improved clarity. This definition is required in order to properly implement the stock exclusion rules.
- The definitions of “community or network utility operator stormwater system” and “reticulated stormwater system” are recommended to be combined into a revised definition of “reticulated stormwater system”. There is considerable overlap in meaning between the two terms, and their use varied in the stormwater rules in the pLWRP. On this basis, simplification of this definition by merging the two terms and use of a single term in the rules is preferable.

There are a number of acronyms that have been deleted in the Reply Recommendations. These acronyms have generally only been used a small number of times, or are acronyms that are not commonly recognised. Where they were used in the pLWRP, they have been now replaced with the full term. In general, there has been an effort to keep to more commonly known acronyms, and to state the less known terms in full.

3 Section 3

Section 3 of the pLWRP sets out the objectives. In the Hearing Group 1 Section 42A Report there was a reasonably thorough analysis of the pLWRP objectives, the submissions that had been received and analysis against Part 2 of the RMA. In that report, a full set of replacement objectives was identified.

In evidence and throughout discussion at the hearing, there were issues raised by a number of submitters with respect to the recommended changes in the Hearing Group 1 Section 42A Report.

The complete set of objectives has been reconsidered in light of evidence and comments made during the hearing. That said, the majority of the recommended objectives have been retained, with minor additions and changes.

A number of submitters suggested that there needed to be greater alignment, if not repetition of RPS and NPS objectives and policies. It has been a consistent theme through the development of the pLWRP to not restate aspects of the RMA, NPS or RPS. In the Officers' view, these documents can be given effect to without restating them.

That said, the recommended set of objectives in the Reply Recommendations has been re-ordered, so that it closely follows the subject matter of the RPS chapters. This allows some clarity and recognition of the RPS, without cross-referencing or restating objectives and policies. Consideration was given to cross-referencing to the NPS and RPS in order to clearly show linkages. However, it was considered that should there be a need to update one or other of the documents then the pLWRP will also need updating and amendment.

The revision of the objectives, policies and rules of the pLWRP for this Reply Recommendation has included a substantial check against the provisions of the RPS. The RPS sets out a number of objectives and policies, along with statements of actions to be undertaken by territorial authorities and the Regional Council. A number of adjustments have been made to objectives, policies and rules in order to better meet the requirement to give effect to the RPS. This is within the context of the as notified pLWRP and the submissions received. There remain some issues where there were not specific submissions or original content that would allow this better alignment with the RPS.

While it is no excuse, it is noted that the decisions on the RPS were not issued before the pLWRP was notified. Regard was had to the proposed RPS and issues that had arisen during the hearings, but the final version of the RPS was not known at the time of preparing the pLWRP. There are a small range of issues that will need to be addressed in some form of future plan change in order to give effect to the RPS. These matters are not fairly within the scope of the submissions and will require additional public engagement and consultation with interested parties. An example of this is in relation to the identification of wetlands, which is contemplated in the RPS, but was not undertaken for the purposes of developing the pLWRP, and an officer's opinion in response to broadly worded submissions is not a sufficient basis upon which to include such provisions in the Plan.

During the hearing process the Commissioners requested a table setting out the as-notified set of objectives, the objectives requested by Ngai Tahu, Fish and Game and significant other requests, the section 42A recommendation and this final recommendation. The attached Table A contains this. The resulting size of the table is unfortunate but necessary.

The adjustments to the Section 42A Report recommended Objectives are discussed below. The numbering of the objectives here are the revised numbering and ordering in the Reply

Recommendations. Further analysis outlined below is on the basis of changes to the objectives as recommended in the Hearing Group 1 Section 42A Report. There is considerable analysis of submissions and the objectives, as recommended in the Hearing Group 1 Section 42A report, comprise a complete and integrated set of objectives with the adjustments in the Reply Recommendations being based strongly on that set of objectives. The reasons for the suggested amendments are:

Objective 3.1 – this objective has been slightly modified to bring it closer to the Ngai Tahu objectives, and now incorporates elements of the Ngai Tahu objectives 1 and 3. The wording would best be described as a refinement, rather than a substantial change.

Objective 3.2 – this objective has been further refined, also to incorporate elements from the Ngai Tahu objective 1. The wording in the objective has been expanded, in order to make the objective clearer and more specific. It also specifically references the ethic of ki uta ki tai as an important element of the management of fresh water.

Objective 3.3 – this objective has been refined to specifically refer to nationally and regionally significant infrastructure so as to more clearly align with the RPS and the relevant National Policy Statements and recovery strategies. No other amendments to the objective are recommended.

Objective 3.4 – this objective is recommended to be shortened somewhat, by removing the rather obvious “irrigation and hydroelectricity generation”. These activities are inherent in the regional network of water storage and distribution facilities and would obviously be critical to multiple use of water.

Objective 3.5 – this objective is similarly recommended to be shortened, to remove the reference to CWMS targets. The CWMS targets are particularly relevant to the management of water and water quality in Canterbury. They are less relevant to other activities that occur and the objective is considered to be unduly narrowed in its application by reference to CWMS targets.

Objective 3.6 – no alterations are recommended this objective.

Objective 3.7 – Objective 3.8 in the Section 42A Report incorporated two concepts, which have now been split into Objectives 3.7 and 3.9. Other than splitting the objective, and incorporating minor clarifications, no changes of substance have been made.

Objective 3.8 – no changes are suggested to this objective.

Objective 3.9 – discussed above at 3.7.

Objectives 3.10 to 3.13 – no changes are recommended to these objectives.

Objective 3.14 – a minor addition is recommended to this objective, to clarify that the aim of improvement to degraded water bodies is to meet community outcomes. This is included as it is a significant process under the CWMS, which is the framework by which improvements to existing degraded freshwater bodies and hapua is likely to occur. It is noted that the pLWRP, of itself, enables, but does not direct the restoration or improvement of degraded water bodies.

Objectives 3.15 and 3.16 – no further changes to these objectives are recommended.

Objective 3.17 and 3.18 – these two objectives have been derived from Objective 3.13, as recommended in the Hearing Group 1 Section 42A Report. The existing Objective 3.13 incorporated

two concepts, and these have now been split into the two recommended objectives. No wording change of significance is recommended other than the splitting of the objective.

Objectives 3.19 to 3.23 – no further changes are recommended to these objectives.

Overall, it is considered that the Reply Recommendations with respect to the objectives, are the most appropriate way to achieve Part 2 of the RMA.

4 Section 4

Section 4 of the pLWRP contains the region-wide policies. These are broken down into strategic policies first and then activity-specific policies follow.

The bulk of the changes that are in the Reply Recommendations were contained within the Hearing Group 1 Section 42A Report, with the exception of nutrient management. The analysis contained within the Hearing Group 1 Section 42A Report is not repeated here.

The first recommended change to this section is a new statement at the beginning of the policies, which confirms that the policies in the Sub-regional Sections, if on the same subject matter as a policy in Section 4, will take precedence over the policy contained in Section 4. This clarifies the existing intention with respect to the region-wide policies and the Sub-regional Sections. This statement is essentially brought forward from Section 2 of the Plan in order to make it more conspicuous.

4.1 Strategic Policies

The strategic policies have undergone a number of changes, primarily related to evidence led at the hearing on the use of “Table 1” and outcome and limit setting in terms of the Freshwater NPS.

As has been addressed by Dr Meredith, Table 1 has been kept in almost its existing form as a set of outcomes tied to Policy 4.1. Dr Meredith has considered the various submissions, evidence and responses to Commissioner questions with respect to the role of Table 1 and has concluded that the majority of Table 1 matters are not appropriate to use as limits.

Some limits are recommended and these are contained in a new Schedule 8. Recommended Policy 4.2 contains the first reference to Schedule 8. The other significant change is the removal of the text at the bottom of each of Table 1a and 1b and restating these in a new Policy 4.3. The wording of the Plan is not changed significantly, but the policy is far more obvious, rather than being contained in the lower part of a numeric table. This has also allowed the revised Table 1a and 1b to be purely numeric.

Table 1c is recommended to be deleted and the text from this table modified, primarily in response to issues raised by groundwater experts. The numeric water quality metrics from Table 1c are recommended to be relocated as limits in Schedule 8.

Other changes are generally minor or are to improve clarity and certainty.

As discussed in Dr Meredith's memorandum, there have been other minor changes to Table 1a in order to remove ranges and to add a column addressing cyanobacteria mat cover.

Overall, the structure of the pLWRP is reliant on this broad scale setting of outcomes. They are not limits in terms of the Freshwater NPS, but rather an overall state that is sought.

4.2 Sub-regional Section Development

Three new policies are recommended to be added. These three policies relate to future actions of the Regional Council, in relation to the development of Sub-regional Sections and future plan changes. In

some ways these three policies codify matters that have been discussed fully in Section 2 of the pLWRP, but were criticised by many parties as not being sufficiently directive for the development of Sub-regional Sections.

A number of parties have suggested that the freshwater outcomes, particularly in Table 1, should be a minimum, from which the Sub-regional Sections must “improve”. For the reasons set out in the Hearing Group 1 Section 42A Report it is still the Officers’ view that the Sub-regional Sections should have freedom to set local outcomes that achieve the objectives of the LWRP.

In particular, it is noted that many of the CWMS processes are identifying actions outside of the RMA process that require catchment specific planning. More clearly setting out the process by which this must be undertaken and the limitations on it, set out within policies is considered to be a more certain and unambiguous way to achieve appropriate integration of future plan changes.

4.3 Activity and Resource Policies

The majority of the recommendations made in the Reply Recommendations were included in the Hearing Group 1 Section 42A Report.

There are a range of changes that are relatively minor in nature, or are consequential to other changes recommended. For example, there are a number of additional references to limits and Schedule 8 on account of the changes made to the overall pLWRP framework to increase emphasis on limits. Other changes are made to improve the certainty and wording of various policies, but are generally similar in nature to the originally notified policies or those recommendations made in the Hearing Group 1 Section 42A Report.

Stormwater and Community Wastewater Systems

There is a small addition to recommended Policy 4.15, which increases emphasis on the Stormwater Management Plan process, and the need for all stormwater to be discharged in accordance with the Stormwater Management Plan where one exists. This is particularly in response to issues raised by Christchurch City Council, which is concerned that some developers may seek to discharge stormwater outside of the consented Stormwater Management Plans. A further change has been made to reflect the revised definition and rule framework around reticulated stormwater systems, which has resulted in removal of the word “public” in a number of situations.

Hazardous Substances and Hazardous Activities

While the recommended changes to the policies relating to hazardous substances and hazardous activities are relatively minor, they reflect wider changes that are recommended for the management of these substances and activities.

With respect to hazardous substances there are two relatively significant changes to the management framework recommended:

First, an altered definition of hazardous substances, which includes, in Schedule 4, a qualification such that the nature and quantity of the hazardous substance must be harmful. While this is imperfect in terms of certainty, it will allow the continued use of the term hazardous substances while not

capturing every-day or very minor discharges that may contain trace amounts of hazardous substances which are otherwise benign.

Second, a number of submitters, particularly DOC, Federated Farmers and the Animal Health Board, submitted and presented evidence that sought greater reliance on processes and approvals outside of the RMA process to provide adequate environmental protections. For example, the evidence on the rules relating to agrichemicals and vertebrate toxic agents strongly suggested that the Council should rely on Hazardous Substances and New Organisms Act approval processes administered by the Environmental Protection Agency, rather than the Regional Council coming up with a new set of performance standards. This “external approval” process is recommended to be adopted, and the first resulting change is to Policy 4.25. The issue is further discussed in relation to the relevant rules.

There are some issues with relying on an external approval process, such as the Environmental Protection Agency's Hazardous Substance and New Organisms Act approval process. The nature of the policies and permitted activity conditions requires complying with the approval, including any conditions of approval. The copies of approvals that were provided by the Department of Conservation in respect of various substances were relatively complex and presumably subject to change over time. This does introduce an element of uncertainty. However, it is considered to be a pragmatic and reasonable approach that will enable the Regional Council to rely on a nationally consistent and objective approval process that is also oriented toward environmental protection. The Regional Council has identified that it wishes to avoid overlap between Regional Council consenting and the consenting of other local authorities and central government agencies.

Livestock Exclusion from Waterbodies

There were a range of changes recommended in the Hearing Group 2 Section 42A Report. The majority of these are carried through into the Reply Recommendations. While the adjustments to the policies are relatively minor, the adjustments to the rules, noted further below, are more significant.

Nutrient Management

The policies on nutrient management have undergone a substantial further rewrite. This rewrite has been triggered by substantial changes that will be addressed further in the rules section. Essentially, there is a greater emphasis on limit setting, particularly in the red, over allocated, zone.

Policies 4.34 and 4.35 are very similar to policies included in the Hearing Group 2 Section 42A Report. They set the framework for nutrient management in general and the framework for load limit setting in Sections 6 to 15 of the Plan.

Policy 4.36 further establishes how sustainable management of farming will occur, particularly with emphasis on allowing small scale discharges, whether they result from small properties or low-level nutrient discharges. Policy 4.36 also recognises that there will be some small increases within the orange, at risk, zones and that there will be an opportunity for industry and irrigation scheme based consenting and management which will enable efficiencies and potentially better management from both the farmers' and Council's perspective.

Policy 4.37 is a clear indication that in the areas that are currently over allocated that there will be no increase in nutrients being discharged. The only exceptions to this are those matters outlined in Policy 4.39, which have, with minor amendment, carried over from the as notified Plan, and for the very small scale and low discharge activities outlined in Policy 4.36.

Policies 4.38, 4.40 and 4.41 set out the framework for requiring best practicable option, farm environment plans and consenting for increases in nutrient discharges. Further, as will be explained in the rules, over time, more significant discharges of nutrients, that are not increasing, will also be required to go through a consenting and farm environment plan framework.

Overall, the revised policies are considered to be the most appropriate to implement the objectives and the requirements of the Freshwater NPS. Although they specifically address diffuse nutrient discharges, the other LWRP policies with respect to discharges are also relevant.

As discussed in the memorandum of Dr Meredith, there are no changes proposed to the nutrient allocation zones included in the as notified pLWRP.

Damning and Diversion of Waterbodies

There are a number of recommended changes to these policies, all of which were discussed in the Hearing Group 1 Section 42A Report. There are additional, minor changes that are the consequence of other changes made in accepting submission points in other parts of the Plan, as well as minor changes to text and formatting.

Abstraction of Water

The majority of recommended changes to these policies have been addressed in the Hearing Group 1 Section 42A Report. However, there are additional significant changes recommended, in response to submissions and evidence, and prompts to reconsider issues from the Hearing Commissioners.

In particular, these relate to Policy 4.50 and the re-consenting of existing water takes. A change has been recommended to this policy to require the reduction in the amount of water re-consented in over-allocated surface water and groundwater catchments, unless there is a method set out in the relevant Sub-regional Section of the Plan. While the amount of reduction is somewhat arbitrary, it will encourage participation in sub-regional processes, and most importantly, will, over time, reduce the amount of over-allocation in the absence of a Sub-regional Section of the Plan addressing over-allocation.

Additional changes are recommended to Policy 4.51 to better recognise the national benefits of hydro-electricity generation and irrigation schemes in particular.

Policy 4.52 is recommended to be amended to address the deficiencies identified by the groundwater experts that presented evidence. In particular, it was suggested that the policy framework from the Natural Resources Regional Plan (Bowden Environmental – Policy WQN8 in particular) was a more appropriate framework for consideration of groundwater that did not have a groundwater allocation zone set.

There is a relatively minor, but important, change recommended to Policy 4.56, which relates to water transferred between catchments. The policy enables the taking of transferred water in the additional situation where an environmental flow and allocation regime has been developed in the receiving water body in anticipation of the transfer taking place. Although it is understood that this has not yet occurred, it may well be the case in a Sub-regional Section of the Plan, and this policy change would enable a flow regime to be developed in anticipation of the surface water being augmented.

There is a strong argument that activities, such as irrigation schemes and hydroelectricity generation schemes, represent a considerable sunk investment that should be recognised in the Plan, particularly by way of permissive rules. While there is a strong desire to avoid unnecessary consenting processes, provide those organisations with on-going investment certainty and to give effect to the NPS on renewable electricity generation, the recommended consent status for these kinds of activities is not considered to be unduly onerous or out of context with Part 2 of the RMA. It is further noted that the RMA provides specific consideration for the value of the investment of the consent holder, at the time of resource consent decision making.

Questions from the Hearing Commissioners sought information on why the source water body was not being given more emphasis. It is the Officers' experience that typically water being transferred from one catchment to another is usually sourced from a significant water body, often an alpine river, and augmenting a smaller, often hill-fed or lowland water body. Typically, the water abstracted from the larger rivers will be within the already developed flow and allocation regime. Conversely, the water transferred is typically a far more significant component of the receiving water bodies flow. On this basis, the implications for the source water body will have been considered in setting the relevant flow and allocation regime.

Transfers

The issue of transfers has generated a significant volume of submissions, legal submissions and evidence. Most importantly, the encouragement of surrender of part of the water take in over allocated catchments has been challenged.

This matter is addressed more fully in Mr Maw's legal submissions. In the absence of legal impediment, the policy position is largely unchanged. There is a change to the text of the policies, whereby Policy 4.73 "as notified" is now added to the end of the previous policy. Essentially there is a change to the text, but the substance of the policy remains unchanged.

Wetlands

The rule framework, that specified that wetlands within the beds of lakes and rivers would not be considered wetlands for the purpose of the wetlands rules, has been substantially adjusted to a more traditional framework whereby wetlands are managed as a discrete package. This was in response to a number of submissions and briefs of evidence presented at the hearing. The "package" of definitions, policies and rules have all had subtle, but important, changes to recognise this different approach to wetland management. However, it is considered that the implications of the policies and rules will not be significantly different.

The changes to the policies have, in part, attempted to bring them closer to the requirements of the RPS. In particular there is more emphasis on the significant value of wetlands and the ability to offset effects in another wetland. This adjustment to the management approach has also resulted in a number of notes being recommended for removal from the policies and rules.

It is also noted that the RPS requires identification of the more significant wetlands in the Region. A number of submitters noted in evidence that this was not included in the pLWRP. It is acknowledged that the completion of this aspect of work will need to be programmed for the future and, as discussed in the Hearing Group 1 Section 42A Report, the identification of wetlands and other significant biodiversity will require engagement with land owners and a participatory Plan process. To introduce

identification of wetlands and specific protections at this stage is not considered to be good practice, and it is doubtful whether the submissions are sufficiently specific in this regard.

4.4 Conclusion on Policies

Overall, the revised set of recommended policies in the Reply Recommendations is considered by the Officers to be the most appropriate method of giving effect to the objectives of the Plan. Further, the revised policies, within the scope of submissions lodged, are considered to be effective and appropriate in terms of Section 32 of the RMA and give effect to the Freshwater NPS, the Renewable Electricity Generation NPS and the RPS.

5 Section 5

Rules 5.1 to 5.6 – General Rules

These six rules are fundamental to the functioning of the LWRP. That said, they will generally only be referred to in specific circumstances or should there be doubt about application of the Plan to a particular activity.

Minor changes are recommended to these rules, primarily to improve clarity and certainty. The recommended changes are generally to improve functionality, and do not have any impact on the nature or intent of the rules. The majority of the recommended changes were set out in the Hearing Group 1 Section 42A Report.

Rule 5.6 is amended in order to include controlled activities, which had previously been omitted. Rule 5.6 is a general rule giving a discretionary activity status to activities not otherwise addressed by other rules in the Plan. A small number of rules have been added throughout section 5, at the end of a particular cascade of rules, to the effect that any other activity not categorised by one of the preceding rules is a discretionary activity. This improves the usability of the Plan, but essentially has the effect of repeating Rule 5.6.

Further, the general restriction of discretion “the extent to which the proposed activity is consistent with the objectives and policies of this Plan” has been recommended to be deleted from Rule 5.5. This occurs in a number of cases with restricted discretionary activities throughout these recommendations. It has become increasingly apparent that the inclusion of this element in the matters of discretion essentially opens the discretion to the point that there is effectively no restriction on discretion. Further, there is no certainty as to which objectives and policies of the Plan would be relevant or how a particular proposal would be judged against the broad range of objectives and policies. This is particularly so when there is an implication that the discretion will somehow be restricted.

A note is recommended to be added under these general rules, which clarifies that any activity may require approval under some other regional or district plans and other legislation. While not being particularly specific, this recommended note arose from requests, particularly from the New Zealand Historic Places Trust, to include references to historic heritage and the archaeological authority process throughout the Plan. These have been included in various locations, and this general note is included in order to capture all of these situations.

Rules 5.7 to 5.9 – On-site Waste Water

The background to on-site waste water management and the analysis of the wide range of submissions received is included in the Hearings Group 1 Section 42A Report. That Section 42A Report recommended a range of changes, and these have been further refined for the Reply Recommendations.

A number of the recommended amendments across all rules in this section are to improve certainty, consistency and clarity.

More fundamentally, it is recommended that as notified Rules 5.8 and 5.10 be merged into new Rule 5.9, which categorises activities that do not comply with either Rule 5.7 relating to existing systems or 5.8, relating to new, modified or upgraded systems. This new structure recognises that there is something of a continuity between an existing system, maintenance of that system, repair and upgrade, through to replacement or new systems where one previously did not exist. The new framework will ensure that no activities in this continuum are omitted or confusion exist as to which standards to apply.

A number of submitters had considerable difficulties with the “Septic Tank Suitability Area” included in the original rule framework. This difficulty was two-fold. First, the submitters disagreed with the correctness and extent of the mapping of various areas throughout the Region. Second, the submitters disagreed with the technical basis for identifying areas within in the “Suitability Area”. This was clearly identified in the evidence of EcoEng and Oasis Clearwater.

Submissions and evidence also suggested that there was an overlap between reliance on NZS1547:2012 and the Septic Tank Suitability Area. There were also concerns raised about the certainty of NZS1547:2012. Due to on-going concerns with the mapping of the Septic Tank Suitability Area, the rule provisions have been revised in the final recommendations, to remove the reference to the Septic Tank Suitability Area, with consequential changes to the mapping. This will place greater reliance on NZS1547:2012 and the other controls within the rules.

Evidence (EcoEng) was also presented supporting the use of some form of accreditation process for installers, whereby resource consents would not be required if design and installation was undertaken by an accredited person. In general, this process is supported by Officers, but it is noted that there are no submissions that actually requested this approach.

Overall, the recommended amendments to Rules 5.7 to 5.9 are the most appropriate method by which the objectives and policies of the Plan will be given effect to, particularly in relation to public health, protection of groundwater and surface water, and enabling people and communities to effectively dispose of on-site effluent.

A number of the provisions, particularly relating to restricted discretionary activities in the pLWRP, contained a limitation on the requirement for affected party approvals or notification. The on-site domestic effluent rules are the first of this type of provision.

A small number of submitters have opposed these types of restrictions on public involvement, most notably Ngai Tahu. In analysing the situation further, it is clear that there may be circumstances where the written approval of one or more people may be appropriate, or indeed notification in significant situations, may be appropriate. Some of the controls in the rules, such as setbacks from bores and design parameters in NZS1547:2012, require specific design in order to protect adjacent people and water supplies. If these are not met, it may well be appropriate that the approval of the

affected people should be sought. On this basis, the restriction on notification is recommended to be deleted.

Rules 5.10 to 5.11 – Swimming Pool or Spa Pool Water

These rules provide a permitted activity for the discharge of swimming pool or spa pool water, subject to conditions and a restricted discretionary activity rule for activities that are unable to meet the conditions.

There have been very few submissions lodged on these rules and no particular evidence raised at the hearings. On this basis, the Reply Recommendations are essentially the same as the Section 42A report, with some minor grammatical and consistency changes. None of these changes are of significance.

