

Section 42A Report

Proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments

Part A: Overview and Context

Part B: Overall Direction, Values and Uses, Science and Economics, Objectives, Limits and Targets

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21 December 2018

Document #: 13383130

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1 Introduction

- 1 Following notification on 22 October 2016, 1023 submissions were received on Proposed Plan Change 1 (PC1). These submissions raise a range of issues and make many requests for changes to PC1. There were an additional 61 submissions received on Variation 1 (Var1), bringing the total number of submissions to 1084.
- 2 This report is prepared under section 42A of the Resource Management Act 1991 (RMA), and is known as the “Section 42A Report”. It is used by the Hearing Panel to assist them with the requests in the submissions and the implications of accepting or rejecting submission points. The analysis in it is the opinion of the Officers¹, and it is not binding on any party – the Hearing Panel will make recommendations, and the Council will make the ultimate decisions on changes to PC1 as a result of submissions.
- 3 While many of these submissions have common themes, all of the provisions of PC1 are subject to one or more submissions. Due to the large number of submissions, submitters with common submission points have often been grouped together in the discussion of individual provisions. For example, there are over 1000 submission points on some topics, with dozens of variations of relief sought. This means that individual submitters are often not identified and the reporting on submitters is often generalised e.g. ‘a large number of submissions were received on Policy...’ and only a single submitter or submission point is shown. This has been done as a means of confirming that there is scope within the submissions to make the requested change, rather than identifying or prioritising particular submitters. A full list of the submissions that are addressed in each section of the report is attached as Appendix B.
- 4 There are further submissions on many submission points. Many of the further submissions are substantial, with one running to some 1400 pages and others several hundred pages in length. The majority of further submissions are from original submitters (68 of 70 received). For most of the further submission points, the change being supported or opposed is also addressed in the submitter’s original submission.
- 5 As a generalisation, several of the agriculture and horticulture submitters (such as HortNZ, Beef and Lamb and F4PC supported each other through further submissions, as well as garnering other further submitter support from the agriculture community. Further submissions in opposition to many points of these original submitters consistently came from Forest and Bird and the Waikato River Authority (WRA).
- 6 Overall, given the issues subject to further submissions are discussed in relation to the original submission point, only in exceptional cases are further submission points noted in the body of this report.

¹ Throughout this Report the term “Officers” is used to represent the team of authors of this report. The lead author, and person ultimately responsible for the opinions in this report is Matthew McCallum-Clark. Full details of the qualifications and experience of the team is included in Appendix A.

1.1 Report format

- 7 This Report is 'topic-based', in that it responds to the submissions grouped by topic, rather than by the order of the provisions in PC1. The broad structure of this report is as follows, recognising that Part C will not be released until a future date, is:

Part A – Introduction and context

- Introduction, structure and abbreviations
- Brief summary of PC1 and its development
- Variation 1 process
- Legal and statutory framework
- NPS-FM and its 2017 update, other NPSs and NESs, MfE work programmes
- Waikato River Vision and Strategy, Joint Management Agreements
- Collaborative development process
- Waikato Freshwater Strategy
- Water quality and ecosystem health

Part B - Outcomes

- B1. Overall direction and whole plan submissions
- B2. Values and uses
- B3. Science and Economics
- B4. Objectives
- B5. Water quality targets and limits, FMUs, priority areas and sub-catchments

Part C – Topics

- C1. Diffuse discharge management
 - Four contaminants - N, P, *E.coli* and Sediment
 - Nitrogen Management/Nitrogen Reference Point
 - Overseer
 - Reductions (75th percentile)
 - Land use change
- C2. Māori Treaty Settlement Land
- C3. Urban/point source discharges
- C4. Stock exclusion
- C5. Cultivation, slope and setbacks
- C6. Schemes
- C7. Commercial vegetable production
- C8. Alternative approaches – including sub-catchment planning
- C9. Farm Environment Plans
- C10. Miscellaneous (forestry, wetlands and lakes, other miscellaneous, consequential changes)

- 8 Recommendations are made where appropriate, and these are either to retain provisions without amendment, or to add to or amend the provisions with the amendment shown by way of strikeout and underlining. In limited circumstances the Section 42A Reporting Officers (Officers) consider that an amendment may be appropriate, but consider it would be beneficial to hear further evidence before making a final recommendation, and this is made clear within the report. All recommended changes have a footnoted reference with a submission point and submitter name that provides the scope for the recommended change.