Rules 5.12 to 5.13 – Grey Water

Discharge of grey water is covered by a permitted activity rule, subject to conditions and a restricted discretionary rule, should the discharge be unable to meet the permitted activity conditions.

There were a number of submissions on these rules, and other relevant submissions relating to on-site effluent discharges. The majority of the recommended changes in the Reply Recommendations were addressed in the Hearing Group 1 Section 42A report. In general, they improve certainty and clarity of the rules.

Recommended condition 7(c) has been reworded, to align with use of the “contaminated or potentially contaminated” usage throughout the Plan, including the definition. The previous, struck-out, wording was that used in an earlier version of the draft LWRP, and somehow escaped edits to reach the notification version.

Recommended condition 8 provides for additional groundwater protection and, in some circumstances, may require some on-site investigation and historical review before a system can be designed to meet this condition.

The restrictions on discretion in Rule 5.13 have been narrowed in scope. The second discretion, in relation to drinking water, is appropriate for this kind of discharge, but it is acknowledged that the specific wording of the discretion has not necessarily been sought across the full suite of rules to which this protection of human and animal drinking water discretion has been applied. Nevertheless, with the removal of the third restriction, being the very open objectives and policies of the Plan, the focus on the quality and safety of human and animal drinking water is appropriate.

The removal of the general restriction on discretion to the objectives and policies of the plan has been discussed earlier in relation to Rules 5.7 to 5.9.

Rules 5.14 to 5.15 – Pit and Composting Toilets

Rules 5.14 and 5.15 provide for pit and composting toilets as permitted activities subject to compliance with a number of conditions. Should the discharge be unable to comply with the conditions, then rule 5.15 sets out a restricted discretionary activity status.

The submissions and evidence on these rules have been limited and the nature of the changes in this Reply Recommendation version have either been discussed fully in the Hearing Group 1 Section 42A Report or, particularly in relation to the restrictions on discretion, are discussed above in relation to grey water discharges.

The only significant issue for discussion is in relation to Condition 2(d) of Rule 5.16. This condition relates to protection of groundwater and surface water through preventing the discharge of pit or composting toilet from when the land is excessively wet, following rainfall, such that the water is not able to be further absorbed in to the soil. For this type of activity, that may be undertaken by members of the general public, this use of “water not ponding or flowing” on the surface is recommended to be used as an approximation of soil having reached field capacity. For activities that relate more closely to farming practices, the term “field capacity” has been used, as it is likely that members of the farming community will understand that term and be able to make those informed judgements.

Rules 5.18 to 5.19 – Dust Suppressants

Again, these rules provide a permitted activity for the discharge, subject to a number of conditions, and a restricted discretionary activity status for those discharges that are unable to meet the permitted activity conditions.

Submissions were lodged that requested other chemicals be available for use as dust suppressants as permitted activities. Evidence on this matter was presented, primarily from Reynolds Soil Technology. Reynolds Soil Technology sought approval for a proprietary polymer-based substance as a dust suppressant. Additional questions were asked at the hearing and further information was tabled.

On balance, the information submitted and evidence given has not enabled the development of permitted activity conditions that would ensure soil and water protection. While it is apparent that the substance is “safe” when appropriately applied, the LWRP would need to set some performance standards in terms of its appropriate use. An alternative may be to provide an alternative permitted activity performance standard whereby a substance may be applied as a dust suppressant if it has a relevant Hazardous Substances and New Organisms Act approval for use as a dust suppressant, and the use complies with the relevant conditions of that approval.

Rules 5.20 to 5.23 – Pest Control and Agrichemicals

The as-notified pLWRP contained rules relating to vertebrate toxic agents and agrichemicals, and set a range of performance standards, activity categorisation and also separated activity status on the basis of the receiving environment.

These rules, as a group, received considerable criticism through the submission and hearing processes.

The general tenor of the evidence, particularly from DOC, Federated Farmers and the Animal Health Board, was such that the controls in the pLWRP overlapped with other controls, particularly under the Hazardous Substances and New Organisms Act, and were too restrictive, in that plant and pest control activities would be subject to unnecessary resource consenting requirements.

As has been discussed earlier in relation to Policy 4.25, Council Officers have formed the view that it is appropriate to rely on the approval process of other government agencies with respect to pest control and agrichemicals. The Environmental Protection Agency's approval processes for agrichemicals and vertebrate toxic agents is comprehensive and likely of greater robustness than the Regional Council's processes. On this basis, the rules are recommended to be considerably simplified to rely on the Hazardous Substance and New Organisms Act approval processes, as a condition of a permitted activity. Many of the other pLWRP conditions for permitted activities are recommended to be removed, as these are appropriately covered by the Hazardous Substances and New Organisms Act processes.

There are two potential issues that the hearing commissioners should be aware of with respect to certainty and scope.

With respect to certainty, it is noted that the Environmental Protection Agency is able to review its approvals at any time, and therefore there is some potential risk of updates or changes being made. There are some parallels to the incorporation of documents by reference provisions in the RMA. However, it is suggested that the Hazardous Substance and New Organisms Act approval processes are different, in that they are a legislative framework that also needs to be complied with. They are not a standard, guidance, or code of practice that is voluntary.

The second issue is with respect to the scope of the submissions. The submissions of the Department of Conservation, Animal Health Board and Federated Farmers are consistent in their desire to have fewer conditions and approval processes. This was somewhat expanded upon in evidence, whereby the rule framework suggested, particularly in Mr Familton's evidence, is an iterative development of the DOC submission. Further, copies of Environment Protection Agency approvals were submitted, and evidence given that these were adequate controls. This was particularly in relation to vertebrate toxic agents.

Officers are confident that the reliance on the external approval processes is contemplated within submissions. However, it is noted that the submissions are somewhat narrower, the evidence expanded upon it and the Reply Recommendations are possibly a further extension of the relief sought. It is clear that for a number of issues, particularly where submissions were lodged, evidence presented, questions asked of experts and further material submitted, that when compared to the original submission, is clearly an iterative development of the submitter's position. The Hearing Commissioners will need to satisfy themselves that final positions arrived at are still within the scope of the submissions lodged.

Rules 5.24 to 5.28 – Offal and Farm Rubbish Pits

There are three rules related to offal pits, and two rules relating to farm rubbish pits. Offal pits and farm rubbish pits are a common component, especially of larger rural properties. That said, they can typically have adverse effects, especially on groundwater, if poorly sited, poorly designed, inappropriate material is disposed of and can be problematic if the pits are very large.

The majority of the changes in the Reply Recommendations were addressed in the Hearing Group 2 Section 42A Report. There were some inconsistencies in the rules, which have now been remedied. Of note, the Federated Farmers suggested rule that allows the burying of a single dead animal in almost any location has been added. This is a pragmatic solution to an everyday problem on rural properties.

The restricted discretionary activities relating to both offal pits and farm refuse pits are altered to more clearly require the preparation of a farm environment plan and for it to be submitted with the resource consent application. This occurs in a number of rules in the Reply Recommendations, whereby if a farm environment plan or some other management plan is required, it is now specified as a condition of a restricted discretionary activity resource consent, with the associated restrictions on discretion relating to the quality of and compliance with the management plan. This will ensure that it is clear that a management plan is required to be presented with the application, rather than it being by implication in the restrictions on discretion.

The other added matter of restriction on discretion is the potential effects on the quality and safety of human and animal drinking water, which has been discussed earlier.

In the Hearing Group 2 Section 42A Report there was a recommendation for the restriction of discretion to include any potential effects on Ngai Tahu values. This was questioned, with respect to the lack of certainty in such a provision.

Officers have investigated the various Iwi Management Plans, including the recently produced Mahaanui Iwi Management Plan 2013, the RPS, the Ngai Tahu Freshwater Policy and other guidance documents, and have been unable to clearly identify a list of Ngai Tahu values that would be appropriate to include. As discussed at the hearing, applicants would need to have certainty as to what values to consider, and council officers would need to have certainty as to whether they had been adequately addressed. In the Officer's view, the restriction on discretion that was previously recommended must be deleted. This is not ideal, but no satisfactory solution has presented itself.

Rules 5.29 to 5.30 – Animal and Vegetative Waste

There are two rules that relate to the discharge of animal and vegetative waste, one which provides for a permitted activity with a number of conditions that must be complied with. The second provides for a restricted discretionary activity where those conditions are not able to be complied with.

The recommended changes in the Reply Recommendations were all addressed in the Hearing Group 2 Section 42A Report, other than for some minor typographical and formatting changes.

Rules 5.31 to 5.37 – Stock holding areas and animal effluent

The Reply Recommendations include a cascade of related rules relating to stock holding areas and the disposal of animal effluent. As was discussed in the Hearing Group 2 Section 42A Report, the rules were bundled into a single rule, which included both land use and discharge elements, in the as-notified pLWRP. This received considerable criticism from submitters, which was reinforced to an extent in evidence presented. The primary issue was that the rule framework would have required resource consents for existing systems that were either permitted activities or were operating under another form of resource consent.

The Section 42A Report recommended splitting these rules into three different rules, and this is largely adopted into these Reply Recommendations.

There are some minor changes to improve wording or consistency, but the recommendations are largely the same.

There are some performance standards that are “historic” in that they have been carried over from the Natural Resources Regional Plan. An example is the sealing of the base of collection and storage areas such that seepage into land does not exceed 1mm per day and that the total volume of animal effluent stored on the property is no greater than 1500m³. The Regional Council, through implementation of the Natural Resources Regional Plan, has established methodologies by which these performance standards are measured and there is now a degree of certainty around them. On this basis they are included without amendment from the Natural Resources Regional Plan.

Federated Farmers sought an additional permitted activity rule for the discharge of animal effluent, particularly from stock truck holding tanks and sheep dips. This is supported, and a rule has been included, but not to the full extent sought by Federated Farmers in their response to the Commissioners' questions. In the Officers' view, the volume sought by Federated Farmers (5000m³) is significant, and probably out of context with usual farming activities with respect to stock truck holding tanks, water troughs etc. A smaller, but similarly arbitrary, figure has been recommended.

Similarly, the Federated Farmers request for the emptying of sheep dips to be a permitted activity is not recommended to be included, as it is the Officers' view that it is highly likely that a sheep dip is likely to contain various hazardous substances and other materials, such that disposal ought to be more carefully considered.

Overall, the Reply Recommendations are generally only minor modifications of the Section 42A Report recommendations, and are considered to be the most appropriate method of managing stock holding areas and animal effluent disposal.

Rules 5.38 to 5.40 – Silage Pits and Compost

There are three related rules that apply to silage pits and compost. Rule 5.38 provides for small “compost heaps” and has a relatively small range of performance standards. Rules 5.39 and 5.40 apply to larger scale compost heaps and silage pits, and provide for permitted activities, provided a wider range of performance standards are adhered to. Restricted discretionary activity status applies otherwise. The majority of the recommended amendments to these rules have been addressed in the Hearing Group 2 Section 42A Report. The recommended amendments included an additional rule covering small scale/domestic composting, along with a number of minor wording changes and improvements.

As further adjustment, “fermenting” is recommended to be removed from the rules, as it is considered to be included within the overall “decaying”. Technically, fermenting is a process involving yeast, and it is considered to be unduly specific for the LWRP to be defining activities on the basis of which type of micro-organisms are involved. Other recommended changes, such as to the conditions on the restricted discretionary activity rule, have been discussed earlier.

Rules 5.41 to 5.64 – Nutrient Management

The rules relating to nutrient management have been completely rewritten, on the basis of evidence, further material lodged, and prompting to reconsider certain issues by the Hearings Commissioners.

The overall framework is characterised by:

- Continued reliance on the nutrient allocation zone mapping with all areas of the Region coloured red, orange, green, light blue, dark blue and cross-hatched in pink adjacent to sensitive lake catchments;
- Reliance on Overseer as the nutrient discharge estimation tool;
- Providing a mechanism for irrigation schemes to manage the activities of their constituent farmers;
- A greater reliance on limits, particularly in the over-allocated red zones and lake zones;
- Continued reliance on farm environment plans. However, these are now to be implemented under a resource consent framework, rather than under permitted activity conditions which may have lacked certainty and objectivity;
- The enabling of less significant discharges, be it from small farming operations, or those with very low levels of nutrient discharge.

There have been a number of submitters appear and present evidence criticising the scientific basis for various provisions, particularly in relation to groundwater quantity limits and nutrient management. Further, the evidence presented has also criticised the measurement methodologies, particularly the use of Overseer for nutrient management.

Questions over the quality and robustness of the science plague natural resource management time and time again. In the Officers' experience, there always needs to be a balance between acting on the information at hand and not acting when that information is not sufficiently certain. There is always a temptation to delay actions and seek further information and scientific input, more reports and more consultation.

The Officers acknowledge that there is uncertainty with respect to the science, with respect to the behaviour of groundwater systems, nutrient processes and the modelling tools at hand. It is the Officers' view that while the information is less than perfect, the natural resource issues at stake are such that there is a significant risk of declining water quality and quantity if positive action is not taken through the LWRP framework.

Rule 5.41 provides for activities with lower nutrient discharges to be exempted from the nutrient management regime. This accords with the submissions and evidence of a number of parties, and will allow greater focus on more significant discharges.

Rule 5.42 specifies that for those properties that are split across more than one nutrient allocation zone, the rules apply only to the area of the property within each zone. This is particularly relevant for the lake zones, which often only apply to part of a property.

Rules 5.43 to 5.48 apply in the red, or over-allocated zone. The focus of this rule regime is to prevent any further increase in nutrient discharges; to require, over time, the existing higher discharging activities to come under a farm environment framework; and to enable the increase in nutrient discharges from a particular property, provided it is offset on another property within the same catchment.

The rules set a threshold of 20kg per hectare per annum above which the future farm environment plan and consenting requirement is triggered. 20kg was chosen as a threshold, rather than trying to specify types of farming activities, as it is inherent in the rules that all farming activities are going to need to use Overseer to calculate their discharges, and the figure of 20kg has been used in earlier versions of the pLWRP and is signalled through the Fish and Game submissions.

Due to the concerns raised by a number of submitters about the capacity of the industry to cope with the number of farm environment plans and audits required, the requirement for existing activities to gain resource consent have been staged several years in the future. That will also allow the sub-regional planning processes to be completed for a number of the red zone areas.

Prohibited activity status has been set for any increase in nutrient discharges. Such a categorisation has not been suggested lightly, and is the result of considerable analysis against the Freshwater NPS and the RPS. In over-allocated catchments, it is the clear policy direction of the Freshwater NPS and the RPS that the limit should not be further eroded.

Rules 5.49 to 5.52 set out the requirements for the lake zones. Lake zones are recognised as particularly sensitive to any nutrient discharge increases, as already a number of the lakes are suffering from increased nutrient inflows. The rule positioning is something of a modification of the existing position. However, farm environment plans are already underway on a number of these properties, and the undesirability of any increase in nutrients has been clearly signalled.

Rules 5.53 to 5.56 set out the requirements for the orange nutrient allocation zones. These nutrient allocation zones are potentially the most problematic to respond to in a manner that enables some further development, but provides certainty that limits will not be breached. The orange zone rules also rely on the 20kg per hectare per annum threshold for existing activities, and also enable an increase above the existing nutrient discharges of 5kg per hectare per annum. This is a change from the previously used 10%, and does not therefore provide a different requirement depending on existing discharges. This aspect was criticised by a number of submitters who considered that it would be unduly restrictive on those farmers who are discharging only low levels of nutrients, for whom it would be very difficult to stay within the very small allowable increase.

Again, the requirement for existing farms to come within the consenting and farm environment plan framework has been staged into the future.

Rules 5.57 to 5.59 set out the requirements for green and light blue nutrient allocation zones. These zones have capacity for increase in nutrient discharges, and the rules generally allow this, subject to larger properties and more significantly increased discharges coming under a farm environment plan framework.

An important aspect of the green and orange zones, which will allow the increase in nutrient discharge, is confidence that limits will not be breached. Dr Meredith is currently progressing work on identifying a water quality monitoring framework for the effective management of nutrient allocation zones in the region, so that long term trends can be monitored and RMA responses instigated where required. It is a feature of development in the Canterbury region that increases in irrigation and intensification is inevitable. However these changes are also occurring at a rate that gives time for responses to be implemented.

Rules 5.60 to 5.62 set out a particular regime for irrigation schemes. This will enable irrigation schemes and principal water suppliers to gain discharge consent for properties within their command area, for those discharge consents to authorise a total amount of nutrients to be discharged, and for those farms within the scheme to be managed by the schemes within those discharge limits.

Irrigation schemes cover a considerable portion of the areas with a current over allocated (red) zoning and managing these discharges via the irrigation schemes will provide considerable benefits to the individual farmers as well as the Council. It is likely that any consents granted to irrigation schemes will require reductions over time or will be relatively short term consents to enable improvement in nutrient allocation status, in accordance with Policy 4.74.

Rule 5.61 provides for two existing irrigation schemes that have already been granted resource consent and have water use consent conditions that specify maximum amounts of nutrient that can be discharged. This rule essentially allows these irrigation schemes to be established under the existing consents.

Rules 5.63 and 5.64 cover the incidental discharge of nutrients from properties that are operating under the preceding rules. This framework is consistent with that notified in the pLWRP and used in the Lake Tekapo catchment. Also of note is the inclusion of a cross reference to rules in the Hurunui Waiau River Regional Plan. This is to ensure that the discharge rules in this Plan do not capture land uses authorised under the Hurunui Waiau River Regional Plan.

It is noted that various submissions, evidence and responses to commissioner questions have been utilised to come to this rule framework. It is acknowledged that no specific submission seeks the particular rules that have been recommended. However, there is a wide range of submissions, addressed in the Hearing Group 2 Section 42A Report, that cover the full breadth of positions from a complete “hands off” through to complete “lockdown”. Officers are satisfied that there is scope within the range of submissions received to implement the recommended changes to the pLWRP.

It was noted in the Hearing Group 2 Report that a small number of submitters requested that their land be excluded from the “red” zone. These are further analysed as follows:

- Blue Gum Trading Ltd and Maungatahi Farm Limited seek to reclassify the gully from Bain Road to Waipara River on map A-037 - Hill Fed - lower (green). This location is near the middle of the Waipara Nutrient Allocation Zone (Bain Rd is shown on the left of Map A-037). There are no known circumstances that would justify exempting this part of the Waipara catchment from the overall over-allocated status.
- Mr Mark Hunter objects to the “red” zoning of their property. This property is near the southern edge of the Ashley-Waimakariri Nutrient Allocation Zone (on Map A-049). There are no known circumstances that would justify exempting this part of the Zone from the overall over-allocated status.
- Mr David Barlass seeks that the property located at 713 Mt Hutt Station Road be classified green and not red on Map A-056. This location is close to the foothills in the Ashburton-Rakaia Nutrient Allocation Zone. The submitter states that the soil types on the property have a low leaching value. Due to the way that nutrient management is structured, the allocation zones are not based on soil types or leaching propensity.
- Mr Peter Farrant opposes map A-095 as he rejects the existing and incorrect “small to medium sized high country Lake” classification and seeks to reclassify it correctly as “Artificial lakes or Other”. This submission seeks reclassification of the waterbody, it is not clear if the submitter is seeking removal of the Lake Zone, and if so, is not clear on where or how it should be modified.

Rules 5.65 to 5.67 – Fertiliser Use

The three rules in this section cover the application of fertiliser either from land based methods or from aircraft. Both set out permitted activity frameworks, with a range of conditions that need to be complied with. Restricted discretionary activity status applies if the conditions are not able to be met.

Many of the changes were set out in the Hearing Group 1 Section 42A Report. However, some significant amendments are suggested in the Reply Recommendations. These include further encouraging riparian planting through not requiring any setback where the riparian area has been planted and removal of references to proprietary certification or application systems, such as Spreadmark or Aircare.

Enabling the application of fertiliser into significant indigenous biodiversity sites (other than from aircraft) as it is often used as an element of restoration or planting within these sites.

Overall, the Officers' consider that the Reply Recommendation rules are somewhat more pragmatic and will provide an appropriate level of environmental protection. Overall, officers are of the opinion that the Reply Recommendation rules are the most appropriate to achieve the objectives and implement the policies of the pLWRP.

Rules 5.68 to 5.71 – Stock Exclusion

The somewhat complicated history of stock exclusion provisions and the relevant rules in the Natural Resources Regional Plan has been set out in the Hearing Group 2 Section 42A Report. In the Section 42A Report there was a relatively “mild” set of amended changes to the as-notified pLWRP provisions. The evidence presented and Hearing Commissioner comments identified that the rules, particularly in terms of the rule cascade and identification of certain activities as prohibited activities was in need of further adjustment.

The Reply Recommendation rules now follow a more traditional rule cascade from permitted through to prohibited activities. The conditions on permitted activities are largely moved over from the pLWRP, with some modifications to wording and improvements in clarity and certainty.

In general, the intention is to provide for a similar level of protection of waterbodies from the same kinds of stock, but under an improved and clarified rule framework. There is also some additional ability to seek non-complying activity consents for stock access to water bodies. This has reduced the need for complexity within the rules, which previously incorporated a far more restrictive set of prohibited activities which then required a range of exclusions.

Rules 5.72 to 5.74 – Flow Sensitive Catchments

There are three rules relating to flow sensitive catchments. A small number of amendments to the rules were recommended to be included in the Hearing Group 1 Section 42A Report. Those amendments are largely brought forward into the Reply Recommendations, with only very minor changes of an editorial nature.

Evidence was presented by a small number of submitters on these rules, and the mapping of the flow sensitive catchments. Most notable of these was Richard Johnson and the forestry company representatives.

Mr Johnson outlined the Natural Resources Regional Plan hearing panel approach and questioned whether analysis had been done to include additional catchments. Council Officers can confirm that the additional analysis that Mr Johnson questioned has been completed and there is technical reporting to support the inclusion of the catchments. This led to the recommended amendments to the mapping and sub-regional section lists in the Hearing Group 1 S42A Report.

Rules 5.75 to 5.80 – Drainage Water

These rules cover the discharge from land drainage systems and also the incidental discharges from maintaining these artificial water courses. The general context of the rules is to enable discharges to the existing systems, and to require consenting at the point of discharge to natural water bodies.

This will require local authority owners of land drainage systems to have management mechanisms in place, rather than potentially relying on Regional Council controls. These issues were discussed fully in the Hearing Group 1 Section 42A Report, and the recommended amendments have been brought through into this Reply Recommendation, with a small number of editorial amendments.

The most significant amendment, raised in the Section 42A Report, is the ability to discharge contaminants due to the maintenance of artificial watercourses and associated structures. This was an omission from the as-notified pLWRP, and is a pragmatic response to a common maintenance practice.

Rules 5.81 to 5.83 – Cemeteries

There are three rules related to cemeteries included in the pLWRP. The limited number of submissions was addressed in the Hearing Group 1 Section 42A Report, and only editorial changes are suggested in this Reply Recommendation.

Rules 5.84 to 5.88 – Sewerage Systems

These five rules were included largely unchanged from the pLWRP in the Hearing Group 1 Section 42A Report recommendations. There has been a range of evidence led, particularly from local authorities, on these rules. Overall, only minor editorial changes are recommended in these Reply Recommendations.

A number of the local authorities expressed concern at the non-complying and prohibited activity status for sewerage overflows and spills. There were various statements made about the expense of designing systems to avoid this occurrence, the design of existing systems incorporating sewerage overflows and the difficulty of meeting the objectives and policies of the Plan under this rule framework.

While the issue largely reduces to a practicality and cost issue, the Regional Council confirms, through these Reply Recommendations, that the prevention of effluent entering surface water bodies, whether unintentionally or not, is a high priority. The cultural, environmental and public health considerations inherent in the Regional Council's functions provide more than adequate justification for this position. On this basis, no further amendment to these rules is recommended.

Rules 5.89 to 5.90 – Municipal Solid Waste

The two rules on municipal solid waste were assessed in the Hearing Group 1 Section 42A Report, and no amendments were recommended. No evidence of any significance has been advanced on these provisions, and they are included in these Reply Recommendations, largely unchanged.

Rules 5.91 to 5.92 – Industrial and Trade Waste

There are two rules relating to industrial and trade waste discharges. Rule 5.91 provides for small scale and relatively benign discharges as a permitted activity, with a number of conditions. Any other discharges of industrial or trade waste are discretionary activities.

The rules and submissions lodged were assessed in the Hearing Group 1 Section 42A Report, and a small range of amendments were recommended. These are largely brought across to the Reply Recommendations, with additional editorial changes recommended.

Condition 4(f) of Rule 5.91 is further recommended to be amended, to incorporate a reference to the limits set in Schedule 8. Given the nature of the other restrictions on permitted activity discharges, particularly that they are to land and of a relatively small volume that does not contain any hazardous substances, there is a relatively low risk of a limit in Schedule 8 being exceeded in any event.

Rules 5.93 to 5.97 – Stormwater

Stormwater discharges are some of the most common discharges managed by the LWRP. The Natural Resources Regional Plan set up a framework, which has largely been brought across to the LWRP, whereby urban areas are generally intended to be dealt with by a “global” consenting process that is managed under stormwater management plans. Other stormwater discharges to ground or surface water are provided for in the rules, with discretionary activity status provided for if the conditions of permitted activities cannot be met.

A key component of the rules is the expectation that an individual can discharge into a reticulated stormwater system, and the owner of the system, normally a territorial authority, will be responsible for the end-of-pipe discharge quality. A number of submitters, including Christchurch City Council, sought greater reliance on control by the Regional Council over these kinds of discharges, which has typically occurred in Canterbury to date. This was fully addressed in the Section 42A Report, and after consideration Council Officers remain of the opinion that a discharge into a reticulated system is not a discharge that can be controlled by the regional plan.

Rule 5.93 provides for stormwater management plans. These provisions were discussed fully in the Hearing Group 1 Section 42A Report. Additional evidence was presented at the hearings regarding the date by which existing systems would need to be consented under this framework. Council Officers recommend continuing with the date that was advanced in the Natural Resources Regional Plan, and provides several years to get the applications lodged. A further condition on the restricted discretionary activity is recommended, to recognise the limits set in Schedule 8.

There are a range of minor amendments included in the Reply Recommendations that are additional to those set out in the Section 42A Report. The majority of these are editorial in nature, and seek to improve the certainty and clarity of the rules.

It is also noted that the protection of flooding and inundation is a significant aspect of stormwater management. Christchurch City Council, in particular, is concerned about the potential for this to occur in the lower reaches of the Avon and Heathcote Rivers, and to ensure that new land developments are managed under City Council stormwater management plan frameworks. On this basis, additional changes are recommended to the relevant sub-regional section to incorporate specific rules for the Christchurch City area.

Rules 5.98 to 5.99 – Other Minor Discharges of Contaminants

These two rules provide for minor discharges to surface water and to groundwater that are not otherwise covered by the other discharge rules in the plan.

There are a range of editorial amendments suggested, in addition to the changes that were recommended in the Hearing Group 1 Section 42A Report.

Rule 5.100 has been added in the Reply Recommendations in order to provide clarity that any other discharge is to be addressed as a discretionary activity. This essentially replicates Rule 5.6, but will aid certainty and plan usability.

Rules 5.101 to 5.102 – Water Traces

There are two rules relating to the discharge of water traces. The background to the rules and submissions lodged were addressed in the Hearing Group 1 Section 42A Report. No changes to the recommendations, other than editorial changes, are included in the Reply Recommendations.

Rules 5.103 to 5.110 – Bores

There is a suite of rules relating to Bores, which were assessed in the Hearing Group 1 Section 42A Report. A range of amendments were recommended. No evidence of any significance has been advanced on these provisions, and they are included in these Reply Recommendations, largely unchanged.

Rules 5.111 to 5.120 – Small and Community Water Takes and Water for Construction and Maintenance

These rules were addressed fully in the Hearing Group 1 Section 42A Report and a range of minor amendments were recommended. Other than additional changes of an editorial nature, the rules are essentially unchanged in the Reply Recommendations.

Rules 5.123 to 5.127 – Take and Use Surface Water

The history and content of these five rules, along with a number of recommended changes were addressed fully in the Hearing Group 1 Section 42A Report. Other than with one significant amendment, these recommended changes, along with a number of minor editorial changes, are recommended to be included in the Reply Recommendations.

The significant amendment is in relation to the matters of discretion in Rule 5.123. It is recommended to add a discretion in relation to replacement of resource consents for existing water takes under Sections 124A to C of the RMA. This additional matter of discretion relates to Policy 4.50, which requires a reduction in the amount of water taken for replacement consents in over-allocated catchments. This provision will enable the Regional Council, through the LWRP, to address over-allocation, in the absence of a specific method to reduce over allocation in the Sub-regional Sections.

Prohibited activity status continues to be recommended for water takes in areas that are already over-allocated. With respect to surface water takes this was not challenged with any significance in evidence. It is also the current position under the Natural Resources Regional Plan and would clearly implement the Freshwater NPS.

Rules 5.128 to 5.132 – Take and Use of Groundwater

Again, these rules have been addressed fully in the Hearing Group 1 Section 42A Report.

The recommended additional matters of discretion and editorial changes are also discussed above, in relation to surface water.

Evidence from a number of submitters and groundwater experts, including Bowden Environmental and Aqualinc, expressed concern with the prohibited activity status recommended for additional water takes when the groundwater allocation zone limits have been exceeded. These submitters generally challenged the accuracy and scientific basis for the allocation limits, and suggested that non complying status was more appropriate.

This non complying status, and challenges to the scientific basis of the allocation limits, has been a consistent method of gaining resource consent for additional groundwater takes under the Natural Resources Regional Plan.

Over the last decade there have been hundreds of applications for additional groundwater takes in areas where the groundwater limits have already been exceeded. These applications have typically been grouped, at the applicants request, such that significant groups of applicants have gone through a single process and hearing. This has been unwieldy, complex and time consuming. In addition,

these processes have been expensive, running to several hundred thousand dollars per group. Much scientific resource that could have been used to further develop groundwater limits has been diverted to assessing and providing advice on groups of consent applications.

In addition, the resource consent condition frameworks that have been developed have often been of a “planning” nature, including the development in some groundwater zones of something akin to a “B Block” of water takes that have lesser rights attached to them than the remainder of takes in the allocation zone.

It is the Council Officers' opinion that these processes are inefficient and contrary to good resource management practice. A far more efficient and effective method would be to undertake a plan change process to adjust the limit, should the applicants consider that additional water is available in the groundwater allocation zone. At this stage, the limits have been set on a somewhat precautionary basis, and this accords with the Freshwater NPS. In the Council Officers' view, the setting of prohibited activity status is appropriate in terms of use of prohibited activity status as outlined in Mr Maw's legal submissions and is appropriate in terms of the Freshwater NPS.

Rules 5.133 to 5.134 – Transfers of Water

These rules have been debated at length in submissions and in evidence. The issues have been fully addressed in the Hearing Group 1 Section 42A Report and are not re-addressed here. There has been a significant legal challenge to the transfer, particularly in relation to the encouragement of surrendering water. This is addressed fully in Mr Maw's legal submissions.

In the absence of a legal impediment, it is the Council Officers' opinion that the rule position should be largely unaltered.

It is important to note that this provision will enable some water to be recovered in over-allocated catchments, particularly water that is not presently being used or not used efficiently. Further, it is noted that the encouragement to surrender some water has been consulted, at length, including through the zone and regional committee CWMS process and has been largely supported.

The exception to the surrender provisions is in relation to water being transferred into an irrigation scheme. This exception is in response to frameworks developed under the CWMS.

Rules 5.135 to 5.144 – Structures in Riverbeds

This group of rules has been addressed fully in the Hearing Group 1 Section 42A Report, and the assessment in that Report is not repeated here. The recommended changes to the rules included in the Hearing Group 1 Report are largely included in this Reply Recommendation. There are a number of editorial changes and other minor changes of a type that has been discussed previously in this report.

The rule relating to the treatment of wetlands within the riverbed has been deleted, in line with the earlier discussion of wetlands in these Reply Recommendations.

There is a minor recommended change to Rule 5.35, relating to pipes, ducts, cables and wires over the bed of a lake or river, to specifically include associated support structures. This is in response to submissions from Chorus and Telecom. This also confirms that structures such as overhead wires, cables and support structures are not provided for in Rule 5.139.

Evidence and responses to questioning have been provided by Christchurch City Council in relation to culverting water bodies. In addition, the forestry companies have raised concerns about the ability to install culverts for harvesting purposes.

In general, the rules that relate to culverts are based on rules from the Natural Resources Regional Plan. They are recommended to be altered to be somewhat more flexible than the Natural Resources Regional Plan provisions, but it is noted that the issues that are of concern to Christchurch City Council (the culverting of long links of existing water bodies) or to the forestry companies (the short timeframe available to temporary culverts) do not appear to have been causing particular issues to date.

With respect to the temporary culverts, the requirements for permanent culverts are not significantly different, and it would be open to the forestry companies or people undertaking gravel extraction in riverbeds to comply with the permitted activity conditions for permanent culverts.

Rules 1.47 to 1.153 – Gravel from Lake and Riverbeds

Again, the history and submissions on these rules have been addressed fully in the Hearing Group 1 Section 42A Report. A number of changes were recommended in the Section 42A Report and these are recommended to be included in the Reply Recommendations. There are a range of editorial changes. However the rule content is essentially unchanged.

New rules 5.151 and 5.152 are included, but are essentially the same as the rules for structures in rivers and lake beds (5.140 and 5.141). The original versions of these rules cross-referenced to disperse rule sets. To aid clarity the rule has been split into two locations but is essentially the same.

Rules 1.154 to 1.158 – Dams and damming

The history of and submissions on these rules has been addressed in the Hearing Group 1 Section 42A Report. The assessment is not repeated here.

Other than a range of editorial changes, the only significant change is with respect to Rule 5.154(1). The change is to clarify that there is an “or” at the end of Condition 1(a). This will ensure that the kinds of on-farm water storage, that typically does not require a “large dams” building consent and has previously been constructed as a permitted activity, can continue and the existing water storage of this nature does not require resource consent.

Meridian Energy, in particular, has sought a more permissive consent status for both dams and water takes and discharges in relation to existing hydroelectricity infrastructure. The majority of this kind of infrastructure is located in areas subject to sub-regional plans or Water Conservation Orders. On this basis, particularly given existence and review of the Waitaki River Water Allocation Regional Plan, the Council Officers' preference is to maintain the consent status and assessment criteria in the Hearing Group 1 Section 42A Report.

Rules 5.159 to 5.162 – Wetlands

As has been previously discussed, the framework for managing wetlands is recommended to be returned to a more traditional framework of wetlands in any circumstance being dealt with under the same rules.

This is in parallel to deletion of rules that suggested wetlands and the beds of lakes and rivers would be addressed by other rule provisions, the definition of wetlands being altered and changes to the policy framework. In terms of the wetlands rules themselves, there are relatively minor changes suggested. There are a number of other changes that were outlined in the Hearing Group 1 Section 42A Report, and subject to some additional editorial changes these are recommended to be included in the Reply Recommendations.

There are some minor changes recommended to improve the relationship between the LWRP wetland provisions and the RPS, particularly in relation to the requirement for offsetting of effects on wetlands within the same wetland. The as-notified pLWRP provisions were not consistent with the RPS, and this is recommended to be adjusted accordingly.

Rules 5.163 to 5.166 – Vegetation in lake and river beds

These rules and the submissions on the rules were outlined in the Hearing Group 1 Section 42A Report. A small number of amendments were recommended in the Section 42A Report. These amendments, along with a small number of editorial changes are included in the Reply Recommendations.

Rules 5.167 to 5.169 – Earthworks and vegetation clearance in riparian areas

The history of and submissions on these rules has been addressed fully in the Hearing Group 1 Section 42A Report. That Section 42A Report recommended a range of changes to the rule framework, and in particular the simplification of both the rules and mapping of soil erosion risk.

Additional evidence was presented by a number of parties with respect to vegetation clearance and soil erosion risk. This included Federated Farmers and the forestry companies.

In general, the changes recommended in the Section 42A Report are included within the Reply Recommendations. A number of additional recommended changes are included, particularly of an editorial nature.

A more significant change is recommended to Rule 5.168, which relates to earthworks within riparian areas. It is recommended that cultivation be removed from these rules, as cultivation occurs relatively infrequently in most areas, particularly the hill and high country and areas of high soil erosion risk. This accords with the requests of a number of parties in their submissions, and while it will rely on the good practice of farmers, it is considered to be of lesser risk than more significant forms of earthworks in riparian areas.

Rules 5.170 to 5.174 – Vegetation clearance and earthworks in erosion prone areas

These rules, and the submissions, have been addressed fully in the Hearing Group 1 Section 42A Report. A range of changes were recommended in the Section 42A Report, and they are included, along with a number of further editorial type changes in the Reply Recommendations.

There was a limited range of evidence presented on these matters, particularly from Federated Farmers and the forestry companies.

Federated Farmers relied considerably on the evidence and position reached under the operative Land and Vegetation Management Plans, especially in relation to burning in the hill and high country. Of particular concern was the setbacks from waterbodies and the inability to burn over small wetlands. The evidence presented was that the adverse effects on small wetlands, burnt infrequently (i.e. less than once every ten years) were insignificant compared to the potential benefits of using burning as a land management practice. Council Officers are inclined to agree with this position, particularly given the substantial investigation and agreements reached under the Land and Vegetation Management Plan development process. On this basis, an exclusion from these rules for these types of smaller scale wetlands is included in the Reply Recommendations.

The forestry companies were concerned with a requirement to vegetate cleared areas within 6 months of the clearance occurring. Their evidence identified that it can take up to 18 months to re-establish forest plantings and in that time there may well be herbicide spraying of regenerating weed. Other than by extending the timeframe in the condition from 6 months to 18 months, there does not appear to be a solution to this issue that would not create a significant “permitted baseline” for any other kind of vegetation clearance. Given that the vegetation clearance required for forestry is relatively uncommon, the restricted discretionary activity status of such an activity, and the relatively limited areas of higher soil erosion risk identified in the planning maps, Council Officers are of the view that the rule framework included in the Reply Recommendations is the most appropriate way to achieve the objectives and implement the policies of the LWRP.

Rules 5.175 to 5.178 – Earthworks over aquifers

These rules and the submissions were fully addressed in the Hearing 1 Section 42A Report. There were a number of recommended changes in the Section 42A Report, which are included within the Reply Recommendations. In addition, there are a number of changes of an editorial nature in the Reply Recommendations. No further changes of significance are recommended.

Rules 5.179 to 5.186 – Hazardous substances

Again, these rules and the relevant submissions were addressed in the Hearing Group 1 Section 42A Report. A number of changes were recommended in the Section 42A Report, which are included in the Reply Recommendations. A number of additional changes, of an editorial nature, are recommended.

Of more significance is an adjustment to the hazardous substance storage rules, particularly Rules 5.182 and 5.183, to reduce the number of performance standards and incorporate the Environmental Protection Agencies Hazardous Substances and New Organisms Act approval procedures, in a manner consistent with the treatment of agrichemicals and vertebrate toxic agents. This is likely to reduce the number of approvals required, and focus the Regional Council's attention on those sites that are more environmentally sensitive. On this basis, the conditions that are location specific are recommended to be retained.

The hazardous substances provisions also address the management of contaminated land. There are inevitable overlaps with the management of contaminated land with the functions of territorial authorities under the National Environmental Standard relating to contaminated soils. The National Environmental Standard for contaminated soils applies to territorial authority functions and is expressly specified as not applying to regional council functions. However, practices and responsibilities inevitably have a degree of overlap. On this basis, the pLWRP was drafted with relatively minimal controls specifically on contaminated sites, but with a range of controls within individual discharge rules to avoid mobilising contaminants. Whether there is a need for a "passive discharge" rule for these sites has been discussed at length. However, at this point the general provisions of Rule 5.6 are relied upon.

6 Sections 6 – 15

6.1 General

The general background to each of the 10 sub-regional sections and the analysis of the submissions received is included in the Hearing Group 3 Section 42A Report. That Report recommended a range of amendments to the Plan and, following the hearing of evidence, some of these have been further refined for the final recommended version of these sections of the pLWRP.

A number of the recommended amendments across all the provisions in these sections are to improve certainty, consistency and clarity. A range of others update the cross-referencing within the Plan, correct errors in the referencing and complete the cross-reference between the pLWRP and the Hurunui Waiau River Regional Plan.

Name of sub-regional sections

Recommendation RN66 (page 9, Hearing Group 3 Section 42A Report) recommends that all references in the pLWRP to “Sections 6-15” be amended to “Sub-regional Section 6-15 of this Plan”. The basis of this recommendation is that it makes the provisions of the pLWRP more clear and readable. Further thought has gone into that proposal and a slightly amended but more concise wording is now incorporated into the Reply Recommendations version of the Plan. The preferred wording is “Sections 6 to 15”.

Introduction (page vii)

The introduction to the Sub-regional Sections (page vii) of the pLWRP sets out the relationship between the Regional and Sub-regional sections. This relationship is also covered in Section 2 (page 2-1) of the pLWRP, although different wording is used. These differences were noted at Page 6 of the Section 42A Report for Hearing Group 3. As a result of a desire for improved clarity, substantial amendment to this part of Section 2 of the Plan has been proposed. Those same amendments are also reflected in the recommended amendments to the introduction to the Sub-regional sections of the Plan.

The result is improved understanding of the relationship between the layers that make up the pLWRP, improved integration of the plan provisions and improved accessibility to the Plan.

6.2 Section 6 – Kaikoura

Overall, very few amendments to this section of the Plan have been sought by submitters. Those are set out in the Section 42A Report for Hearing Group 3 commencing at page 12. In all but one instance the recommended amendments to the Plan set out in that Report remain supported.

Recommendation R6.6.1 concerns Table 2 – the Kaikoura Streams flow and allocation limits. There has been a request to amend the allocation limit for A permits on the Hapuku River from 178 L/s to 206 L/s. Further consideration of this matter following receipt of evidence in support of the request now suggests that the requested amendment is appropriate. The amendment is included in the Reply Recommendations version of the Plan.

The allocation limit for A permits on the Hapuku River was calculated for the NRRP using the sum of consented allocations that existed at the time the NRRP became operative. It has been pointed out that the limit was incorrectly calculated by excluding the allocation attributed to resource consent CRC081804.

The decision on the NRRP allocation limit for the Hapuku River states:

“197. We are mindful there are no submissions specific to the hill-fed rivers and accept there is no scope to amend the proposed variation in relation to these rivers. We accept the nature of hill-fed rivers may provide limited opportunity for future water storage options via a limited “B” block allocation.

198. As discussed above, we consider it is appropriate to correct the existing surface water allocation to the revised limit based on the best available information and that this will not adversely affect any existing abstractors.

199. There is no change to the surface water allocation for the Hapuku River, as notified.”²

The abstraction of water under CRC081804 is restricted during times of low flow, with minimum flow conditions consistent with the A allocation block minimum flows set out in both the pLWRP and the NRRP. CRC081804 is a non-consumptive abstraction of water taken for gravel washing purposes. The consent holder subsequently discharges sediment-laden water to sediment retention ponds, authorised under resource consent CRC085055. However, given the water abstracted under CRC081804 is not discharged back to the river, the abstraction must be considered part of the existing A allocation block.

This amendment recognises an existing situation, will not give rise to any adverse environmental effects that are greater than minor and better achieves sustainable management than not making the amendment.

The only other matter in respect of this section of the Plan concerns the use of the term ‘pro rata’ in Policy 6.4.1. The phrase means “in proportion, according to a certain rate”. This policy is implemented through Table 2 whereby if, for example, the available flow for A allocation permits in Luke Stream was only 73 L/s then all A permit holders would need to reduce their take by 12%, unless they belong to a water user group. That reduction would ensure that the relationship between minimum flow and allocation remained constant.

² R Nixon, S McGarry, 18 August 2010, Recommendations of the Hearing Commissioners, Proposed Variation 5 to Chapter 5 of the Natural Resources Regional Plan.

6.3 Section 7 – Hurunui-Waiau

At the time the pLWRP was publicly notified the Hurunui Waiau River Regional Plan was heading towards the hearing of submissions. That phase of its development is now complete and decisions have been released by Council. A number of those decisions are the subject of appeal to the High Court. Nevertheless, the opportunity has been taken to update the cross-referencing between that Plan and the pLWRP and to improve the text of the pLWRP in respect of the relationship between the provisions of both plans.

This is best reflected in amendments to 7.1.1 and the introduction of a new rule at 7.5.1.

Evidence presented by Dr Brent Cowie (on behalf of Ngai Tahu Property Ltd and Te Runanga o Ngai Tahu) highlights the need to clarify the relationship between the pLWRP and the sub-regional plans and separate catchment plans. While neither NTPL nor TRONT submitted on this point, HWP does raise this issue in its submission³.

Clarifying the relationship between regional policies and rules, the sub-regional chapters and separate catchment plans will enable the community to better understand which rules apply without unnecessary confusion. It will improve the readability of the pLWRP.

In its submission and evidence, Fish and Game seeks that Table 5 Conway River Environmental Flow and Allocation Limits is amended to reflect the flow regime that existed prior to the recent Plan Change 2 to the NRRP to provide for the trout fishery. Plan Change 2 established a revised flow and allocation regime for the Conway River/Tūtae Putaputa. That plan change is operative and is included in Schedule WQN1 of the NRRP. The flow regime for the Conway River set out in Table 5 of the pLWRP duplicates that regime.

The Hearing Commissioners at the NRRP Plan Change 2 hearing considered the evidence presented by Fish & Game and noted in their decision the following in relation to trout fisheries:

“Importance of trout habitat in the Conway River / Tūtae Putaputa

120. *Fish and Game’s evidence focused on the need to recognise the Conway as a significant habitat for trout and as an important trout fishery, and provide for a flow and allocation regime that protects it. Mr Lynn considered the Conway is a locally significant recreational fishery, one that is under-represented in angler surveys. He stated that it is appreciated for its remoteness and the relative lack of other anglers. Sea-run trout are fished near the river mouth in winter; in summer, the most popular fishing is above Ferniehurst, around the confluence of the Spey Stream. There is no trout fishery in the Charwell.*

121. *We accept Mr Lynn’s evidence in regard to the trout fishery in the Conway River / Tūtae Putaputa and find that the river supports a small, locally important, fishery with particular values that are not found in many other rivers. We do not, however, consider that it is a significant habitat for trout. The trout fishery is a relevant consideration in setting a flow and allocation regime, along with other instream and cultural values, and the needs of out-of-stream users. The evidence of Dr Burrell is consistent with this approach, in that when making his recommendations on minimum flow he considers adult and juvenile trout habitat in the various stretches of the river where they are present.”*

³ HWP 131.33

Given the very recent nature of this decision and the absence of additional information regarding the effects on water users and reliability of supply the proposed amendment to Table 5 sought by Fish and Game is not supported.

Finally, and this is a minor matter, paragraph 2 on page 7-1 of the pLWRP states that there has been an approximately 98.7% loss in wetland area over time. The value of having such a precise approximation has been questioned. Removal of the reference to the 7 tenths would improve the text.