1.2 Abbreviations

9 Abbreviations used in the text of this Report are:

BOPRC	Bay of Plenty Regional Council
BPO	Best Practicable Option
CSG	Collaborative Stakeholder Group
DIN	Dissolved Inorganic Nitrogen
DO	Dissolved Oxygen
DRP	Dissolved Reactive Phosphorus
<i>E.coli</i>	Escherichia coli
FEP	Farm Environment Plan
FMU	Freshwater Management Unit
GFP	Good Farming Practices
GMP	Good Management Practice
HRWO	Healthy Rivers Wai Ora
MAV	Maximum Acceptable Value
MCI	Macroinvertebrate Community Index
MMOL	Multiple Māori Owned Land
N	Nitrogen
NES	National Environmental Standard
NES-PF	National Environmental Standards for Plantation Forestry
NOF	National Objectives Framework
NPS-FM	National Policy Statement for Freshwater Management
NRP	Nitrogen Reference Point
NZCPS	New Zealand Coastal Policy Statement
Officers	Section 42A Reporting Officers (see Appendix A)
Overseer	OVERSEER(R) Nutrient budgets
P	Phosphorus
PC1	Proposed Plan Change 1
RMA	Resource Management Act 1991
WRPS	Waikato Regional Policy Statement
TLG	Technical Leaders Group
TN	Total Nitrogen
TP	Total Phosphorus
TLG	Technical Leaders Group
TRH	Te Rōpū Hautū
Var1	Variation 1 to Plan Change 1
Vision and Strategy	Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato
WRA	Waikato River Authority
WRC	Waikato Regional Council
WRP	Waikato Regional Plan

10 Abbreviations of submitter names used in the text of this Report are:

Ata Rangi	Ata Rangi 2015 Limited Partnership
Ballance	Ballance Agri-Nutrients Limited
Beef and Lamb	Beef + Lamb New Zealand Limited
DoC	Department of Conservation

F4PC	Farmers 4 Positive Change
FANZ	Fertiliser Association of New Zealand
Federated Farmers	Federated Farmers of New Zealand, Federated Farmers of New Zealand (Waikato Region) 1999 Incorporated, Federated Farmers of New Zealand – Rotorua Taupō Province Incorporated, Federated Farmers of New Zealand (Auckland Province) Incorporated
Fish and Game	Auckland/Waikato Fish and Game Council, Eastern Region Fish and Game Council
Fonterra	Fonterra Co-operative Group Limited
Forest and Bird	The Royal Forest and Bird Protection Society of New Zealand
Hamilton CC	Hamilton City Council
Heritage NZ	Heritage New Zealand Pouhere Taonga
HFM	Hancock Forest Management (NZ) Limited
HortNZ	Horticulture New Zealand
Matamata-Piako DC	Matamata-Piako District Council
Oji Ltd	Oji Fibre Solutions (NZ) Limited
Oil Companies	BP Oil NZ Limited, Mobil Oil NZ Limited, Z Energy Limited
PLUG	Primary Land Users Group
Rotorua Lakes DC	Rotorua Lakes District Council
South Waikato DC	South Waikato District Council
Tangata Whenua	Maniapoto Māori Trust Board, Maungatautari Marae, Ngaati Tamaoho Trust Te Taiao, Ngāti Haua Iwi Trust, Poohara Marae, Potini Whaanau, Raukawa Charitable Trust Te Arawa River Iwi Trust, Te Awamaarahi Marae Trustees, Te Kauri Marae, Te Runanga o Ngāti Kea Ngāti Tuara Trust, Te Taniwha o Waikato, Te Whakakitenga o Waikato Incorporated (Waikato-Tainui), Turangawaewae Marae, Tūwharetoa Māori Trust Board, Waahi Whaanui Trust, Waikato and Waipā River Iwi
Taupō DC	Taupō District Council
Watercare	Watercare Services Limited
Waitomo DC	Waitomo District Council
WRA	Waikato River Authority
WRC	Waikato Regional Council

2 Summary of PC1

- 11 The Waikato River was once considered one of New Zealand’s dirtiest rivers. Since the 1970’s there have been improvements in the way urban and industrial wastewater has been treated in the Waikato. However, the biggest risk to water quality today is from non-point source discharges to land, or contaminants from a wide area. PC1 seeks to reduce the amount of contaminants entering the river from the Waikato and Waipā catchments and has been developed to achieve the Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato (the Vision and Strategy), as well as giving effect to the National Policy Statement for Freshwater Management 2014 (NPS-FM). The Waikato Regional Council (WRC) has a legal requirement to give effect to both higher order documents, with the Vision and Strategy taking precedence where there is any inconsistency.
- 12 Plan Change 1 was developed by a Collaborative Stakeholder Group (CSG). The CSG settled on an 80-year time frame to achieve the water quality objectives of the Vision and Strategy, which requires the

rivers to be safe for swimming and taking food from. The development of PC1 is part of a staged approach toward these ambitious long-term freshwater objectives.