It appears that a very specific percentage loss of wetland area has been used when a more approximate value would more than adequately suffice. For the purposes of the Plan, a less specific value is considered sufficient without detracting from the effect of the statement. It is considered that the amendment can be made in accordance with Clause 16(2) of the First Schedule to the RMA and is promoted on that basis.

6.4 Section 8 – Waimakariri

Aside from updating the cross-referencing in this section of the Plan, the most significant amendment concerns Table 7 – Ashley River/ Rakahuri Environmental Flow and Allocation Limits.

In the Section 42A Report for Hearing Group 3 commencing at page 22 is the evaluation of submissions made on this Table. The conclusion reached in that Report is that the Table should be retained without amendment.

During the presentation of evidence on this particular Table, concern was expressed at the environmental effect of the inclusion of an “unlimited” B Block allocation for Taranaki Creek, Waikuku Stream, Little Ashley Creek and Saltwater Creek, and in particular noting the potential for the proposed regime to “flat line” the river. The Director General of Conservation submits that the proposed “unlimited” allocation limit for B permits threatens in-stream values and is inconsistent with Part 2 of the RMA and the NPS (Freshwater). This submission is supported by Fish & Game.

On review of the evidence provided by Fish & Game, and in light of concerns highlighted during its presentation, it is agreed that an unlimited B block is inappropriate and Table 7 should be amended accordingly.

From the Environment Canterbury's allocation database for the affected creeks it is noted that of the four water-bodies that have an unlimited B Block, only one resource consent has been granted that is considered part of the B allocation.

Resource consent CRC121766 was granted in 2012 and authorises the abstraction of groundwater which is hydraulically connected to Waikuku Stream. The depletion rate of the groundwater was calculated at less than 5 litres per second, meaning the consent holder is not restricted to minimum flow conditions. However, two litres per second has been attributed to the Waikuku Stream. Given that the consent does not have a minimum flow restriction condition, the allocation of stream depleting groundwater appears to sit outside both the A and B Blocks.

DOC requests that the B block allocation limit is replaced with “0” or hydrological evidence is provided of a sustainable block size that will not threaten the life-supporting capacity of these creeks.

In the absence of hydrological information, a precautionary approach is considered appropriate with the opportunity for a future plan change in the event that further information becomes available which supports the inclusion of a B Block. In terms of Section 32 (4) (b) of the Act it is considered the risk of acting is too great without sufficient information.

The Department of Conservation has also requested that the Table 7 is amended to replace the term “N/A” with “0”. The requested amendment is reasonable, however for clarity, it is considered more appropriate to replace “N/A” with “No B Block” and “No C Block”.

With these amendments, which are included in the Reply Recommendations version of the pLWRP, this sub-regional section now provides for the sustainable management of the water resource within its jurisdiction. The method chosen most effectively and efficiently gives effect to the objectives and policies of the Plan.

6.5 Section 9 – Christchurch-West Melton

There are a number of amendments to this sub-regional section of the Plan that are not contained in the Section 42A Report for Hearing Group 3 commencing at page 25. These amendments improve the cross-referencing within the Plan, correct the English and tidy up the layout of Table 9.

Of a more substantive nature, Volume 3 of the pLWRP Section 42A Report (page 28) recommends that Policy 9.4.1 be amended to improve the understanding and application of the Policy.

In addition to those amendments, a further amendment is recommended. CIAL submits that clause (e) of Policy 9.4.1 is not practicable for sites that do not have a 3 m confining layer. The submitter states that the airport is located over an unconfined aquifer and therefore does not have a 3 m confining layer above the aquifer. CIAL seeks that Policy 9.4.1 is amended so that it only applies to sites where there is a naturally occurring confining layer of 3 m or more.

It is agreed that clause (e) of the policy creates an impractical outcome for sites where the natural confining layer is less than three metres in thickness or the site is not located above a confined aquifer system. Therefore the policy should be amended to provide for the situation where the confining layer is less than 3 metres thick. Overall, this amendment better reflects the purpose of the Act.

The Department of Conservation seeks that Table 9 is amended to replace the words “no limit set” in relation to A allocations with the word “zero”. It is noted that this matter was also discussed at the hearings for the Natural Resources Regional Plan (NRRP), where the NRRP was notified with an allocation limit of 0 litres per second for the Avon and Heathcote Rivers. Submitters on the NRRP were concerned with a “0” limit in the plan, as such the Commissioners replaced the “0 L/s” with the following wording in the allocation limit cell for both the Avon and the Heathcote Rivers :

“No limit is set. No more water to be allocated unless for group drinking water supply or community drinking water supply.”

The NRRP Hearing Commissioners state that the intent for the flow and allocation regime for the Avon and Heathcote Rivers is to allow existing takes which have a direct, high or moderate degree of hydraulic connection will be able to continue to take at and below the minimum flow to the extent necessary to take water that is required for essential use.

It is considered that reverting back to “0” allocation limit (as per the notified NRRP) may have unintended implications for existing groundwater abstractors that are hydraulically connected to these rivers. To provide for the existing abstractors, it is recommended that the words “no limit set” be replaced with “no more water to be allocated”.

During the course of the hearing the need to retain the last two columns of Table 9 was questioned because they do not add anything to the Plan. These columns are superfluous and it is recommended they are deleted.

Recommendation R9.6.2 (page 32 of Volume 3 of the pLWRP Section 42A Report) recommends that Section 9.6.2 of the Plan is amended to allow for the non-consumptive taking and use of water as set out in Rule 5.105. It is noted that Rule 5.105 provides for the non-consumptive taking and use of water as a permitted activity, where water is not typically allocated against permitted activities. Upon review of the evidence, it is considered more appropriate to reference Rule 5.106, which provides for the non-consumptive take and use of water as a discretionary activity.

A number of submitters are concerned that further allocation of water in the Christchurch-West Melton Groundwater Allocation Zone will be a prohibited under Rule 5.104 of the Plan without the justification for the limit on further allocation of water. Submitters state that Section 9.6.2 of the plan does not set a numeric allocation limit for the Christchurch-West Melton Groundwater allocation zone, but rather it limits further allocation of water to group or community water supply as set out in Rule 5.88. The Aggregate Group submits that Rule 5.104, in relation to Section 9, does not give effect to the NPS as a resource limit has to be established in order for the resource to be considered over-allocated.

For the purposes of managing water abstraction from the Christchurch West Melton Groundwater Allocation Zone, the proposed wording of Section 9.6.2 is still considered appropriate for the reasons set out in the section 32 report⁴.

Section 9.6.2 effectively limits the allocation of water to the volume of water attributed to all existing resource consents. While a numeric limit is not specified, further work is required to determine an appropriate allocation limit for the Groundwater Allocation Zone. A review of existing water permits within the Groundwater Allocation Zone is also necessary to determine an appropriate annual volume for existing water permits and a realistic estimate of how much water is currently abstracted. Until this information is available, it is not considered appropriate to deviate from the precautionary approach taken in Section 9 of the Plan. In terms of Section 32 (4) (b) of the Act it is considered the risk of acting is too great without sufficient information.

Following a review of the evidence presented in respect of the water transfer provisions in the Plan (Rules 5.107 and 5.108) and the evidence presented by the Aggregate Group in respect of gravel extraction outside of river beds, it has become clear that provision should be made for the transfer of water permits associated with this activity. Rather than draft an exception to Rule 5.107, it is considered more elegant that provision be made for such transfers within this sub-regional section. To implement this a new policy (9.4.4) and rule (9.5.6) are proposed. These are set out in the Reply Recommendations version of the Plan.

While the abstraction of additional water is classified as a prohibited activity, it is considered appropriate to allow for the transfer of water used for gravel washing purposes to other quarry sites within the Christchurch-West Melton Groundwater Allocation Zone. The abstraction of water for quarrying/ gravel extraction is largely non-consumptive. Further, this source of gravel is, and will be for some considerable time, important for the Christchurch re-build. Requiring a partial surrender of a largely non-consumptive take when all that is happening is the shift from one aggregate extraction site to another is not going to achieve the water efficiency that the transfer rules are striving for. Further, it would negatively impact on the sustainable management of the aggregate resource.

The policy and rule will not adversely affect the effectiveness and efficiency of the transfer rules in the Plan; they will, however, positively affect the effectiveness and efficiency of the aggregate extraction provisions.

It is acknowledged that the extraction of gravel within close proximity to Christchurch provides a cost effective resource of significant value to the future development of Christchurch (including the post-earthquake rebuild), without being subject to the surrender requirements set out in Rule 5.107.

Finally in respect of this section of the Plan a question has been raised concerning the references to "Zone 1". It is understood that this is a reference to the Woolston/Heathcote Groundwater Management Zone (as shown on the Planning Maps). It appears the text references to Zone 1 and Zone 2 within this sub-regional section were carried over to the pLWRP from the NRRP in error. The

⁴ Proposed Canterbury Land and Water Regional Plan Section 32 Report, August 2012, page 137.

correct reference is to the Woolston/Heathcote Groundwater Management Zone. In the Reply Recommendations version of the Plan these amendments are included. They occur in policies 9.4.2 and 9.4.3, rules 9.5.3, 9.5.4 and 9.5.5 and Table 10 which is part of rule 9.6.2. These are minor amendments which promote consistency throughout the Plan and correct an unintended error.

6.6 Section 10 – Banks Peninsula

Aside from the amendments presented in Volume 3 of the Section 42A Report (commencing at page 34) there are no further amendments considered necessary arising from a review of the evidence and submissions.

In four instances within this sub-regional section there are amendments recommended that improve and/or correct or update the cross-referencing within the pLWRP. These are considered to be minor amendments but they improve the readability of the Plan and therefore its accessibility to the community.

6.7 Section 11 – Selwyn-Waihora

This sub-regional section of the pLWRP is a true 'holding' section. That is because the development of this section has been proceeding in parallel to the development of the pLWRP. Despite this, there have been a number of submissions requesting amendments to this section of the Plan. While most of those have been previously considered in the s42A Report, one appears to have been omitted.

The Ellesmere Irrigation Society seeks that Section 11 is amended to include an additional outcome of 95 to 100% reliability for irrigation water supply for the catchment. The desirability of such a high level of reliability is understood. However, achieving 100% reliability may not be realistic while still meeting the needs of the community and the environment. While it is not considered appropriate to specify the outcome requested by the Ellesmere Irrigation Society, water users are still able to invest in infrastructure (such as on-farm storage) or shares in an irrigation scheme to provide water with a higher reliability.

It is also understood that the outcomes for the catchment are being considered in much greater detail as the specific policies and rules are developed for this sub-regional chapter.

The further amendments to the provisions in this section of the Plan that are now contained in the Reply Recommendations version of the pLWRP are the result of updates to the cross-referencing within the Plan.

6.8 Section 12 – Central Canterbury Alpine Rivers

Aside from amendments to the provisions of this section of the pLWRP that update the cross-referencing within the Plan, all of which are considered minor amendments, there is one other matter where amendment is now recommended. This has arisen from a review of the evidence presented by Fish and Game and concerns the table in Section 12.7.

Fish & Game seeks the addition of the Clyde and Havelock Rivers (including all tributaries) to the high naturalness water bodies listed in Section 12.7, on the basis that this will ensure the Schedule 1 Waters in the National Water Conservation (Rangitata River) Order 2006 are afforded adequate protection under the pLWRP.

The Section 42A Report for Hearing Group 3 (at page 40) states that the values of the High Naturalness Water bodies in the pLWRP were based on those values specified in Objective WQN1 of the NRRP, which generally did not include recreational values. It goes on to note that while these values may be relevant, their inclusion could skew or undermine the original intent of the criteria for the High Naturalness Water bodies. However, upon review of the evidence presented by M Webb on behalf of Fish & Game, it is considered that an amendment to Table 12.7 of the plan to include these rivers will allow for greater consistency with the National Water Conservation (Rangitata River) Order (2006).

The Reply Recommendations version of the pLWRP contains the amendments sought by Fish and Game.

6.9 Section 13 – Ashburton

The introduction to Section 13 states that the flow regime will maintain and improve the reliability of supply for existing users. From the evidence presented by submitters it is clear that the outcomes sought by the Plan provisions are somewhat at odds with the expression of those outcomes in the introduction. The plan provisions as set out in Section 13 of the pLWRP are the package of measures that Council believes will best achieve the environmental outcomes sought by the community. The issue that has arisen concerns the use of the phrase “maintenance and improvement of reliability of supply for current water users”. While this is the long-term outcome it cannot be achieved until the full package of measures signaled in the policies and rules is implemented. It is therefore appropriate that the text of the introduction is amended to better reflect this situation and to better illustrate the intention of the provisions contained in Section 13 in relation to reliability of supply.

The suggested amendments are set out in the Reply Recommendations version of the Plan. Essentially, the amendment involves restructuring the existing text to more accurately reflect the outcome that the Plan provisions are directed at attaining.

One of the cornerstones of the flow and allocation regime for the Ashburton River is significant reductions in the ADC stock water abstractions. These reductions will arise from efficiency gains that follow much of the scheme being piped. The scheme at present is acknowledged as being very inefficient in the delivery of water abstracted to the end user. In Volume 3 of the Section 42A Report (page 45) there is a recommendation (R13.4.1) that Policy 13.4.1 is amended to clarify its intent. This recommendation was based on the information available at the time it was drafted and was in response to a request that the policy be deleted.

Further to the changes recommended in the Section 42A Report, Ashburton District Council provided additional evidence to support its submission. It is now acknowledged that the improvements sought by the Plan (and the community) to upgrade the stock water network, and hence reduce the abstraction volume, will take some years to implement and complete. To accommodate this it is appropriate that Policy 13.4.1 is further amended to reflect a realistic timeframe for compliance.

The as-notified compliance date is unrealistic. The recommendation contains a date that ADC agrees is attainable. The net effect of this amendment, however, is that the staging of the flow and allocation regime set out in Table 12 also requires amendment. The amendment now recommended is set out in the Reply Recommendations version of the Plan.

In order to give effect to the new implementation timeframe described in above there is a need for the Plan to contain a mechanism that enables Council to review water permits within the Ashburton River catchment so that they might be brought into line with the allocation limits and minimum flow requirements specified in Table 12. A new policy outlining the required timeframes for consent reviews is considered to be the most efficient and effective way to give effect to the provisions set out in Section 13 of the pLWRP.

The recommended policy does not commit Council to the review but rather signals that it may undertake such a review. Given the long lead-in time for the flow and allocation regime to take full effect such a policy is considered to be prudent. It will signal an intent and it clearly places this possible review within the realm of the tools Council intends to use to achieve sustainable management of this freshwater resource.

As a consequence of the recommended amendment to Policy 13.4.1, the implementation timeframe for the flow and allocation limits, as set out in Table 12, requires amendment. To ensure that the reliability of supply for existing users is not significantly reduced, it is recommended that Table 12 is

amended to implement the new minimum flows after ADC reduces its abstraction. It is also recommended that the long term minimum flow of 10,000L/s is amended as a consequence of the revised implementation timeframe for the 6,000L/s. The revised timeframe will allow for a sufficient lead in period for existing abstractors to undertake on-farm improvements (such as storage or the purchase of irrigation scheme shares) in preparation for the increased minimum flows.

In essence, the amendments now being promoted shift the commencement date for the interim minimum flow of 6000 L/s from August 2012 to 1 July 2023; and the long term minimum flow of 10,000 L/s from August 2022 to 1 July 2033.

At the hearing of submissions on this sub-regional section of the Plan there was some comment made in evidence (Bryce on behalf of RDRML) that the long term minimum flow should be deleted from the Plan, largely based on the assertion that it was unnecessary for maintaining an open river mouth. Council has considered this matter and concluded that the long term minimum flow should remain in the Plan as a very clear signal of intent. There are numerous means by which this flow regime might be attained and to remove it from the Plan at this time would be inappropriate.

As a further consequence of the recommendation to amend the timing of the introduction of the flow and allocation regime set out in Table 12, the reduction in abstraction relative to the flows in the Ashburton River, as set out in Table 13, will not now apply until 1 July 2023. To avoid any doubt when the restriction regime applies, it is recommended that an advice note is included under Table 13.

The advice note would read *"Note: Table 13 applies from 1 July 2023"*. This amendment is included in the Reply Recommendations version of the Plan which forms part of this s42A Report.

As will be noted in the Reply Recommendations version of the pLWRP, there have been a number of minor amendments to Section 13. These update or correct cross-referencing within the Plan following the restructuring of rules within section 5, provide more complete cross-referencing and are a consequence of a plan-wide review of, and amendment to, the matters over which discretion is restricted in some of the rules – particularly the reference to Ngai Tahu values.

6.10 Section 14 – Orari-Opihi-Pareora

As well as recording that there have been a number of minor amendments made to this section of the Plan all of which correct, enhance or update cross-referencing within the Plan there are a number of specific matters that have been raised in evidence presented that require a response.

As part of the evidence given on behalf of the Orari Flows Steering Committee, Judy Blakemore requested that several additional definitions are included in order to give certainty to the users of Section 14. All the relevant submissions have been reviewed and a conclusion reached that there is no scope for the amendments requested because none of the submissions made contained any changes or additions to the definitions.

In evidence presented in support of its submission, the Orari Water Society Incorporated questioned the need for Policy 14.4.1. Their concern is that this policy views the Rangitata South Irrigation Limited (RSIL) Scheme as a viable alternative water source to the Orari catchment when that scheme's reliability of supply has not yet been proven.

As noted in the s42A Report (Volume 3 page 60), Policy 14.4.1 is a policy to guide applicants in the preparation of applications for resource consent and the Council when reviewing or renewing existing consents and should be read together with Policy 14.4.2. It is anticipated that any consent holder that has access to RSIL Scheme water will be required to demonstrate that they are using this water prior to gaining the balance of their allocation from the Orari catchment. It does not mean that consent holders will not continue to have access to Orari water on consent renewal or review. The intention of the policies is to try and minimise the use of Orari River water if it is appropriate. For the reasons stated above Policy 14.4.1 should be retained without amendment.

A minor wording change to what was originally sought in the submission by the Orari Water Society Incorporated in relation to Policy 14.4.8 is requested in its evidence to ensure the B block is managed in a fair and equitable manner. Originally the submissions sought the addition of a new clause enabling the water user group to gain access to any unused water in the B allocation block. The s42A report states (Volume 3 page 63) that it is unclear as to how access to unused water would enable the equitable use of B block water and recommends retaining Policy 14.4.8 without amendment. That recommendation remains appropriate.

Both the Orari Water Society Incorporated and the Orari Flows Steering Committee suggest in their evidence that amendments be made to Policy 14.4.9. They ask that surface water takes also be included. The original submissions on this topic have been reviewed and it has been concluded that the amendments sought are not within scope. The amendment as set out in the Section 42A report (Volume 3 page 64) is appropriate and no further amendments to Policy 14.4.9 are recommended.

Fish and Game has asked for three additional policies in Section 14 relating to the need to collect additional scientific data and the reviewing of Section 14 three years and five years after it is operative. The Orari Flows Steering Committee has also asked that a review policy is added.

In addition to the reasons provided in the s42A Report (Volume 3 page 67) for not supporting these requests, it can be noted that further work is due to start in the Orari-Opihi-Pareora catchment in the next couple of years and this programme includes the establishment of catchment specific of water quality limits as well as a review of water quantity limits.

The Environmental Defence Society requested that Policy 14.4.6 be amended to ensure that no new allocation occurs where the catchment is over allocated. The s42A report (Volume 3 page 62)

responds that Rule 5.96 prohibits further allocation until the flow and allocation regime is achieved and therefore recommends no amendment to the policy. Following further consideration, it is now agreed that Policy 14.4.6 does require clarification that no new consents will be granted where the catchment is over-allocated. Through making the amendment, the Policy will be more consistent with the National Policy Statement of Freshwater Management 2011 (NPSFWM). The suggested amendment would result in the words and must meet the limits as set out in Table 15 being added to the policy.

This amendment provides greater certainty and clarity to a reader of the Plan and will enhance its ability to promote sustainable management of this water resource.

During the hearing of evidence on this section of the Plan, an in particular respect of Policy 14.4.12(e) as amended in the s42A Report (Volume 3 page 66) an issue arose as to whether or not the words 'residual flow' are correct and whether these words would mean that flow variability would be maintained. Mr James Jolly in his submission stated that flow variability and flushing flows are essential for the river and that by making damming below the Orari Gorge a prohibited activity rather than a non-complying activity would ensure that flow variability is maintained.

It is considered inappropriate to amend the policy as sought by Mr James Jolly but the wording of 14.4.12(e) could be significantly improved. To achieve the intended outcome, and to express it clearly, the clause should be restructured and the words "minimum flow and" added. This will promote the outcome that the flows and limits in Table 15 are met and flow variability is maintained. The suggested amendment is set out in the Reply Recommendations version of the Plan.

Orari water Society stated in its evidence that it agrees with Rule 14.5.1 being deleted, but only if the submissions relating to Rule 5.128 (Dams and Damming) are accepted in order to make storage of water more permissive.

Making the storage of water as permissive as possible in the Orari catchment is crucial for attaining sustainable management of the freshwater resource and for enabling the attainment of environmental, social and economic values established by the community.

Rule 14.5.1 should be retained without amendment to ensure this storage capability within the catchment, irrespective of whether Rule 5.128 is amended or not. In the Reply Recommendations version of the Plan the wording of this rule has been amended to improve its clarity and to update the reference to the certifier of the structure.

Fish and Game has asked that the allocations in Table 15 are amended to reflect the amount of water to be allocated calculated in accordance with Schedule 13- Requirements for implementation of water allocation regimes.

The as-notified version of Schedule 13 uses the average daily rate of abstraction, whereas the limits in Table 15 are calculated as the maximum daily rate. The CRC made a submission to amend Schedule 13 so that the calculation is based on the maximum daily rate rather than the average rate. If this submission is accepted then the limits in Table 15 will match the method in Schedule 13. If it is not accepted then the community has agreed on using the maximum daily rate and there is no requirement to change the calculation and the limits in Table 15.

During the hearing further clarification regarding Table 15 and how it is to be read was requested. The flow and allocation regime has three stages for the Upstream Ohapi site; Current, 3yrs from the date the Plan becomes operative and 2040. An explanation is provided below using the Upstream Ohapi Site (Column 2, Row 1) as the example.

Current

Column 4, Row 1 outlines the *minimum flows for A permits* at the Upstream Ohapi site. The flows are:

- December to April 200 L/s with restrictions starting at 1724 L/s,
- May to July 900 L/s with restrictions starting at 2424 L/s,
- August to October 400 L/s with restrictions starting at 1924 L/s and
- November 300 L/s with restrictions starting at 1824 L/s.

The *Allocation limit for A permits* (Column 7, Row 1) is 1524 L/s.

There is no B block minimum flow or allocation for the Current regime

3yrs from Operative Plan

Column 5, Row 1 outlines the *minimum flows for A permits* at the Upstream Ohapi site. The flows are:

- 500 L/s all year round. Those who are not part of a water users group and are therefore on stepped restrictions will have their restrictions starting at 2400 L/s and those that are part of a water users group will self-manage above 1500 L/s. Once flows drop to 1500 L/s the water users group will then comply with 1:1 flow sharing down to 500 L/s when takes must cease.

The *Allocation limit for A permits* (Column 8, Row 1) is 1400 L/s.

The *Minimum flow for B permits* (Column 11, Row 1) is 3800 L/s.

The *Allocation limit for B permits* (Column 14, Row 1) is 1400 L/s.

2040

Column 6, Row 1 outlines the *minimum flows for A permits* at the Upstream Ohapi site. The flows are:

- 900 L/s all year round. Those who are not part of a water users group and therefore on stepped restrictions will have their restrictions starting at 2000 L/s and those that are part of a water users group will self-manage above 1500 L/s. Once flows drop to 1500 L/s the water users group will then comply with 1:1 flow sharing down to 900 L/s when takes must cease.

The *Allocation limit for A permits* (Column 9, Row 1) is 800 L/s.

The *Minimum flow for B permits* (Column 12, Row 1) is 3800 L/s.

The *Allocation limit for B permits* (Column 15, Row 1) is 1400 L/s.

Consideration was given to grouping within the table all the provisions relating to the current time period, those relating to the 3 years from plan operative time period and those relating to the 2040 time period. While this may provide greater clarity in respect of the worked example above, it would have required either a separate table or repetition within the table for the remaining rivers. The option of reconstructing this table remains but for now it is believed that it is workable.

Two further matters arose during the presentation of evidence in support of submissions made on this sub-regional section of the Plan. The first was raised by Mr James Jolly who is concerned that the

flow and allocation regime in Section 14 does not provide the appropriate habitat for birds and nesting. His evidence states that the quality of the habitat is severely reduced by the lows flows in mid-summer and the number of dry days. Mr Jolly also states that flushing flows are important to clear the riverbed to provide nesting habitat and that a higher minimum flow of 1300 L/s is more appropriate for the bird nesting season (August until the end of January).

It is acknowledged that the flow and allocation regime for the Orari catchment, and the minimum flow limits in particular, need to be higher to fully provide for all ecological habitats. In order to appropriately balance the economic, ecological and cultural values, a staged implementation of increasing minimum flows and reducing allocation has been devised and included in the Plan. This staged process is required as it takes time for water users to adjust to providing more storage so that reliability of supply can still be met.

The regime in Table 15 will improve the habitat from what it currently is. By increasing flows over time, the number of dry days will also be reduced. The first stage caps current allocation, the second increases the minimum flow in the lower Orari River in the shoulder seasons from 200 L/s to 300-400 L/s, then three years after the plan becomes operative, to 500 L/s year round and the final stage is a vision for 2040 which includes a further increase to a minimum flow of 900 L/s year round.

The last two stages are also accompanied by the introduction of 1:1 flow sharing for river flows between 500 L/s and 1500 L/s, then between 900 L/s and 1500 L/s from 2040. This regime increases minimum flows and reduces the allocation and, along with the Conjunctive Use Zone which captures shallow stream depleting groundwater takes, will provide an improvement to the river. The combination of these steps will increase flows in the river, reduce the number of dry days and will provide for flushing flows and flow variability throughout the year. It is not possible to increase the minimum flow to 1300 L/s while providing a balance for all values in the catchment.

This regime represents an appropriate regime to achieve sustainable management of this freshwater resource. It is therefore recommended that the flow and allocation regime remain as notified and without amendment.

The second matter was raised in evidence by Catherine and Ad Sintenie who are concerned about the decline of water quality, the effects of increasingly lower flows, and the increased water abstraction in the Coopers Creek catchment. They believe a minimum flow in Upper Coopers Creek is essential to maintain what values are left.

Currently the Coopers Creek minimum flow site and flow of 50 L/s is not appropriate and is not protecting the values in the Creek or allowing reliability of supply for several consented water takes. In summary it is not sufficiently protecting any value. There is also a lack of hydrological data to be able to provide an appropriate minimum flow. It is known that there is a hydrological connection between Coopers Creek and the Orari River. This is why Coopers Creek consents are to be attached to the Upstream Ohapi minimum flow site. It is generally agreed (the Steering Committee, Dr Greg Ryder in his evidence on this sub-regional section and the Cawthron Institute in its review of the ecological values of Coopers Creek) that at the present time this is the best solution.

The Conjunctive Use Zone will have positive effects for the flows in Coopers Creek and capping the allocation addresses the issue of further abstraction exacerbating the low flows. It has been stated by Golder Associates and Ryder that there are immediate steps that can be taken to improve the quality of the habitat of Coopers Creek such as fencing to exclude stock and improving riparian cover. Another benefit of having the Coopers Creek consents attached to the Upstream Ohapi minimum flow site is that this site is a recorder site and it will make it very clear to the abstractor as to when they have to cease taking water.

For these reasons, it is recommended that Coopers Creek is attached to the Upstream Ohapi flow site and that no amendment is required.

6.11 Section 15 – Waitaki and South Coastal Canterbury

The Section 42A report - Volume 3, pages 76 to 82, provides an evaluation of the requests for amendments to Section 15 of the pLWRP. Three submitters brought evidence to the Hearing, based on their submissions to alter the as-notified Waihao Wainono flow and allocation regime. These requests are evaluated below.

The background to the flow and allocation regime included in Section 15 of the pLWRP is set out in the s42A Report (Volume 3 at page 80).

Mr Hughes presented an argument in support of his request for the ability to abstract water from Sinclairs Drain to irrigate his farm. As part of his evidence to explain why there is plenty of water in the Waihao catchment, he described his observations made when Morven Glenavy Irrigation Scheme dug a trench for a pipe across a supposedly dry riverbed. He observed that cubic metres of water flowed into the trench and that the contractors had to use a pump to pump it out.

There is a relatively simple explanation for what Mr Hughes observed. All of the rivers that are fed by the Hunter Hills (in the Waihao Wainono catchment) have areas along their riverbed where water is lost to or gained from the groundwater system (gaining and losing reaches). There are varying arguments as to whether dry reaches would naturally occur or whether they are induced by human activity, but it is acknowledged that abstraction can increase the drying effect. It is also well understood that these catchments have both a shallow and deep groundwater system. When the rivers are dry on the surface they will have "lost" their water to the shallow groundwater because the water table is low. On the other hand, when this water table is close to or at the surface or there is an impenetrable layer in the river bed, water can be seen flowing along the surface.

In the case of Waihao River it has been shown that the river was losing from Elliotts down to the point that Morven Glenavy discharges its environmental discharge into the river. What Mr Hughes is likely to have been observing was the trenching intercepting the shallow groundwater.

One of the reasons for putting in place minimum flows and partial restrictions is to allow the river losses to help keep the water table high and reduce the duration and length of drying reaches in riverbeds caused by abstraction.

In the pLWRP it states there is zero allocation for Sinclairs and therefore it is not applicable (n/a) that there is a minimum flow (Table 17).

There are three key reasons for this:

- Sinclairs Drain drains run-off from the hills and this can be from storm events or from irrigation up in the foothills and/or surrounding land. It is anticipated that the runoff as a result of irrigation will reduce as irrigators become more efficient with their methods.
- Canterbury Mudfish (Nationally endangered) have been found in the creek for a number of years and this was reconfirmed in October 2011 when a good population of Canterbury Mudfish was found again.
- There are more reliable sources of water in the area rather than abstracting water from Sinclairs. The allocation for Waihao Groundwater is only 37% allocated and the Morven Glenavy Irrigation Scheme is in the local vicinity. Both of these sources will provide more reliable water than abstracting water from Sinclairs.

Noting that policy 15.4.7 directs applicants for water permits in the Waihao and Wainono catchments to demonstrate that irrigation scheme water (where available) is being used ahead of surface water, allowing water to be taken from Sinclairs Drain would not be considered sustainable management in accordance with Part 2 of the RMA 1991.

It is recommended that the regimes on Sinclairs and Waihao waterways are not amended.

The regime as notified in the pLWRP for Buchanans Creek sets a minimum flow of 150 L/s and the A allocation block 123 L/s to protect and maintain cultural, ecological, social and existing economic values in the catchment.

Mr Samuel Small requested the Buchanans Creek allocation block be amended from 123 L/s to 153 L/s to include his application to take water. In the Section 42a report - Volume 3 (Pg. 81) it was recommended to accept this part of the submission (Recommendation 5.16.1). The second part of his request was to reduce the minimum flow of Buchanans Creek from 150 L/s to 112 L/s. This part of his request was recommended to be rejected.

The submitter based his evidence on an old Staff working report. The Staff working report has been amended to a final published report and is titled *Planning report on the review of the environmental minimum flow and water allocation for the Waihao River and tributaries of the Wainono Lagoon* (Report No. U07/62). Buchanans Creek is discussed from pages 44 to 49.

In this report (U07/62) it is stated that the reliability of supply was difficult to assess due to “*the lack of low flow data and absence of a 7DMALF*” (pg 48). Even though flow data was limited, using observations from experts a minimum flow of 112 L/s minimum flow was determined to be appropriate for Buchanans Creek.

In 2011/2012 Buchanans Creek was one of many waterbodies that had their minimum flows and allocation blocks reviewed in the Waihao Wainono water quantity project. Five years have passed since this hydrological assessment was completed for these streams; there is now a body of flow data for many of the waterways.

The results from this recent data for Buchanans Creek are in the following Tables 1 and 2:

Table 1 (reference: Martin *et al.* 2012)

Minimum flow sites	Catchment area (km ²)	Mean flow (l/s)	Median flow (l/s)	Natural MALF (7d)(l/s)	Specific yield(l/s)
Buchanans Creek at Fletchers	15.4	338	335	180	21.9

Changing the minimum flow and allocation can change the reliability of supply (when water can be taken from the waterbody). Based on a minimum flow of 150 L/s, including Mr Small's take, the irrigators may have access to the water above Buchanans minimum flow site at Fletcher's Bridge 98% of the time during the period from October to April, while for takes below the minimum flow site the reliability is 91%. If the minimum flow was to stay at 112 L/s the upper abstractors and lower abstractors would have a slight increase in reliability (to 99% and 94.4% respectively). Of the nine consents attached to Buchanans minimum flow site, three are below the site.

Table 2 (reference: Martin 2012 memo)

	A (%)	B (%)		A (%)	B (%)
150L/s Min flow without Small	98.5	20.3	Residual Without Small	91.01	18

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150L/s Min flow with Small	98.3	19.5	Residual With Small	90.98	17.6
112L/s Min flow without Small	99.4	10.1	Residual Without Small	95.5	7.9
112L/s Min flow with Small	99.1	9.3	Residual With Small	94.4	7.5

The local hapu highly value this spring as an important part of their cultural landscape. The creek flowed past an historical settlement and pa site (Punatarakao). They have recommended a flow of 200 L/s in their cultural report (Tipa and Associates (2012)).

Increasing the minimum flow from 112 L/s to 150 L/s provides for the high cultural values in the area, with a less than minor reduction of reliability of supply of water for abstractors on Buchanans Creek. The 150 L/s is within the range recommended in the U07/62 report and closer to the ecological recommendation of 162 L/s (Golders 2012).

Therefore it is considered 150 L/s minimum flow during 1 October to 30 April on Buchanans Creek appropriately meets Part 2 of the Resource Management Act 1991.

The final matter raised in evidence that requires a specific response concerns evidence given on behalf of Fish and Game (Scott Pearson 07 June 2013).

At paragraph 81 of that evidence is a requested amendment to policy 15.4.7 that was not in the original submission. Fish and Game consider Policy 15.4.7 should be amended as shown below:

On application for a water permit in the Waihao and Wainono catchments affected by section 124B or when consents are reviewed, and where the property has access to irrigation scheme water, the application must demonstrate that scheme water is being used to the fullest extent possible efficiently and that use of fresh water from the Waihao Wainono catchments is minimised...

Amending the words from 'fullest extent possible' to 'efficiently' changes the intent of the policy. This policy is about ensuring irrigation schemes (if it is possible) are used before run-of-river is used. It is recommended that Policy 15.4.7 not be amended.

7 Schedules

The schedules to the pLWRP attracted a range of submissions. However, they are generally focused on only a small number of the 23 schedules. The submissions were analysed fully in the Hearing Group 1 and 2 Section 42A Reports, and that analysis is not repeated here. There are a range of minor editorial-type amendments included in these Reply Recommendations. Of more substance are the following comments and recommended changes:

Schedule 1 – Group or community drinking water protection zones

In order to use consistent terminology throughout the Plan, there are a number of changes from “area” to “zone”. This change is in order to ensure certainty and consistency, but makes no difference to the application of the relevant rules.

Schedule 4 – Hazardous substances

As discussed in the policies section there is an addition to the “definition” of hazardous substances to incorporate an element of risk, so that the minimal quantities of hazardous substances that may be incidentally disposed of in the normal course of activities is not captured by the rules.

Schedule 7 – Farm Environment Plan

There are a number of adjustments to the farm environment plan schedule included in the Hearing Group 2 Section 42A Report. These changes were in response to evidence presented, further information provided by submitters and in response to prompting by the Hearing Commissioners to reconsider issues. In general, an attempt has been made to clarify the wording, and to ensure that it is clear that an industry developed, approved template is an option for farm environment plans. Further, a number of the details on farm environment plan content have been simplified, as has the requirements for information provision. A new option has been added for information provision by way of supply of Overseer input and output files.

As the farm environment plan framework is now generally provided for under a resource consent framework, there is some additional flexibility that can be incorporated into the schedule, particularly with respect to the audit requirements. Earlier versions of the schedule were developed under the presumption that it would be implemented under permitted activity rules, which required additional specification of performance, which is no longer required under the Reply Recommendations framework.

While the requirements for independence of farm environment plan auditors has been vigorously challenged in submissions and evidence, the Officers are of the view that the requirement for independence should be maintained. The issues of industry capacity are understood, and that is part of the reason why the staging of farm environment plans has been set out in the relevant rules. Independence of auditing, be it environmental, quality or financial, are a critical element to maintain the confidence of third parties that the audit process fulfils its “checking” function.

Schedule 8 – Region-wide water quality limits

As has been discussed earlier, Schedule 8 incorporates a number of water quality limits, for some rivers, lakes and groundwater, in accordance with the memoranda of Dr Meredith included in Appendix 1.

The need for the LWRP to have a greater emphasis on limits has been discussed at length at the hearing and it is the Officers' view that the limited range of limits in Schedule 8 are appropriate, given the current state of knowledge. Officers maintain their view that there are also limits inherent in the Plan in terms of activity status, and that very few activities that would give rise to a contribution towards limits being breached are included as permitted activities.

Schedule 9 – Assessment of stream depletion effect

This schedule is largely unchanged. However, it has become apparent through use of the pLWRP that there was an omission made in relation to the management of stream depleting surface water takes, and particularly the need for minimum flow conditions on highly connected groundwater. An alteration to the relevant table in this schedule is recommended.

Schedule 17 – Salmon and inunga spawning sites

There were a small range of submissions, primarily from Fish and Game and DOC that sought significant changes to the lists in Schedule 17. It was acknowledged in the Section 42A Report that Schedule 17 is not a complete list. It was also apparent in the evidence given that providing protection to these areas can also have significant impact on adjacent land owners. As discussed in the Section 42A Report, the broadening to a considerably wider range of sites and values, as requested by some submitters, is not supported by Council Officers and has not resulted in any recommended changes. The development of Sub-regional Sections is seen as the more appropriate method to introduce changes to Schedule 17.

Schedules 18 to 23

It is noted that there are no submissions on these schedules, and they have not been included in the tracked changes version of the Plan, but will need to be included in the final decision version.

8 Overall Conclusion

The Reply Recommendation version of the Plan differs from the as-notified pLWRP and the s42A Report recommendations. The Officers' consider that this suite of Reply Recommendations includes objectives that are the most appropriate to achieve the single purpose of the RMA, and the policies and rules are the most appropriate to achieve the objectives of the Plan. Further, the revised objectives, policies and rules, within the scope of submissions lodged and as an integrated package, are considered to be effective and appropriate in terms of Section 32 of the RMA and give effect to the Freshwater NPS, the Renewable Electricity Generation NPS and the RPS.

Appendix 1

Memorandum of Dr Meredith

Date: 8 July 2013

MEMORANDUM

from : Adrian Meredith, Principal Water Quality Scientist

to : Peter Constantine, Matthew McCallum-Clark

cc

subject : Assistance with Councils Right of Reply to pCLWRP hearing

You have asked me to:

1. Provide detail around the process used by the expert panel to determine the nutrient allocation zones across Canterbury – in particular, what metrics (or combinations of metrics) from Table 1 were used, in what circumstances, to arrive at Map NAZ.
2. Identify what metrics presently included in Table 1 could be used in a schedule as water quality limits at a region wide level (eg. NZ Drinking water Standard).

This memo answers Question 1. An additional separate memo answers Question 2. above.

NUTRIENT ALLOCATION ZONES:

The process for developing and confirming the Nutrient Allocation Zones or Nutrient Status Zones for Canterbury were set out in a memorandum dated 30 June 2012 and reproduced as Appendix 6 in the pCLWRP section 32 report. The Section 32 memo clarified a number of reasons for the process being developed and should be read in association with this memo.

The initial nutrient management assessment process followed a process of identifying 30-50 surface catchment management units and establishing or choosing a downstream river node point for water quality [concentration] assessment or water quality load [for plan compliance purposes]. In some instances the downstream node was composed of a series of representative spring fed stream nodal points or groundwater shallow wells. This preliminary process utilised existing national and international numerical nutrient criteria to determine a concentration or load and therefore proposed preliminary nutrient allocation grades. However, this analysis failed to achieve defensible results because it categorised almost all management units as red (outcomes not met) which was often at variance with the narrative or observational outcomes (as in Table 1(a,b)). It also struggled to deal with different media boundaries (surface water and groundwater catchments) such that it only worked well for 'river' unit based process for rivers with little appreciation of groundwater interaction.

Parts of the analysis conducted by several technical submitters (Dr Cooke and Ms Shirley Hayward) largely reproduced similar numerical analyses to test the current Map NAZ grades, in a select number of catchments, utilising available single river monitoring points. The analysis of the Rakaia River by Dr Cooke illustrated one of the problems of data and node/site availability for this approach, being based on patchy data, and often restricted to inappropriate node points (such as using hydrology data from the inland Rakaia Gorge site in this instance rather than a node point close to the sea).

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Ms Hayward in her submission also alluded to the paucity of available data (in time and space) for catchments or to its restricted frequency of collection (often quarterly rather than monthly or continuous). This is a major problem for these approaches in the large and diffuse array of water bodies in the Canterbury Region requiring a high degree of monitoring to adequately achieve these catchment and nodal processes. The monitoring programmes currently in place, and data available in Canterbury, are largely of an SOE (state of the Environment) nature and so strive to monitor representative examples of river types rather than comprehensively monitoring all catchments. However, despite this, the analyses presented in Ms Hayward's evidence demonstrated that her single numerical limit analysis approach and the Map NAZ map correlated relatively well and that the limited discrepancy was in the intermediate (orange) zones and units that were on the cusp between being graded red or orange, or graded green or orange.

Ms Hayward in her statement of evidence to the Group 2 hearing is correct in observing that rather than the NAZ analysis being based upon a single numerical assessment, the expert panel assessment was largely an assessment of a hierarchy of criteria with some being dominant depending upon the main receiving environment (TLI for lakes; nitrate in groundwater; nitrate toxicity thresholds in some rivers or stream types). These criteria largely made some grades obvious and absolute, and so beyond any further reasonable discretion or debate to change them further.

The greatest debate (and discretion) was where either:

- nutrient criteria indicated thresholds for nuisance growths WERE exceeded, but nuisance growths were NOT or seldom observed, or
- nutrient criteria were NOT exceeded but that nuisance growths WERE observed or noted.

In both these situations some of the Table 1 outcomes (observed nuisance growths) were considered the true, or deciding factor, and most strongly influenced the final zone grade. These two situations account for the vast number of differences in the initial and final analysis, and comparisons in the submission evidence of Ms Hayward and the resulting Map NAZ grades.

The remaining differences are a further scale and geographical distribution issue. Unlike the original process of establishing catchment nodes (as also in Dr Cooke's and Ms Hayward's analysis), the Map NAZ management units are 'zones' rather than surface water river catchments. That is, many encompassed a number of parallel catchments, or areas with a number of rivers of different 'types' (hill fed, spring fed etc.), or both surface water and groundwater zones that had variable interactions and often different surface geography boundaries. Therefore, the expert panel approach considered the outcomes across a number of areas, and water body types in a zone. This often required a judgement to be made when there were obvious small areas of a zone that may suggest quite different nutrient status to the bulk of the zone. Three examples demonstrate this:

- the Morven-Glenavy zone where one stream (Whitneys Creek) should probably have been graded 'red' (outcomes not met) on the basis of nitrate concentrations, macrophyte growth and sedimentation issues) but that all other streams and extensive shallow groundwater of the zone generally complied with criteria – and so on balance the zone was graded 'green'.
 - The Ashley-Waimakariri Zone (as discussed by Ms Hayward) has a dominant area (the Eyre groundwater zone and Kaiapoi/Silverstream River) with high and increasing nitrate concentrations, and high macrophyte or nuisance algal growths, but other areas of the zone (Ohoka, Cust, Cam, and Taranaki Creek catchments) have varying or lesser degrees of these criteria. However, it is difficult to further demarcate this zone into subunits under existing science understanding, particularly for high level regional plan
-

purposes. This is because most of these are groundwater fed subcatchments and the boundaries between them are 'fuzzy' or ill defined.

- The Temuka zone (also discussed by Ms Hayward) has both the central 'hill-fed' Temuka River, as well as a number of spring fed streams that flow both to the Temuka River and to the lower Opihi catchment. These vary greatly in their state for many of the Table 1 criteria. There were also great differences between areas dominated by groundwater fed by adjacent rivers (Orari River), fed by irrigation schemes (Kakahu Irrigation scheme), or dominated by land surface recharge (Geraldine basin). This is therefore a further example of a zone that could readily be further subdivided, although further data and discussion with local communities would be required, as in a subregional plan process.

These 'scale' issues are better dealt with at a sub-regional plan level where more resources can be brought to bear to justify detailed sub division of the zones, and meaningful discussions and consultation can be had with the local community on how to further subdivide them. The Map NAZ grades are therefore a high level 'holding position' until these more detailed considerations can be had in a sub-regional plan process.

One final issue was for the Waipara River zone as raised by Ms Hayward in her Group 2 evidence. The Waipara River was graded as 'red' or 'outcomes not met' even though it does not contain a high level of nutrient generating land uses (i.e. pasture irrigation or break fed green feed crops). This is because the catchment (like three or four others in Canterbury) drains areas of soft sedimentary geology with marine tertiary sediments that naturally leach elevated levels of phosphorus and other chemicals to both surface water and groundwater. These in turn promote higher levels of growths of periphyton (filamentous algae and cyanobacteria mats). This generates concerns for different elements of the local community as it causes outcomes to be exceeded (and degradation of in-stream values) without an apparent opportunity to easily propose some further intensification developments in the zone (for land users).

We acknowledged this dilemma, but agreed to continue to grade this zone 'red' on the basis that the plan approach remained focussed on the plan aiming to achieve the Table 1 outcomes, but without any explicit consideration of cause (natural or induced). That is, we considered that in this catchment 'the environment' has largely naturally used up the base nutrient allocation leading up to where effects levels occur. Any further nutrient intensive land use would only exacerbate the current state and extend the duration and intensity of unacceptable outcomes (such as nuisance periphyton and cyanobacteria mat growth) effects. We considered that it was not expedient to treat catchments such as this as not applying to 'outcome targets' and therefore allowing for increased nutrient generation/allocation. We also noted that in previous decades the Waipara catchment had previously not shown such conspicuous nuisance growths. Therefore the current state is a result of both natural enrichment, and the currently developed state of land use intensification. Further nutrient allocations would increase the extent and duration of nuisance growths (and effects) by a further degree.