- 13 The 80-year timeframe recognises that full achievement of the long-term water quality objectives will require technologies or practices that are not yet available or economically feasible. In addition, the current understanding is that achieving water quality restoration requires a considerable amount of land to be changed from land uses with moderate and high intensity of discharges to land use with lower discharges (e.g. through reforestation).
- 14 Because of the extent of change required to restore and protect water quality in the 80-year timeframe, the CSG adopted a staged approach. This approach breaks the required improvements into a number of steps, the first of which is to put in place and implement the range of actions for an initial 10-year period that will be required to achieve 10 percent of the required change between current water quality and the long term water quality in 2096. The staged approach recognises that immediate large-scale land use change may be socially disruptive, and there is considerable effort and cost for resource users, industry and WRC to set up the change process in the first stage. New implementation processes, expertise and engagement are needed to support the first stage. The staged approach also allows time for the gathering of additional information, and innovation in technology and practices that will be needed to meet the targets and limits in subsequent regional plans to be developed.
- 15 Because of the extent of change required to meet the 80-year limits, achieving even the first step towards the long-term freshwater objectives in PC1 is an ambitious target. This means the effects of actions and changes on the land may not be seen as water quality improvements in the water bodies in the short term. This is partly due to the time required for the concentration of contaminants in the water to reduce, following mitigation actions being put in place, and specifically, the time it takes for nitrogen (N) to move through the soil profile to groundwater, and then to surface water. This means that the effect of actions put in place to reduce N now may not be seen in the water for some time (the length of time lag varies across the catchment). It also means there is a N 'load to come' from historic land use that is yet to be seen in the water. Realistically, there is also a time delay between notification of the requirements in PC1 and when they will be applied in practice – it is likely that several years will pass in the RMA First Schedule process alone.
- 16 Several other organisations, along with the WRC, are undertaking significant restoration activities and encouraging reductions in contaminant losses to the Waikato and Waipā Rivers through funding, education and leadership. These activities will continue, alongside the contribution of individuals, farmers, communities and industry, to help progress toward achieving the Vision and Strategy.
- 17 Plan Change 1 affects all rural properties over 2ha, within the Waikato River and Waipā River catchments. The new rules will complement the existing rules in the Waikato Regional Plan (WRP) and those existing rules will continue to apply. The new rules in PC1 include additional requirements for forestry, additional considerations for point source discharges, and new rules and consents for farming activities. PC1 is clear that these constraints on land use are the first stage, and future regional plan changes will likely require further reductions of discharges of sediment, nutrients and microbial pathogens from farming, urban and point source discharges.
- 18 The approach to reducing contaminant losses from farm land in PC1 includes:
 1. stock exclusion from water bodies as a priority mitigation action, Farm Environment Plans (FEPs) (including for commercial vegetable producers) that ensure industry-specific good

- management practice, and identify additional mitigation actions to reduce diffuse discharges by specified dates, which can then be monitored
2. a property scale nitrogen reference point (NRP) to be established by modelling current nutrient losses from each property, with no property being allowed to exceed its reference point in the future and higher dischargers being required to reduce their nutrient losses
 3. accreditation systems to be set up for people who will assist farmers to prepare their FEP, and to certify agricultural industry schemes
 4. WRC to develop approaches outside the rule framework that allow contaminant loss risk factors to be assessed at a sub-catchment level, and implement mitigations that look beyond individual farm boundaries to identify the most cost-effective solutions.
 5. land use change from tree cover to animal grazing, or any livestock grazing other the dairy or arable cropping to dairy, or any land use to commercial vegetable production, will be constrained
- 19 There are a number of existing provisions, including rules, in the WRP that will continue to apply for point source discharges. Municipal and industrial point source dischargers will also be required to revise their discharges in light of the Vision and Strategy and the water quality objectives, and sub-catchment limits and targets that have been set. This will happen as the current consent terms of those point source discharges expire.
- 20 The NPS-FM includes a requirement to define the waterbodies to be managed, and set outcomes, limits, targets and other measures to achieve those outcomes. In accordance with this framework, a Waikato and Waipā River catchment boundary has been established which has been further divided into eight Freshwater Management Units (FMUs).