This discussion (and case studies both raised here and by submitters) also clarifies that the Map NAZ grades did not result from simple nutrient load limit setting processes based primarily on nutrient concentration criteria, but were more closely tied to 'achievement of the Table 1 outcomes'. It is therefore important to acknowledge this potential confusion as to whether Table 1 should have a dual role or requirement (of achieving both 'outcome' and 'limit setting' purposes of the Map NAZ grades). This is where the greatest debate and discrepancy occurs, because of very different understandings between different submitters of the fundamental basis and purpose of both Table 1 and Map NAZ.

If the submissions to include numerical nutrient limits in Table 1 were agreed to, then the intent of Table 1 would become confusing. It would be difficult to reconcile which of the groups of parameters took precedence for the purpose of determining whether outcomes were being met, and which were

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primarily determining compliance to limit setting requirements. For this primary reason, I consider that these two functions, if both required, should be separated into different tables or schedules in the pCLWRP.

A question touched on by submitters was whether there is currently adequate “plan effectiveness monitoring” and “plan effectiveness reporting” of the regional outcomes and in particular the Map NAZ management units to inform and programme the timeliness of scheduling of sub-regional plans, or responding to degradation of the environment (particularly in any Map NAZ zones). The Map NAZ process was an “expert opinion” based process partially as a result of the Canterbury Region being very large and the accompanying S32 memo acknowledging a paucity of data to regionally establish numerical limits, or to comprehensively monitor Table 1 outcomes in all catchments or areas.

Most Map NAZ management units have ongoing monitoring activities at one or more points within them, however, some Map NAZ units do not currently have any ongoing surface water quality or ecology monitoring conducted within them. This is acceptable for a short term plan ‘holding position’. However, if the pLWRP were to include a limit setting table, then more consideration of the monitoring requirements to give effect to that would also be needed. The ECan monitoring network has been reviewed and adjusted to achieve broad regional “State of the Environment” objectives, but achievement of “plan effectiveness” monitoring is more limited except where plans were already proposed or in place (Hurunui Waiau River Regional Plan). Further plan effectiveness and monitoring should be addressed and reviewed as plans are developed and become operative. The current monitoring networks are not adequate to give effect to all possible/probable future plan requirements in the pLWRP and sub-regional plans under development or in the future. Such plans and the pCLWRP itself, should either have an accompanying implementation and monitoring chapter, or require an implementation and monitoring strategy to be developed upon plans becoming operative.

The Table 2 attached to the Appendix 6 memo in the pCLWRP Section 32 analysis gave a brief 1 sentence reasoning for the [outcome] grading of each zone management unit. This will be extended (as attached) to make it clearer what the hierarchy of criteria were that resulted in the proposed grading of each Map NAZ zone.

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Table 2A: Amended Management units / zones and nutrient status category for each with rationale for assessment

ID	Main Catchment Name	Principle Receiving Environment	Status – based on maintenance of nutrient sensitive values	Reason for status
1	Hurunui/Waiiau	Surface water rivers	Sub-regional chapter	Addressed by new Sub Regional Plan
2	Wainono	Surface water streams, rivers and lagoon	Water quality outcomes not met in: <ol style="list-style-type: none"> 1. TLI of Wainono lagoon 2. Condition of lowland streams (macrophytes and algae) 3. Nuisance algal blooms in rivers (Waihao) 	Due to observed enrichment of spring-fed streams (algae and macrophytes) and feeding to lowland lake in eutrophic state.
3	Banks Peninsula	Surface water streams	Unclassified	Short steep catchments without appreciable groundwater (N) influence
4	Okana - Lake Forsyth	lake	Water quality outcomes not met in: <ol style="list-style-type: none"> 1. TLI of Wairewa 2. Condition of lowland streams (macrophytes and algae) 	Due to observed enrichment of spring-fed streams (algae and macrophytes) and feeding to lowland lake in excessively eutrophic state.
5	Rangitata	Surface water river	Meets Table 1 water quality outcomes	Showing some nutrient enrichment, but swift and flashy hydrology with no evidence of regular algal growths.
6	Upper Waitaki - Haldon Arm	Lake	Lake arm trending towards non achievement of TLI target.	Due to increasing enrichment of some spring-fed streams with increasing algal (mat) abundance, and feeding to valued lake with nutrient status trending towards mesotrophic.
7	Valetta-Hinds-Mayfield/Hinds	Spring-fed streams	Water quality outcomes not met. <ol style="list-style-type: none"> 1. Very high nitrate conc in gw and streams 	Predominantly a groundwater zone with frequent groundwater results often above nitrate-N MAV and spring-fed streams with very high nutrient concentrations above all guidelines.
8	Orari	Spring-fed streams	At Risk. <ol style="list-style-type: none"> 1. Spring fed streams with high and increasing nitrate concentrations above toxicity thresholds. 2. High macrophyte and algal growth in spring fed streams 	At threshold of likely effects River with high values (e.g. whitebaiting, salmon spawning sites) and increasingly high nutrient concentrations in lower reach of main-stem and tributaries and ongoing intensification of land use.

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ID	Main Catchment Name	Principle Receiving Environment	Status – based on maintenance of nutrient sensitive values	Reason for status
9	Rangitata-Orari	Groundwater/ spring-fed streams	Water quality outcomes not met. 1. Groundwater above drinking water standards 2. Spring fed streams with high and increasing nitrate concentrations above toxicity thresholds. 3. High macrophyte and algal growth in spring fed streams	High groundwater N concentrations often above MAV, and spring-fed streams with very high nutrient concentrations.
10	Hakataramea	Surface water	At Risk. 1. Periods with high nuisance algal biomass.	At threshold of likely effects River with high values, exhibiting periods of high algal biomass, and with recent increases in land use intensification.
11	Washdyke	Lake/lagoon	At Risk: 1. Receiving water is a coastal lagoon/estual with high level of enrichment 2. Streams with increasing nutrients, and support a locally important whitebait fishery.	At threshold of likely effects Would be 'Above threshold' except that urban and springfed streams bypass the lagoon in ring drains, and high tidal flushing generates nutrient exchange and high salinity.
12	Pareora	Surface water wiver	At Risk: 1. Nuisance algal mat growth at sites such as Pareora Huts 2. Increasing nutrient concentrations particularly in lower river.	At threshold of likely effects Increasing nutrient concentrations, and presence of excessive algal growths at points at times.
13	Otaio	Surface water river	At Risk : 1. Nuisance algal mat growth at sites such as in lower river. 2. Increasing nutrient concentrations particularly in lower river.	At threshold of likely effects Increasing nutrient concentrations, and presence of excessive algal growths at points at times.
14	Makikihi	Surface water streams	At Risk: 1. Nuisance algal mat growth at sites such as in stream reaches 2. Increasing nutrient concentrations	At threshold of likely effects. Increasing nutrient concentrations, and presence of excessive algal growths at points at times.

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ID	Main Catchment Name	Principle Receiving Environment	Status – based on maintenance of nutrient sensitive values	Reason for status
			particularly in lower river.	
15	Lower Waitaki	Surface water river	Meets water quality outcomes	Large surface water flows with low to moderate nutrient concentrations, and apparent absence of algal/macrophyte effects.
16	Morven-Glenavy	Groundwater	Meets water quality outcomes: 1. Shallow groundwater with N concentrations below 0.5MAV 2. Most surface waters intermittent and/or with low N	Groundwater zone with low N concentrations
17	Upper Selwyn	Surface water	Water quality outcomes not met: 1. Algal mats prevalent in summer 2. Increased nutrient load not in keeping catchment above Te Waihora.	Included with Selwyn-Waihora catchment unit as separate upper catchment unit not justified.
18	Christchurch-West Melton	Groundwater/surface water	Special purpose area	A special purpose zone already managed to protect Christchurch drinking water supply and urban spring fed rivers.
19	Medina	Surface water	Unclassified	Inadequate information in that area.
20	Ashley-Waimakariri	Spring-fed streams	Water quality outcomes not met: 1. High N concentrations in groundwater 2. High N concentrations in valued spring fed streams 3. N increases in Waimakariri River	Area of strong surface water-groundwater interaction with highly valued spring-fed streams with increasing nutrient concentrations above all guidelines.
21	Kaikoura	Spring-fed streams	Water quality outcomes not met: 1. High N concentrations in groundwater 2. High N concentrations in valued spring fed streams	Nutrient enriched streams in shallow groundwater area with intensive land use, high level of biological growths, and downstream hapua as focus of town.
22	Kahutara	Surface water river	Below threshold of likely effects	Hill-fed river with low to moderate nutrient concentrations, moderate land use, and low to moderate evidence of growths/effects except at the mouth.
23	Conway	Surface water river	At risk	At threshold of likely effects Hill-fed river with low to moderate nutrient concentrations, moderate land use,

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ID	Main Catchment Name	Principle Receiving Environment	Status – based on maintenance of nutrient sensitive values	Reason for status
				and occasional nuisance growths of periphyton (e.g. filamentous green algae).
24	Opihi	Surface water river	At risk	At threshold of likely effects Hill-fed river with moderate nutrient concentrations, but healthy ecology, despite proliferation of algal mats.
25	Temuka	Surface water river/streams	Water quality outcomes not met	Nutrient rich river with number of high nutrient spring-fed streams, and obvious growths.
26	Rakaia	Surface water river	Meets water quality outcomes	Showing some nutrient enrichment, but swift and flashy hydrology with no evidence of growths.
27	Waihao	Surface water river	At risk: 1. Algal mats prevalent in summer 2. Increased nutrient load not in keeping catchment above Wainono.	River with moderate and increasing nutrient concentration and moderate algal growth.
28	Ashburton	Surface water river	At risk: 1. Nutrient concentrations at threshold in lower river. 2. Algal mats and filamentous algae present in summer.	At threshold of likely effects Large hill-fed river with moderate nutrient concentration increasing from groundwater gain in middle reaches.
29	Waiau	Surface water river	Sub-regional chapter	Addressed by new Sub Regional Plan
30	Jed	Surface water river	Sub-regional chapter	Addressed by new Sub Regional Plan
31	Porangara		Unclassified	Low quantity of surface resources in area, and inadequate information.
32	Hapuku	Surface water river	Meets water quality outcomes	Small hill-fed river with low nutrient concentration and no obvious effects
33	Kowhai	Surface water river	Meets water quality outcomes	Small alpine river with low nutrient concentration and no obvious effects
34	Ewelme	Surface water streams	Unclassified	Low quantity of surface resources in area, and inadequate information.
35	Kaikoura Peninsula	No water	Unclassified	Low quantity of surface resources in area, and inadequate information.
36	Omihi	Surface water stream	Unclassified	Low quantity of surface resources in area, and

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ID	Main Catchment Name	Principle Receiving Environment	Status – based on maintenance of nutrient sensitive values	Reason for status
				Inadequate information.
37	Blythe	Surface water river	Unclassified	Low quantity of surface resources in area, and inadequate information.
38	Waipara	Surface water river	Water quality outcomes not met 1. Nuisance algal mats and filamentous algae very prevalent. 2. Nutrient concentrations elevated.	High nutrient concentrations with very high algal biomass.
39	Kowai		Unclassified	Low quantity of surface resources in area, and inadequate information.
40	Amberley		Unclassified	Low quantity of surface resources in area, and inadequate information.
41	Ashley	Surface water river	At risk: 1. Algal mats prevalent in summer 2.	R At threshold of likely effects river with increasing nutrient concentrations and periods of increasing algal growth.
42	Saltwater Creek	Surface water streams	At risk: 1. Algal and phytoplankton blooms 2. Nutrient concentrations at limit for discharge to valued lagoon.	At threshold of likely effects River with increasing nutrient concentrations and periods of increasing algal growth.
43	Selwyn-Waihora	Lake/ spring-fed streams	Water quality outcomes not met: 1. High groundwater and sw nutrient concentrations 2. Valued nutrient sensitive receiving lowland lake.	Nutrient rich streams in intensive landuse area feeding into hypertrophic coastal lake.
44	Little Rakaia	Spring-fed streams	At risk	At threshold of likely effects Spring-fed streams with moderate and increasing nutrients and growths but still supporting high values.
45	Waimakariri	Surface water river	Meets water quality outcomes	Low but increasing nutrient concentrations. Episodes of algal mat growth more related to flow issues.
46/47	Clarence	Surface water river	Meets water quality outcomes	Low nutrient concentrations, low intensity of land use and no observable effects.
48	Woodside		Unclassified	Low quantity of surface resources in area, and

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ID	Main Catchment Name	Principle Receiving Environment	Status – based on maintenance of nutrient sensitive values	Reason for status
				inadequate information.
49	Upper Hinds	Spring-fed streams	Water quality outcomes not met	Included with Valetta-Hinds-Mayfield/Hinds catchment unit as separate upper catchment unit not justified.
50	Ohapi Creek	Spring-fed streams	Water quality outcomes not met: 1. High nutrient concentrations above criteria 2. Algal mats	High nutrient concentrations, high level of biological growths and intensive and intensifying land use.
51	Maerewhenua	Surface water river	Meets water quality outcomes	Increasing nutrient concentrations, but below level of observable effects.
52	Waikakahi	Surface water	Water quality outcomes not met	High and increasing nutrient concentrations, and high degree of macrophyte growths.
53	Upper Waitaki - Ahuriri Arm	Surface water/Lakes	Water quality outcomes not met	Increasing nutrient status of lake, beyond mesotrophic threshold, and degrading tributary streams with intensive land use.
54	Upper Waitaki at Waitaki Dam	Surface water/Lakes	At risk: 1. Lake TLI limits.	At threshold of likely effects Lake trophic status increasing.
55	Ashburton-Rakaia	Groundwater	Water quality outcomes not met: 1. Very high groundwater N concentrations.	Groundwater zone with high nitrogen breaching drinking water standards (MAV) at times.
58	Several upper Rakaia Small Lakes	Surface water/Lakes	Sensitive lakes catchment	Lakes with increasing nutrient status and increasing land use intensity in catchments.
60	Several upper Waimakariri Small Lakes	Surface water/Lakes	Sensitive lakes catchment	Lakes with increasing nutrient status and increasing land use intensity in catchments.
	Several Ashburton Small lakes	Surface water/Lakes	Sensitive lakes catchment	Lakes with increasing nutrient status and increasing land use intensity in catchments.
	Several upper Waitaki small lakes	Surface water/Lakes	Sensitive lakes catchment	Lakes with increasing nutrient status and increasing land use intensity in catchments.

Date: 8 July 2013

MEMORANDUM

from : Adrian Meredith, Principal Water Quality Scientist

to : Peter Constantine, Matthew McCallum-Clark

cc

subject : Assistance with Councils Right of Reply to pCLWRP hearing

You have asked me to:

3. Provide detail around the process used by the expert panel to determine the nutrient allocation zones across Canterbury – in particular, what metrics (or combinations of metrics) from Table 1 were used, in what circumstances, to arrive at Map NAZ.
4. Identify what metrics presently included in Table 1 could be used in a schedule as water quality limits at a region wide level (eg. NZ Drinking water Standard).

This memo sets out a discussion of Question 2. A separate memo sets out the rationale and more detail on Map NAZ process.

TABLE 1 OUTCOMES and preparation of a SCHEDULE OF WATER QUALITY LIMITS.

Much of the debate in submissions to the pLWRP over the content and purpose of the Table 1 (a,b,c) tables has been confusion over their intended purpose. They are largely uplifted from the NRRP plan process and were proposed as 'Outcome' tables which clearly indicated intended target outcome conditions that the plan strives to achieve. These outcomes varied from actual outcome conditions to be 'maintained or protected', or as 'aspirational outcome conditions' that should be aimed to attain over the period of the plan life (or beyond). Therefore, they were envisaged as absolute target conditions and were not specified as statistical derivations (medians, percentiles, etc.):

- A target should be an absolute value or an index derived from a range of values
- A limit may have discretionary levels of non-compliance, so may be a median or percentile.

The National Policy Statement for Freshwater Management (NPSFM) has a series of policies to give effect to its objectives. One of these is to set water quality limits and to establish methods to avoid over-allocation. Several submitters identify that the pCLWRP does not adequately give effect to the NPSFM, and proposed addition of such limits to Table 1(a,b,c). Furthermore, many such submitter proposed numerical nutrient limits have been drawn from Schedule 5 of pCLWRP. Both of these suggestions pose significant problems that I will address below. If such limits are to be included in pCLWRP then I consider they should be in a new and separate table or schedule that is clearly identified for this specific purpose, and then clearly relates to specific plan rules or policies. This will avoid confusion with the intended and current purposes of both Table 1(a,b,c), any new limit table or schedule, and schedule 5 in the pCLWRP.

Table 1 (a,b,c) is an 'outcomes' table and so (as above) is intended to provide a clear picture of the outcomes or targeted environmental condition that the plan is trying to achieve by a combination of its methods. Inclusion of numerical nutrient and other water quality limits would simply confuse the two

purposes. Some of the outcomes in Table 1(a,b,c) may however be teased apart or re-presented as limits, however that would also require consideration of the appropriate statistical criteria of the limit (max, median percentile etc.). Below I consider which of the 'outcome criteria' could be separated as 'limits' in a limit table, or alternatively could conceivably be duplicated in different tables so that they could serve as both an outcome and a limit.

However, firstly I will also clarify the derivation and use of schedule 5 in pCLWRP and why it is not appropriate to simply use these numerical criteria for limit setting without firstly considering whether their derivation is appropriate for this purpose. Schedule 5 is a table of water quality standards that was derived to be appropriate for use with point source discharge consent requirements, at a compliance point at the end of a mixing zone. That is, appropriate water quality limits for a constrained area (reach) of a water body before full mixing had occurred (generally after ~50% mixing with the water body at the end of the mixing zone) and after which further dilution with natural waters would be expected. They were never intended to be a 'whole of river' bottom line compliance condition, but to allow expeditious plan management of small point source discharge activities.

Schedule 5 nutrient standards were chosen from a candidate list of four options in Hayward, Meredith and Stevenson (2009: Table 3.10). Only one of these lists was "effects based" (periphyton guidelines) and the other three lists were statistically derived from national or regional ambient data distributions (ANZECC 80%iles, medians, regional 80%iles). This was because most 'effects based' numerical criteria (at the time of plan development) were conservative such that resulting standards would be unlikely to allow any simple plan based consent compliance. Analysis against statistically derived ambient water quality standards both allowed an assessment of likely compliance against existing ambient water quality, and that environmental effects would be no worse than under existing observed ambient water body states. Subsequently, the majority of nutrient standards in schedule 5 were selected from the three non-effects based ambient water quality lists. We recommended them as appropriate for the consenting situation described above, but did not recommend or consider their suitability for whole catchment limit setting purposes. If they were used for limit setting purposes they are quite likely to not achieve the purposes or outcomes in Table 1a as whole river or reach limits.

Subsequent to this analysis, nitrate toxicity standards have been developed and refined that would also appropriately become additional candidate water quality criteria for some water body types. There have therefore been submissions by Fonterra witnesses that in addition to the DIN (Dissolved inorganic nitrogen) criteria, there should be Nitrate-N criteria as well. The schedule 5 DIN criteria will in most respects be dominated by the nitrate-N component. However, inclusion of DIN is focussed on achieving a combination of nuisance growth limitation and "maintain or enhance" nutrient status philosophies. Addition of a nitrate toxicity criteria would generate an potential confusion or conflict between which of the DIN and NO₃N criteria applies or takes precedence, unless clearly clarified in accompanying notes. In almost all respects the DIN criteria will be much more limiting than NO₃N, and potentially make the NO₃N toxicity criteria somewhat redundant in schedule 5. This is largely the reason for original inclusion of DIN criteria but not NO₃N criteria.

However, that said, the same issue exists for the existing inclusion of ammonia toxicity values in schedule 5 where the "acceptable" ammonia toxicity values would either alone or in combination with other nitrogen species (NO₃N) likely cause exceedence of the original DIN criteria. Therefore some guidance notes are currently needed here, and therefore both NH₄N and NO₃N could be included in the 'toxicity standards' table accompanying schedule 5. If it was consider to include them, then I agree with the median metrics on the end of the submission by Gerard Willis (for Fonterra) (as they pertain to 99% (1.0 mgN/l), 95% (2.4 mgN/l) and 90% (3.8 mgN/l) criteria), but there also remains the issue from Hickey and Martin 2013 of the incusion of both median and 95%ile criteria. While 95%ile criteria may not be needed in most lowland streams on the open Canterbury Plains, but there are

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other situations where they should also be included in Schedule 5 for completeness (1.5, 3.5, and 5.6 mgN/l as 95%iles (for the 99%, 95% and 90% levels of protection).

Further, particularly with respect to ammonia and nitrate it is an omission that the accompanying schedule 5 toxicity table does not include a column of 80% species protection that may be appropriately used in some places.

It is therefore of concern that several submitters have drawn suggested nutrient "limits" from schedule 5, without considering their original purpose and derivation. Use of these criteria may simply be achieving maintenance of current river type median (50%ile) water quality status (a 'maintain' current 'average' water quality philosophy) rather than being effects related and truly striving to achieve the listed Table 1 outcomes.

Table 1a:

I am comfortable with all of the river indicators in Table 1a being suitable outcome criteria provided some omissions and points are corrected. As described in the submission by Dr Young for Fish and Game, the QMCI indicator should be a single numerical target rather than a range. The proposed range for some river types generates uncertainty as to what the outcome or target should actually be. The outcome should be the upper value of the ranges. Also, as raised by the Fish and Game experts submissions, there should be a cyanobacterial mat cover (50%) criteria alongside the filamentous algae cover (20%) criteria. This is because cyanobacteria mats are now a much more prevalent and serious nuisance algal growth issue in Canterbury, and generate widespread public and health agency concern (often more so now than for filamentous algae).

The cyanobacteria mat % cover criteria could be populated in Table 1a (from top to bottom) alongside the filamentous algae % cover: 20, 30, 20, 50, 50, 30, 20, 50, 50, 50. These are consistent with the derivation of the filamentous algae criteria, drawn from the NZ periphyton guidelines (2000), or more recent discussions.

1. QMCI is an integrating ecological measure of river ecology so does not sit appropriately in a limit criteria list. However, it remains a very appropriate outcome measure to determine whether the plan is achieving appropriate management of 'ecosystem health' or 'ecological integrity'.
 2. Dissolved oxygen concentration is a numerical water quality criteria but is a fundamental criteria for sustaining life-supporting-capacity. It is appropriately an 'outcome criteria', as it is not generally a discharge component but is a condition that results from discharges of oxygen consuming or reducing substances (such as BOD5), or respiration of biological materials. Dissolved oxygen itself does not sit well as a limit criteria, especially if determined by a load requirement of contaminants.
 3. Water temperature is also a numerical water quality criteria and is a fundamental criteria for life-supporting-capacity. It is appropriately an 'outcome criteria', as it is not generally a discharge component (unless there are industrial thermal discharges) but is a condition that results from changes to the natural environment that enhance solar heating of waters or reduce thermal mass of water bodies. Temperature itself does not sit well as a limit criteria determined by a load of contaminant in Canterbury.
 4. The four primary production growth criteria (emergent macrophytes through to filamentous algae cover: and inclusive of a fifth new cyanobacteria mat cover) are primarily visible 'outcome' conditions. It is, these are outcome states that nutrient load limits would be designed to assist in maintaining or achieving, and relating to changes in land use pathways. They should therefore remain as outcomes, and not as limits.
 5. Fine sediment cover is again a visible outcome state of the issues associated with fine sediment discharge. Total suspended solids concentration or water clarity (turbidity or Black Disk visibility) are likely to be better limit setting criteria. However, they have a relationship with both water clarity issues and sedimentation issues. The derivation of appropriate numerical criteria as limits is not yet well founded.
 6. The suitability for recreation grade (SFRG) is an overall assessment state (generated annually, but from 5 years of raw data and 95 percentiles) that is focussed on a water bodies "suitability for use". It is entirely an outcome state criteria that is reported in five broad categories. As a load or limit criteria, only the underlying microbiological data could be
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appropriately used. However, even this is currently a 95th percentile of 5 years of site specific bacteria data, and relating to the national health derived thresholds (260, 550). It was never intended to be related to a load limit criteria.

I would therefore suggest that Table 1a remain as the proposed river outcomes table, but with the replacement of QMCI ranges and addition of a cyanobacteria mat cover criteria.

A corresponding limits table for rivers could be developed to appear somewhat like Schedule 5 but with careful consideration of 'values' or 'purposes of management' and subsequent choice of appropriate numerical criteria, again largely as discussed by submitters technical experts. However, the derivation of these numerical criteria are far from simple and would be subject to considerable development and technical justification.

1. Nitrate toxicity limits may be the most appropriate nitrogen criteria for spring-fed streams because of current high ambient concentrations that exceed all other "effects" criteria, but toxicity thresholds would vary for the different ecological and cultural values being managed. Salmonid fish (trout and salmon) and whitebait are specifically identified as nitrate sensitive taxa and would require higher levels of protection (at least 90%) than other more tolerant aquatic communities (80% species protection) more commonly described or considered in degraded lowland streams.

A nitrate toxicity criteria could therefore be put in a limits table for lowland streams, but requires some consideration of appropriate limiting "purposes of management" (how restrictive the species protection level should be). For example in the Waimakariri Zone the presence of the ex-NIWA salmon and trout hatchery and an important fishery on Silverstream would require at least a 90% species level of protection (median N =3.8 mgN/l), and in the Hinds Sub regional plan process we have identified that the Hinds River itself (as against other zone waterways) needs to be managed as a "trout fishery" so also requiring at least a median N =3.8 mgN/l. This situation would be reproduced throughout lowland streams in many zones in Canterbury (Ohapi Creek in OOP zone; Waikakahi Stream in S Waitaki zone; Lyell Ck in Kaikoura zone etc. to name a few more). So while there would be some argument for imposing the lowest criteria 80% species protection (6.9 mgN/l) across lowland streams, a "regional" approach" should be somewhat more conservative to acknowledge these many situations with high values requiring protection, and truly achieve a "holding position" that would then be tenable for subsequent sub-regional planning effectiveness.

Looking nationally we may subsequently get a steer that lowland trout fisheries may require a 95% protection level but this would be a very challenging limit for most Canterbury situations. So a 90% protection level (median = 3.8 mgN/l) should provide the appropriate 'regional' signal, be conservative in not "opening the door to rapid unconsidered development", but not be so conservative as to be unachievable. So:

- a. lowland streams nitrate toxicity limit **=annual median limit of 3.8 mgN/l**. (I do not think the accompanying 95thile limit of 5.6 mgN/l (from Hickey and Martin 2013) is needed as in almost all lowland Canterbury situations nitrate is routinely high throughout much of the year rather than for brief seasonal periods of only 1-3 months)
 - b. I do not think that nitrate toxicity limits are readily able to be imposed for other river types. Alpine, foothill, Banks Peninsula streams and rivers have low nitrate concentrations limited by algal growth criteria rather than the higher toxicity criteria. Lake fed rivers also require lower lake nutrient load eutrophication criteria. Inland basin streams may be closest to consideration of N toxicity, but remain difficult
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because they both feed loads into alpine and foothill rivers and therefore need to be responsive to their load criteria, and are in a wide range of ambient condition, so limits can be difficult with respect to differing criteria, and the “maintain or enhance” ethic of RMA and CWMS.

2. Hill-fed streams and rivers would require much lower concentration criteria as ambient concentrations are much lower, and these river types are more susceptible to nuisance algal growths. However, as described in the derivation of the Map NAZ process, effects based criteria for nuisance growths are very conservative and would indicate most rivers were above criteria (outcomes not met) and so largely prevent any further nutrient allocation.
3. Alpine Rivers would require further consideration again. They had previously been considered of little nutrient concern because of low ambient concentrations and high flood frequency, although many of Canterbury's alpine rivers are already exhibiting periods of nuisance growths or health significance events (Hurunui, Waimakariri etc.). These observations indicate some uncertainty in limit setting even in these water bodies.

Therefore, while Table 1a could be adapted to generate an accompanying limits table or schedule this cannot be conducted easily or rapidly. Only a lowland stream nitrate-N toxicity limit is easily justified. I cannot recommend a comprehensive “rivers” limits table for the pCLWRP and suggest that for most ‘candidate limits’ this would be best generated collaboratively and cooperatively with communities in the sub regional plan process (as occurred for the Hurunui Waiau River Regional Plan).

Table 1b:

I am comfortable with all of the lake indicators in Table 1b being suitable outcome criteria.

1. Dissolved oxygen concentration, as in Table 1a, is a numerical water quality criteria but is a fundamental criteria for sustaining life-supporting-capacity. It is separated into both a deep water (hypolimnion) and surface water (epilimnion) criteria to reflect the very different effects of low or depressed oxygen in these lake components. A hypolimnion criteria is designed to avoid generation of reduction chemistry and production of toxic or polluting contaminants within the hypolimnion in stratified or poorly mixed lakes. This is therefore a target ‘outcome’ criteria for lakes in general. The surface water (or epilimnion) criteria is more simply a criteria for maintaining the ‘life supporting capacity’ of the more ecologically ‘populated’ areas of lakes. Both are appropriately ‘outcome criteria’, as they are not generally load components as they are not generally a condition that results from discharges of or accumulation of oxygen consuming or reducing substances that can be measured (such as BOD5). Dissolved oxygen itself does not sit well as a limit criteria determined by a load requirement of contaminants entering lakes.
 2. Water temperature is also a numerical water quality criteria and is a fundamental criteria for life-supporting-capacity. Most lakes are valued particularly for supporting of temperature sensitive cool water taxa such as salmonid fish (trout and salmon), galaxiid fish and koura. Temperature is therefore appropriately an ‘outcome criteria’, as it is not generally a discharge component (unless there are industrial thermal discharges). It is a condition that results from changes to the natural environment that enhance solar heating of lake waters or reduce thermal mass of water bodies. Temperature itself does not sit well as a limit criteria determined by a load of contaminant in Canterbury.
 3. Lake SPI is a nationally derived index that determines an overall condition factor of a lake based upon its lakebed vegetation patterns. It is measured between annually to five yearly,
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and so is an integrating factor of overall lake condition or state. As with other such indices it describes categories of a desired state of a lake. These may often be aspirational and so do not relate well to a limit or load setting function. LakeSPI and its underlying components is therefore not a candidate for a limit setting table or schedule.

4. The TLI or Trophic Level Index is another nationally derived index that is based upon averaging annual data and determining lake status in a number of bands or categories. It is very appropriate for setting outcome categories for lakes, although these may also be set as 'road markers' along a planning route to a final desired condition (i.e. the TLI target of 6 in Te Waihora/Lake Ellesmere is a preliminary target but is unlikely to be a satisfactory final water quality outcome for key stakeholders). The TLI is however based upon four water quality measures that are combined together to generate the TLI index. Three of these are direct measures of nutrient mass (total N and P as against dissolved N and P) and phytoplankton biomass (Chlorophyll a concentration). These three components could more appropriately sit as load or limit setting criteria rather than the TLI itself. All three can be set as limits that correspond with an overall TLI target, however it should also be borne in mind that these outcome targets may be aspirational, or a road marker on a journey to an eventual target.
5. Colour is an important and valued perception component of lakes. It corresponds with RMA requirements to ensure no 'conspicuous change in colour or clarity'. However, despite this it is seldom directly measured. It may also vary seasonally. It should therefore remain as an outcome target but is insufficiently developed or related to contaminants to be a "limit criteria".
6. The suitability for recreation grade (SFRG) is an overall assessment state (generated annually, but from 5 years of raw data and 95 percentiles) that is focussed on a water bodies "suitability for use". It is entirely an outcome state criteria that is reported in five broad categories. As a load or limit criteria, only the underlying microbiological data could be appropriately used. However, even this is currently a 95th percentile of 5 years of site specific bacteria data, and relating to the national health derived thresholds (260, 550). It was never intended to be related to a load limit criteria.

Overall, only the numerical components of the TLI (TN, TP and Chl a) and of the SFRG (95th %ile of microbiological data) could be set in a limit setting table or schedule.

Table 1c:

Table 1c is the only table that is populated with load or limit setting type criteria. This is largely because groundwater is primarily viewed as an abstractive or drinking water resource and so the criteria relate to water 'appearance, palatability and public health related indicators'. Pressures on these suitabilities are generally related to loads of contaminants leaching to the groundwater from land surface recharge sources. This whole table could therefore easily be adapted to a load or limit setting function.

However, this table does not directly acknowledge that groundwater systems also directly affect or relate to ecological functions in groundwater related ecosystems (groundwater itself, and in surface waters fed by or interacting with groundwater). Particularly in highly valued spring-fed lowland stream systems, groundwater quality should also be managed to ensure values in these systems are being maintained or enhanced (eg appropriate nitrate toxicity limits (as being discussed in Selwyn Te Waihora and Ashburton Hinds sub-regional plans), or nutrient loads for lake or river state, and avoidance of 'nuisance growths' (as in Hurunui Waiou River Regional Plan)).

Overall, a load or limit setting table or schedule for the pCLWRP could include:

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- Dissolved nitrogen limits for some river and stream types
 - o Including nitrate toxicity limits appropriate to values in spring-fed lowland streams (90% limit for trout, salmon and whitebait streams; 80% criteria for all others (if these were readily distinguished)). These could include solely the median criteria as 95%ile criteria in Hickey and Martin (2013) are seldom the issue.
 - 80% species protection – median 6.9 mgN/l
 - 90% species protection – median 3.8 mgN/l
 - o Similar criteria for other toxicants (ammonium-N and ANZECC lists of toxicants) in spring fed streams
 - o Approaches based upon nuisance growth criteria for hill-fed and alpine rivers, although at best these may need to be based around ambient levels (80%ile or 95%ile of ambient water quality data) provided adverse effects are not already occurring.

All of these proposed river criteria have levels of discretion particularly depending upon “purpose of management” or values to be maintained. It is therefore appropriate to give effect to NPSFM limit setting criteria, but these can be best developed for rivers and streams in sub regional plan processes where the scale and purpose of management issues can best be addressed.

For lakes management, the pCLWRP Table 1b separates lakes into 7 types on the basis of size, geographical position, and whether they are natural or artificially constructed, and sets different outcome targets for each type.

- Limits can be generated for the individual Trophic Level index components (TN, TP, Chl a) in lakes, based upon the existing plan TLI thresholds for these individual component sub-metrics. These are based upon the national methods of Burns et al 200, and should be:

TLI	Trophic State	Lake types	TP*	TN*	Chl A*
2	Oligotrophic	Large High Country	0.004	0.073	0.82
3	Mesotrophic	small/medium high country lakes on-river artificial lakes	0.009	0.160	2
4	Eutrophic	other artificial lakes Coopers Lagoon/Muriwai	0.020	0.340	5
6	Supertrophic	All other coastal lakes	0.096	1.560	30
* as an annual average maximum			mg/l	mg/l	ug/l

Alternative classifications are often determined by the degree of stratification, whether lakes are routinely optically challenged, and whether they are brackish. It is worth acknowledging that these alternative classifications may be a basis of national frameworks (National objective framework), however the underlying TLI criteria (and numerical limits) on TN, TP, and Chl A remain the same.

The Microbiological criteria as 95%ile of the underlying annual and 5 year data sets for the SFRG index can be selected from the table below. This table is the guideline for all bathing waters so applies to rivers, lakes and estuaries. This sets different public health safety criteria depending upon risks and degree of use. A regional limit could be set at any of these levels as a default although there would be consequences to areas depending upon degree of protection required. A middle ground criteria is probably to require at least “good” criteria regionally so as to not allow for degrading of water bodies. However most lakes at ambient conditions will comply with the highest (very good) condition.

SFRG	MAC*
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grade	
Very Good	<40
Good	41-200
Fair	201-500
Poor	>500
* - microbiological assessment category as 95%ile of 5 years data	

Inclusion of most of the potable or drinking water criteria from Table 1c could include:

Nitrate-N Maximum concentration <11.3 mg/l
Annual average concn <5.65 mg/l
E coil any sample <1 organism/100 ml
Other contaminants* any sample <50% MAV**

* Other contaminants of health significance as listed in NZ Drinking water stds.

** Maximum acceptable value (as listed in * above)

Appendix 2

Table A – Objectives

As notified	Ngāi Tahu	Fish & Game	Other relevant	s42A	Reply Recommendation
3.1 Water is recognised as essential to all life and is respected for its intrinsic values.		Retain		3.1 Water is recognised as essential to all life and is respected for its intrinsic values.	3.6 Water is recognised as essential to all life and is respected for its intrinsic values.
3.2 Water and land are recognised as an integrated resource embracing the philosophy and practice of ki uta ki tai thus recognising the connections between land, groundwater, surface water and coastal waters.	Objective 1: Land and water are managed as integrated natural resources: <ul style="list-style-type: none"> Enabling Ngāi Tahu customary uses and traditional relationships with land and water; Focusing on managing whole catchments and applying the ethic of ki uta ki tai – from the mountains to the sea; and - Managing the connectivity between surface water and groundwater, and between fresh water, land and the coast. 	Retain		3.2 Land and water are managed as integrated natural resources, recognising the connectivity between surface water and groundwater, and between fresh water, land and the coast.	3.2 Water management applies the ethic of ki uta ki tai – from the mountains to the sea – and land and water are managed as integrated natural resources, recognising the connectivity between surface water and groundwater, and between fresh water, land and the coast.
3.3 The relationship of Ngāi Tahu and their culture and traditions with the water and land of Canterbury is protected.	Objective 3: Ngāi Tahu's past present and future relationship with the land and water of Canterbury is recognised and provided for.	Retain		3.17 The relationship of Ngāi Tahu and their culture and traditions with the water and land of Canterbury is recognised and enabled.	3.1 Land and water are managed as integrated natural resources to recognise and enable Ngāi Tahu culture, traditions, customary uses and relationships with land and water.
3.4 In keeping with the philosophy and practice of ki uta ki tai the interconnectivity of land, water and the coast is reflected in its management.		Retain			
3.5 Outstanding fresh water bodies and hāpua and their margins are maintained in their existing state or restored where degraded.	Objective 2(a): Kaitiakitanga is exercised - freshwater bodies and their catchments are maintained in a healthy state or, where they have been degraded, they are improved.	3.5 Outstanding fresh water bodies and their margins are protected or if degraded are restored to protect their values.		3.12 Outstanding fresh water bodies and hāpua and their margins are maintained in their existing state or restored where degraded.	3.14 Outstanding fresh water bodies and hāpua and their margins are maintained in a healthy state or are improved where degraded in order to meet community outcomes.
3.6 The significant indigenous biodiversity values of natural wetlands and hāpua are protected and wetlands in Canterbury that contribute to cultural and community values, biodiversity, water quality, mahinga kai or ecosystem services are enhanced.	Objective 5: The outstanding characteristics and values of Canterbury's fresh water bodies and their catchments are protected, and lakes and the main stems of rivers, which have not already been modified, are retained in their natural state.	3.6 Wetland habitats in the region and hāpua are protected, and where they contribute to cultural and community values, biodiversity, water quality, mahinga kai or ecosystem services they are enhanced.	Jane Demeter: The significant indigenous biodiversity values of dryland ecosystems are protected from water use on adjacent land. DOC: Avoid the loss or reduction of wetlands both in terms of their quality and quantity.	3.13 The significant indigenous biodiversity values of rivers, natural wetlands and hāpua are protected and wetlands that contribute to cultural and community values, biodiversity, water quality, mahinga kai, water cleansing and flood retention properties are maintained.	3.17 The significant indigenous biodiversity values of rivers, wetlands and hāpua are protected. 3.18 Wetlands that contribute to cultural and community values, biodiversity, water quality, mahinga kai, water cleansing and flood mitigation are maintained.
3.7 The mauri of lakes, rivers, hāpua and natural wetlands is maintained or restored and they are suitable for use by Ngāi Tahu and the community.	Objective 10: Fresh water is managed prudently as a shared resource with many values, and: <ol style="list-style-type: none"> Community-based water harvest and storage schemes are developed which maximise the number of potential users and combined uses of water where practicable; People's use of water is as efficient as practicable; and Land uses and the discharge of contaminants are managed in accordance with good practice and taking into account the capability of the land and the sensitivity of the receiving environment. 	Retain	Fonterra: The value of agriculture to community well-being is able to be maximised through land use and associated discharges that allows for water storage, conveyance and irrigation infrastructure to be used to yield greatest social and economic benefit. Fonterra: Recognise that existing water takes and discharges contribute to social and economic well-being and in some cases significant investment relies on the continuation of those takes and discharges, including rural-based activities such as agriculture and perishable food processing. Fonterra: Recognise that existing water takes and rights to discharge treated wastewater contribute to social and economic wellbeing. Significant investment is made based on the reliability of these water takes and discharge rights including that related to regionally and nationally significant, capital intensive, large scale facilities which process perishable products such as those from dairy farms".	3.8 Fresh water is managed prudently as a shared resource with many values, and any abstraction is necessary and reasonable for its intended use and any water that is abstracted is used efficiently.	3.7 Fresh water is managed prudently as a shared resource with many in-stream and out-of-stream values. 3.9 Abstracted water is shown to be necessary and reasonable for its intended use and any water that is abstracted is used efficiently.
3.8 The health of ecosystems is maintained or enhanced in lakes, rivers, hāpua and wetlands.	Objective 2(b): The quality and quantity of water in fresh water bodies and their catchments is managed to: <ol style="list-style-type: none"> Safeguard the life-supporting capacity of ecosystems and ecosystem processes, including ensuring sufficient flow and quality of water to support the habitat and feeding, breeding, migratory and other behavioural requirements of indigenous species, nesting birds and, where appropriate trout and salmon; Provide for actual and any reasonably foreseeable needs for drinking water or stockwater; Support customary uses and contact recreation in water bodies which are valued for these purposes; Maintain natural hydrological and 	3.8 Lakes, rivers, hāpua and wetlands are managed in a manner which protects their life-supporting capacity, and recognises and provides for their values.	Genesis: To recognise and provide opportunities for new renewable electricity generation infrastructure, particularly multiple use schemes incorporating hydro-electricity and irrigation components and enable their development where the adverse effects on the environment can be appropriately managed.	3.10 The quality and quantity of water in fresh water bodies and their catchments is managed to safeguard the life-supporting capacity of ecosystems and ecosystem processes, including ensuring sufficient flow and quality of water to support the habitat and feeding, breeding, migratory and other behavioural requirements of indigenous species, nesting birds and, where appropriate, trout and salmon.	3.8 The quality and quantity of water in fresh water bodies and their catchments is managed to safeguard the life-supporting capacity of ecosystems and ecosystem processes, including ensuring sufficient flow and quality of water to support the habitat and feeding, breeding, migratory and other behavioural requirements of indigenous species, nesting birds and, where appropriate, trout and salmon.

As notified	Ngai Tahu	Fish & Game	Other relevant	s42A	Reply Recommendation
	<p>geomorphic processes including flushing and opening hāpua and river mouths, flushing algal and weed growth, and transporting sediment;</p> <p>v. Maintain or enhance water quality in all lakes, rivers, wetlands, springs, hāpua and coastal lagoons;</p> <p>vi. Maintain water levels in aquifers, and avoid salt-water intrusion of coastal groundwater sources; and</p> <p>vii. Maintain water levels in wetlands, hāpua, coastal lagoons, lowland springs and springfed water bodies or improves levels where the values of these water bodies have been degraded through diversions, abstractions or land drainage</p> <p>viii. Maintain or enhance the natural character of freshwater bodies including braided rivers, and their margins, wetlands and hāpua and coastal lagoons.</p>				
3.9 The existing natural character values of alpine rivers are protected.		3.9 Preservation of the natural character of lakes, rivers and wetlands and their natural processes, and protection from inappropriate use and development		3.11 Freshwater bodies and their catchments are maintained in a healthy state, including through hydrological and geomorphic processes such as flushing and opening hāpua and river mouths, flushing algal and weed growth, and transporting sediment.	3.16 Freshwater bodies and their catchments are maintained in a healthy state, including through hydrological and geomorphic processes such as flushing and opening hāpua and river mouths, flushing algal and weed growth, and transporting sediment.
3.10 The significant indigenous biodiversity values, mahinga kai values, and natural processes of rivers are protected.	<p>Objective 4 Wetlands and hāpua are recognised and valued for their rich ecological and cultural values and their water cleansing and flood retention properties and:</p> <p>(a) The biodiversity, cultural, recreational and amenity values of natural wetlands and hāpua are protected and where those values have been degraded, they are improved; and</p> <p>(b) The overall stock of wetland areas in the region is increased.</p>	<p>3.10 Biodiversity values, mahinga kai values, salmonid fishery and wildlife values, recreational and amenity values, are identified and protected.</p> <p>3.10A Limits to protect non-consumptive values of water bodies shall be established, as well as limits to the quantum of resource to be utilised or resource capacity to be exploited.</p>		3.14 Natural character values of freshwater bodies, including braided rivers and their margins, wetlands, hāpua and coastal lagoons, are protected.	3.19 Natural character values of freshwater bodies, including braided rivers and their margins, wetlands, hāpua and coastal lagoons, are protected.
3.11 Water is available for sustainable abstraction or use to support a variety of economic and social activities and maximum social and economic benefits are obtained from the efficient storage, distribution and use of the water which is available for abstraction.	<p>Objective 7 Fresh water is available for abstraction to provide for the economic well-being of people and communities, within the allocation limits or management regimes which are set to give effect to Objectives 2(a) and (b).</p>	3.11 Subject to limits, water is available for sustainable abstraction or use to support a variety of economic and social activities and maximum social and economic benefits are obtained from the efficient storage, distribution and use of the water which is available for abstraction.	<p>NZTA seeks to delete 'maximum'.</p> <p>Fed Farmers seek to add a new objective 3.11, as follows: Water is recognised as a key driver for the economic and social wellbeing of the region.</p> <p>Ag Research seeks to include the following (or similar) objective in Section 3: The recognition that existing water takes contribute to social and economic wellbeing and in some cases significant investment relies on the continuation of those takes, including regionally and nationally significant research facilities.</p>	3.4 Water is available for sustainable abstraction or use to support social and economic activities and social and economic benefits are maximised by the efficient storage, distribution and use of the water made available within the allocation limits or management regimes which are set in this Plan.	3.10 Water is available for sustainable abstraction or use to support social and economic activities and social and economic benefits are maximised by the efficient storage, distribution and use of the water made available within the allocation limits or management regimes which are set in this Plan.
3.12 Groundwater continues to provide a sustainable source of high quality water for flows and ecosystem health in surface waterbodies and for abstraction.	<p>Objective 6 Canterbury's groundwater resources remain a sustainable source of high quality water which supports base flows or levels in surface water bodies, springs and wetlands and which is available for abstraction.</p>	3.12 Groundwater continues to provide a sustainable source of high quality water to protect life supporting capacity and for flows and ecosystem health and for abstraction.	CDHB seeks 3.12 Groundwater continues to provide a source of high quality water for flows and ecosystem health in surface water bodies for abstraction for uses such as drinking water.	3.6 Groundwater resources remain a sustainable source of high quality water which is available for abstraction while supporting base flows or levels in surface water bodies, springs and wetlands and avoiding salt-water intrusion.	3.13 Groundwater resources remain a sustainable source of high quality water which is available for abstraction while supporting base flows or levels in surface water bodies, springs and wetlands and avoiding salt-water intrusion.
3.13 Those parts of lakes and rivers that are valued by the community for recreation are suitable for contact recreation.		3.13 Wetlands, lakes and rivers that are valued by the community for recreation are suitable for primary or secondary contact recreation depending on the particular uses at each site.		3.18 Those parts of lakes and rivers that are valued by the community for recreation are suitable for contact recreation.	3.15 Those parts of lakes and rivers that are valued by the community for recreation are suitable for contact recreation.
3.14 High quality fresh water is available to meet actual and reasonably foreseeable needs for community drinking water supplies.		3.14 High quality freshwater is available to meet the reasonable needs for community drinking water supplies now and into the foreseeable future. Efficiency in use of water is maximised.			
3.15 A regional network of water storage and distribution facilities provides for sustainable, wise, efficient and multiple use of water.	<p>Objective 9 Water harvest and storage schemes are developed which provide for all of the following:</p> <p>(a) The exercise of kaitiakitanga;</p> <p>(b) Reliable water for irrigation or hydro-electricity generation;</p> <p>(c) The maintenance or enhancement of the</p>	Include as a note under objective or in definitions: A regional network is defined as 'a network of water storage and distribution which provides benefits of a regional nature and has regard to matters of regional or greater significance'.	RDRML: Recognise and provide for the ongoing operation, maintenance, development and upgrading of existing lawfully established and consented infrastructure and abstraction, while ensuring that any adverse effects on this infrastructure is avoided, remedied or mitigated to the	3.7 A regional network of water storage and distribution facilities provides for sustainable, efficient and multiple use of water, including irrigation and hydro-electricity generation.	3.4 A regional network of water storage and distribution facilities provides for sustainable, efficient and multiple use of water.

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	flows or levels and the quality of water in water bodies within the catchment; and (d) Integrated management of the supply of irrigation water with land uses and resulting contaminant discharges.		extent needed to accord with the purposes of the Resource Management Act 1991.		
3.16 Infrastructure of national or regional significance is resilient and positively contributes to economic, cultural and social wellbeing through its efficient and effective operation, ongoing maintenance, repair, development and upgrading.		3.16 Infrastructure of national or regional significance is resilient and positively contributes to economic, cultural and social wellbeing through its efficient and effective operation, ongoing maintenance, repair, development and upgrading, while avoiding any significant adverse effects on the environment.	NT Property seek to delete the words "of national or regional significance". Terralea Partnership seeks to add a new key objective that recognises the importance of agricultural role in Canterbury's economic sustainability.	3.9 Infrastructure is resilient and positively contributes to economic, cultural and social wellbeing through its efficient and effective operation, on-going maintenance, repair, development and upgrading.	3.3 Nationally and regionally significant infrastructure is resilient and positively contributes to economic, cultural and social wellbeing through its efficient and effective operation, on-going maintenance, repair, development and upgrading.
3.17 The mauri and the productive quality and quantity of soil are not degraded.	Amend Objective 3.17 to read: Canterbury soils are healthy and their susceptibility to human-induced erosion or contamination is minimised.			3.19 Soils are healthy and human-induced erosion or contamination is minimised.	3.23 Soils are healthy and human-induced erosion or contamination is minimised.
3.18 The risk of flooding or erosion of land or damage to structures is not exacerbated by the diversion of water, erection, placement or failure of structures, the removal of gravel or other alteration of the bed of a lake or river, removal of vegetation, or the re-contouring of adjacent land.	Retain	Retain and include: 3.18A Wherever possible, hazards and risks will be identified and risks reduced by preferably avoiding, then mitigating and, only if necessary, mitigating hazards.	NZTA 3.18: Amend to read "The risks of damage to property or structures or adverse effects on human health and safety, including due to flooding or erosion of land or damage to structures is are not exacerbated..."	3.20 The diversion of water, erection, placement or failure of structures, the removal of gravel or other alteration of the bed of a lake or river or the removal of vegetation or natural defences against water does not exacerbate the risk of flooding or erosion of land or damage to structures.	3.21 The diversion of water, erection, placement or failure of structures, the removal of gravel or other alteration of the bed of a lake or river or the removal of vegetation or natural defences against water does not exacerbate the risk of flooding or erosion of land or damage to structures.
3.19 The risk and effects of natural hazards, including those arising from seismic activity and climate change, are reduced through protecting the effectiveness of natural hazard protection infrastructure, wetlands and hāpua.	Amend Objective 3.19 to read: The risk of and effects of natural hazards including those arising from seismic activities and climate change are mitigated through maintaining the effectiveness of both 'man-made' natural hazard protection infrastructure and wetlands and hāpua as natural water retention areas.	3.19 The risk and effects of natural hazards, including those arising from floods, seismic activity and climate change, are reduced through protecting the effectiveness of natural hazard protection infrastructure, wetlands and hāpua.		3.21 The effectiveness of both man-made natural hazard protection infrastructure, and wetlands and hāpua as natural water retention areas is maintained to reduce the risk of and effects from natural hazards, including those arising from seismic activity and climate change.	3.22 The effectiveness of both man-made natural hazard protection infrastructure, and wetlands and hāpua as natural water retention areas is maintained to reduce the risk of and effects from natural hazards, including those arising from seismic activity and climate change.
3.20 Extraction of gravel from riverbeds maintains flood carrying capacity, protects infrastructure and provides a resource to enable development.	Amend Objective 3.20 to read: Gravel in riverbeds is able to be extracted to maintain flood carrying capacity and to provide resources for building and construction, while maintain the natural character of braided rivers and not adversely affecting water quality, ecosystems or their habitats, access to or the quality of mahinga kai or causing or exacerbating erosion.	3.20 River management including gravel extraction needs to safeguard life supporting capacity, recognises and provides for values, protects natural character and is sustainable. and In order to protect the life supporting capacity and natural character of waterbodies and to recognise and provide for their values the management, use or development of the beds of rivers and lakes shall be: 1) Maintain biological and physical processes 2) Avoid adverse effects to feeding, spawning, dispersal or migration of fish and other aquatic species 3) Avoid adverse effects on habitats that are important to the life cycle and survival of fish and birds including spawning and nesting areas 4) Avoid adverse effects on biological and physical processes 5) Maintain or enhance the natural character of waterbodies including maintaining same or similar river bed configuration (including pool, run, riffle sequences and braiding patterns;	Fulton Hogan and Aggregate Group: Recognise and provide for the development of mineral resources (including gravel) while avoiding, remedying or mitigating any inappropriate adverse effects.	3.22 Gravel in riverbeds is extracted to maintain floodway capacity and to provide resources for building and construction, while maintaining the natural character of braided rivers and not adversely affecting water quality, ecosystems or their habitats, access to or the quality of mahinga kai or causing or exacerbating erosion.	3.20 Gravel in riverbeds is extracted to maintain floodway capacity and to provide resources for building and construction, while maintaining the natural character of braided rivers and not adversely affecting water quality, ecosystems or their habitats, access to or the quality of mahinga kai or causing or exacerbating erosion.
3.21 Land uses continue to develop and change in response to socio-economic and community demand while remaining consistent with the CWMS targets.	Objective 8 Changes and intensification of land uses occur within water quality allocation limits or management regimes which are set considering the sensitivity of the receiving environment and to give effect to Objectives 2(a) and (b).	3.21 Sustainable land uses which meet limits continue to develop and change in response to socio-economic and community demand while remaining consistent with the CWMS targets.	Graeme Lowe Tannery: Manage water and land use in a manner that minimises any land use conflicts, including minimising potential for reverse sensitivity with existing land uses. Dairy NZ: The importance of water to our social and economic well-being is recognised and the potential for water to further improve our social and economic well-being is realised as far as possible while meeting other listed objectives. Fonterra: The value of agricultural use of land and water (including water's assimilative capacity), in terms of both primary production and food processing, and the associated social and economic benefit derived by Canterbury communities is recognised. Wainui Station Limited: The use of land for productive purposes, including the efficient use and management of water resources, is to be supported and encouraged where these benefits are balanced with the environmental outcomes sought in the CMWS.	3.5 Land uses continue to develop and change in response to socio-economic and community demand while remaining consistent with the CWMS targets.	3.5 Land uses continue to develop and change in response to socio-economic and community demand.

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3.22 Community outcomes for water quality and quantity are met through managing limits.		Delete	Forest & Bird seek: Amend to read, "Community outcomes for water quality and quantity are met through setting and managing to limits."	3.15 Community outcomes for water quality and quantity are met through setting, and managing within, limits.	3.12 Community outcomes for water quality and quantity are met through setting, and managing within, limits.
3.23 All activities operate at "good practice" or better to protect the region's fresh water resources from quality and quantity degradation.		3.23 All activities operate at measurable and accountable "good environmental practice" or better to optimise efficient resource use and protect the region's fresh water resources from quality and quantity degradation within the limits based regime.		3.16 All activities operate at good environmental practice or better to optimise efficient resource use and protect the region's fresh water resources from quality and quantity degradation.	3.24 All activities operate at good environmental practice or better to optimise efficient resource use and protect the region's fresh water resources from quality and quantity degradation.
			Fed Farmers: Add a new objective 3.11: Water is recognised as a key driver for the economic and social wellbeing of the region.	3.3 Water is recognised as an enabler of the economic and social wellbeing of the region.	3.11 Water is recognised as an enabler of the economic and social wellbeing of the region.
		Water quality of aquifers, lakes, rivers, and wetlands is managed to ensure that: I. Water quality is maintained where the existing water quality is at a level sufficient to support the values (listed) II. Water quality is restored where the existing water quality is not at a level sufficient to support the values (listed) III. Accelerated eutrophication and sedimentation of waterbodies in the region is prevented IV. The special values of waterbodies protected by water conservation orders are maintained			
		Water use must be necessary, reasonable, and justifiable for its intended use, and where it meets these criteria its use must be efficient.			
		Water quantity is managed to enable people, industry, and agriculture to take and use water to meet their reasonable needs while ensuring that: a) For surface water I. Minimum flows and allocation regimes are set for the purpose of maintaining or enhancing the existing life supporting capacity of waterbodies and recognising and providing for values (listed) II. In times of water shortage, takes are restricted to those that are essential to the health or safety of people, and communities, or for drinking water for animals and all other takes are ceased b) For groundwater I. Takes does not cause a significant adverse effect on the long term groundwater yield II. Groundwater takes that are hydrologically connected to surface waterbodies are managed with minimum flow and allocation regimes established for those surface water bodies and to protect their natural character III. Groundwater takes that are hydrologically connected to lakes or wetlands are managed to protect the life supporting capacity and natural character of those wetlands and lakes IV. The adverse effects of a groundwater take on other groundwater and surface takes are avoided V. Saltwater intrusion into coastal aquifers, induced by groundwater takes, is avoided			
		Protect areas of significant indigenous vegetation and significant habitats of indigenous fauna and maintain biological diversity, including enhancement where degraded			
4.1 Lakes, rivers, wetlands and aquifers will meet the fresh water outcomes set in Sections 6-15. If outcomes have not been established for a catchment, then each type of lake, river or aquifer will meet the outcomes set out in Table 1.	4.1 Water quantity and quality is managed through setting water allocation regimes or limits to manage the abstraction of fresh water and the discharge of contaminants for each catchment, which give effect to objectives 1, 2(a) and (b) of this plan.	4.1 Lakes, rivers, wetlands and aquifers will meet the fresh water outcomes set through the NPS and RPS, in this plan and its schedule XX and in Sections 6-15. In order to ensure the NPS requirement to maintain or enhance overall water quality in the region and in each catchment, zone or catchment based outcomes shall not be less than those for the region in this plan, or allow water quality to decline in any catchment. If outcomes have not been established for a catchment, then each type of lake, river or aquifer will meet the outcomes set out in Table 1 within a timeframe specified in sections 6-15 and in any case not after 2030.		4.1 Lakes, rivers, wetlands and aquifers will meet the fresh water outcomes set in Sections 6-15 within the specified timeframes. If outcomes have not been established for a catchment, then each type of lake, river or aquifer will meet the outcomes set out in Table 1 by 2023.	4.1 Lakes, rivers, wetlands and aquifers will meet the fresh water outcomes set in Sections 6 to 15 within the specified timeframes. If outcomes have not been established for a catchment, then each type of lake, river or aquifer will meet the outcomes set out in Table 1 by 2023.
4.2 The management of lakes, rivers, wetlands and aquifers will take account of the cumulative effects of land uses, discharges and abstractions in order to meet the fresh water outcomes in accordance with Policy 4.1.	4.2 In setting water allocation regimes or limits: (a) Surface water bodies and groundwater are managed as a single resource except where very deep groundwater is unlikely to have a connection to surface water; and (b) Allocation regimes or limits for water	4.2 The management of lakes, rivers, wetlands and aquifers will take account of the cumulative effects of land uses, discharges and abstractions by setting catchment based limits in order to meet the fresh water outcomes in accordance with Policy 4.1.		4.2 The management of lakes, rivers, wetlands and aquifers will take account of the cumulative effects of land uses, discharges and abstractions in order to meet the fresh water outcomes in accordance with Policy 4.1.	4.2 The management of lakes, rivers, wetlands and aquifers will take account of the fresh water outcomes, water quantity limits and the individual and cumulative effects of land uses, discharges and abstractions in order to will meet the water quality limits set in Sections 6 to 15 or Schedule 8 and the individual and cumulative effects of abstractions will meet the water

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	quantity and quality are considered together.				quantity limits in Sections 6 to 15
4.3 The discharge of contaminants to water or the damming, diversion or abstraction of any water or disturbance to the bed of a fresh water body shall not diminish any values of cultural significance to Ngāi Tahu.	4.3 Resource consents shall not be granted that will allow activities either singularly or in combination with other activities, to exceed the allocation regime or limits set for that catchment, except where Policy 4.4 applies.	4.3 The discharge of contaminants to water or the damming, diversion or abstraction of any water or disturbance to the bed of a fresh water body shall not diminish any values of cultural significance to Ngāi Tahu, or values identified by the community.		4.3 The cultural values of each catchment shall be identified and provided for in the sub-regional sections of the plan.	
4.4 Water is managed through the setting of limits to maintain the life-supporting capacity of ecosystems, support customary uses, and provide for community and stock drinking water supplies, as a first priority and to meet the needs of people and communities for water for irrigation, hydro-electricity generation and other economic activities and to maintain river flows and lake levels needed for recreational activities, as a second priority.	4.4 Where the abstraction or water or discharge of contaminants already exceed the allocation regime or limits set under Policy 4.1, resource consents may be granted to: <ul style="list-style-type: none"> Allow the continuation of existing activities at the same or a lesser rate or scale, provided that there is a plan to reduce the over-allocation within a specified timeframe; or Exceed the allocation limit in the short-term if that exceedance is part of a proposal to reduce the over-allocation in the catchment and that proposal is provided for within the relevant sub-regional section of this plan. 	Break into two parts: 4.4 Water is managed through the setting of limits to maintain the life-supporting capacity of ecosystems, recognise and provide for values, support customary and community values as set out in Schedule XX, And Water is managed to safeguard life supporting capacity and recognise and provide for values by managing to limits and provide for community and stock drinking water supplies, as a first priority and to meet the needs of people and communities for water for irrigation, hydro-electricity generation and other economic activities and to maintain river flows and lake levels needed for recreational activities, as a second priority.		4.4 Water is managed through the setting of limits to maintain the life-supporting capacity of ecosystems, support customary uses, and provide for community supplies and stock water, as a first priority and to meet the needs of people and communities for water for irrigation, hydro-electricity generation and other economic activities and to maintain river flows and lake levels needed for recreational activities, as a second priority.	4.5 Water is managed through the setting of limits to safeguard the life-supporting capacity of ecosystems, support customary uses, and provide for group or community drinking-water supplies and stock water, as a first priority and to meet the needs of people and communities for water for irrigation, hydro-electricity generation and other economic activities and to maintain river flows and lake levels needed for recreational activities, as a second priority.
4.5 In high naturalness waterbodies listed in Sections 6-15, the damming, diverting or taking of water is limited to that for individual or community stock or drinking water and water for the operation and maintenance of infrastructure.	In high naturalness water bodies listed in sections 6-15, the damming and diverting or taking of water is limited to that for individual or community stock or drinking water, to support research purposes or customary uses, or the operation or maintenance of existing infrastructure.	4.5 In those high naturalness value waterbodies listed in Sections 6-15 and in Schedule XX, the damming, diverting or taking of water is limited to that for individual or community stock or drinking water and water for the operation and maintenance of infrastructure or which maintains the identified values and community outcomes and does not cause significant adverse effects to them.		4.5 In high naturalness waterbodies listed in Sections 6-15, the damming, diverting or taking of water is limited to that for individual or community stock or drinking water and water for the operation and maintenance of existing infrastructure.	4.6 In high naturalness waterbodies listed in Sections 6-15, the damming, diverting or taking of water is limited to that for individual or community stock or drinking water and water for the operation and maintenance of existing infrastructure.
4.6 Where a water quality or quantity limit is set in Sections 6-15, resource consents will generally not be granted if the granting would cause the limit to be breached or further over-allocation to occur.	4.6 The cultural landscapes of each catchment shall be identified and provided for in the subregional sections of the plan.	4.6 Water quality or quantity limit is set in Sections 6-15 cannot be contrary to table 1. Resource consents will not be granted, if the granting would cause the limit to be breached or further over-allocation to occur.		4.6 Where a water quality or quantity limit is set in Sections 6-15, resource consents, will generally not be granted if the granting would cause the limit to be breached or further over-allocation to occur. New consents replacing expiring consents may be granted, but will likely be subject to additional restrictions.	4.76 Resource consents will not be granted if the granting would cause a water quality or quantity limit set in Schedule 8 or Sections 6 to 15 to be breached or further over-allocation to occur. New consents replacing expiring consents may be granted, but will be subject to additional restrictions.
4.7 Where over-allocation of water for abstraction from surface water catchments and groundwater zones or nutrient discharges has been determined, a regime will be established in Sections 6-15 that provides methods and a timeframe to eliminate the over-allocation.	4.5 Where no allocation regime or limits have been set for abstraction or the discharge of contaminants for a catchment in a sub-regional section of this plan or any other relevant regional plan referred to in the sub-regional section of this plan, then resource consent applications shall be assessed against the fresh water outcomes set out in Table 1.	4.7 Where over-allocation of water for abstraction from surface water catchments and groundwater zones or nutrient discharges has been determined, a regime will be established in Sections 6-15 that provides methods and a timeframe to eliminate the over-allocation. If the timeframe is greater than 5 years, there shall be not more than 5-yearly review of the effectiveness of the regime with adjustment to the regime, if required, in order to meet the timeframe to eliminate the over-allocation.		4.7 Where over-allocation of water for abstraction from surface water catchments and groundwater zones or nutrient discharges has been determined, a regime will be established in Sections 6-15 that provides methods and a timeframe to eliminate the over-allocation.	
4.8 The harvest and storage of water for irrigation or hydro-electricity generation schemes contribute to or do not frustrate the attainment of the regional concept for water harvest, storage and distribution set out in Schedule 16 or the priority outcomes expressed in the relevant ZIP.	Proposals to harvest and store water for irrigation or hydro-electricity generation: <p>(a) Contribute to or do not frustrate Regional or Zone Committee proposals for making irrigation water available to parts of the region or proposals to restore or enhance degraded environments, as set out in the relevant sub-regional sections of this plan; and</p> <p>(b) If supplying irrigation water, the proposal must address any potential effects of the use of water and associated increase in the discharge of contaminants on receiving environments.</p>	New: Water must be used efficiently, including by the following measures: <ol style="list-style-type: none"> Requiring water audits and water budgets to check for leakages and water use efficiency Requiring the use of, or progressive upgrade to infrastructure for water distribution that minimises the loss of water and restricts the use of water to the amounts determined by policy (reasonable, justifiable need for water) Enabling the transfer of water permits Raising awareness about water efficiency issues and techniques Requiring monitoring of water takes, including by installing water metering and telemetry 		4.8 The harvest and storage of water for irrigation or hydro-electricity generation schemes contribute to or do not frustrate the attainment of the regional concept for water harvest, storage and distribution set out in Schedule 16, the priority outcomes expressed in the relevant ZIP or a water quantity limit set in sections 6-15.	4.8 The harvest and storage of water for irrigation or hydro-electricity generation schemes contribute to or do not frustrate the attainment of the regional concept for water harvest, storage and distribution set out in Schedule 16, or a water quantity limit set in sections 6 to 15.
		Water quantity must be managed to ensure that: <ol style="list-style-type: none"> The requirements of WCO must be given effect under this plan Minimum flows and core allocations must be set to protect the life supporting capacity, and natural character of water bodies and recognise and provide for values (listed) Takes from rivers must be apportioned, restricted or suspended when river flows are at or below minimum flows Non essential takes shall be suspended when river flows are at or below minimum flow 			4.3 Surface water bodies are managed so that: <ol style="list-style-type: none"> toxin producing cyanobacteria do not render rivers or lakes unsuitable for recreation or animal drinking-water; fish are not rendered unsuitable for human consumption by contaminants; the natural colour of the water in a river is not altered; the natural frequency of hāpua, coastal lakes, lagoons and river openings is not altered; the passage for migratory fish species is maintained unless restrictions are required to protect populations of native fish;

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					<p>(f) the natural continuity of river flow is maintained from source to sea, without reaches being induced to run dry; and</p> <p>(g) variability of flow, including floods and freshes, avoids “flat-lining” of rivers and enables fish passage and mobilises bed material.</p> <p>4.4 Groundwater is managed so that:</p> <p>(a) long-term decline in groundwater levels is prevented through groundwater abstraction being limited so that there is not a continuing long-term decline in mean annual groundwater levels and artesian pressures;</p> <p>(b) the individual and cumulative rate, duration and volume of water pumped from bores is controlled so as to prevent seawater contamination;</p> <p>(c) control the rate and duration of individual abstractions to ensure that individually or cumulatively, localised pressure reversal does not result in the downward movement of contaminants;</p> <p>(d) in any location where an overall upwards pressure gradient exists, restrict the taking of groundwater so that at all times the overall upward pressure difference is maintained between any one aquifer and the next overlying aquifer; and</p> <p>(e) overall water quality in aquifers does not decline.</p>
		<p>Lakes, rivers will meet region wide freshwater outcomes in Chapter 3 and catchment specific freshwater objectives in chapters 6 – 15 (which must not be contrary to the objectives in chapter 3) to:</p> <ul style="list-style-type: none"> • Limits to achieve freshwater objectives are set in table 1a • Water quality and water quantity will be managed to achieve limits table 1 • Catchment committees must be established... (explain process, representation etc) • Catchment wide outcomes and limits must achieve the objectives of this plan set out in chapter 3, but may also achieve additional objectives as set by the community where these are not contradictory with chapter 3 • Catchment wide outcomes and limits can then be included in this plan by plan change 			<p>4.9 Reviews of sub-regional sections will:</p> <p>(a) be in accordance with Appendix 2 of the RPS 2013; and</p> <p>(b) identify and provide for the social, economic, cultural and environmental values of each catchment; and</p> <p>(c) give effect to collaborative catchment management processes that set local water quality and quantity outcomes, and methods and timeframes to achieve those outcomes, including through setting limits and targets; and</p> <p>(d) establish methods and a timeframe to eliminate any over-allocation where over-allocation of water for abstraction from surface water catchments or groundwater zones or nutrient discharges has been determined.</p> <p>4.10 Reviews of sub-regional sections will not make any changes to the Objectives or Policies 4.1-4.8 of this Plan, except that catchment-specific outcomes and limits may be developed.</p>