2.1.1 Relationship with the Waikato Regional Plan

- 21 The WRP is an operative regional plan and contains objectives, policies, methods and rules that apply to the entire Waikato Region (with the exception of Chapter 3.10 which applies only to the Lake Taupō catchment). The WRP contains provisions that assist the WRC in carrying out its functions, in order to achieve the sustainable management of the land and water resources of the region. This includes provisions that manage the use of land; the discharge of water and contaminants to water and land; the taking, use, damming and diversion of water; and air.
- 22 The provisions contained in PC1 apply specifically to the Waikato and Waipā River catchments and seek to manage land use activities to protect water quality, particularly from diffuse discharges. The most common source of diffuse discharges are farming activities. The provisions in PC1 are complementary to those contained in the remainder of the WRP.
- 23 A number of submitters raise concerns that PC1 does not address point source discharges, particularly those from urban activities. PC1 does not seek to include any new rules in relation to urban or point source discharges, as these are already managed by the operative WRP. This is further addressed in Part C of this report.

2.2 Variation 1 process

- 24 Following notification of PC1, Pare Hauraki raised concerns with WRC that they had not been consulted with in the manner required by the RMA. WRC withdrew part of PC1 on 3 December 2016 in order for consultation to take place.
- 25 On 10 April 2018, WRC notified Variation 1 (Var1) to PC1 for public submissions. In summary, Var1 makes the following amendments to PC1:
- Amendments to reinstate the previously withdrawn provisions and area;
 - Amendments to key dates for landowners, including dates for Registration and providing a NRP, as well as dates for FEPs and stock exclusion; and
 - Amendments arising from consultation with Pare Hauraki.
- 26 While Var1 followed a separate submission process to the rest of PC1, further submissions were called for at the same time, so that these two processes would be brought together before the S42A reporting and hearing process.
- 27 Variation 1 has the effect of changing PC1 – submissions on those parts of PC1 that were changed by Var1 are now considered to be submissions on Var1.

3 Legal and statutory framework

- 28 Plan Change 1 is the product of an extended community-led, collaborative process undertaken to address issues relating to water quality in the Waikato and Waipā River catchments. An understanding of the unique legislative and planning requirements specific to the Waikato and Waipā Rivers provides useful context for the policy framework contained in PC1.
- 29 The statutory documents relevant to the Waikato River and Waipā Rivers are described in detail in Section A.2 of the Section 32 Report, however for the purposes of this report, a summary of the relevant provisions is set out here.

3.1 Resource Management Act

- 30 [Extract from S32 Report]

Regional councils have responsibilities under the RMA and give effect to the Act through regional policy statements and plans.

The RMA is the primary legislation that guides regional plans in managing water quality. Very much in summary:

- S5 states that local authorities have a responsibility to sustainably manage natural and physical resources while “safeguarding the life-supporting capacity of air, water, soil and ecosystems”.
- S30 outlines the functions that regional councils must undertake to give effect to the RMA. This includes:
 - The control of the use of land for the purposes of the maintenance and enhancement of the quality of water in waterbodies and coastal water(s30(1)(c)(ii); and
 - The control of discharges of contaminants into or onto land, air, or water and discharges of water into water (s30(1)(f)); and
 - If appropriate the establishment of rules in a regional plan to allocate the capacity of air or water to assimilate a discharge of a contaminant 30(1)(fa)(iv).
- S70 sets a baseline with respect to discharges to waterways, including a requirement that any permitted activity rule shall not allow for the adverse effects specified in s70 (for example, conspicuous change in colour or visual clarity).
- S2 defines relevant terms including discharge, contaminant, water, fresh water and water bodies.
- Schedule 1 outlines the process that must be followed when any part of a policy statement or plan is reviewed.
- S32 outlines the requirements for preparing and publishing the evaluation report that supports this Plan Change.

3.2 NPS-FM and its 2017 update, other NPSs and NESs, MfE work programmes

3.2.1 Freshwater NPS

31 In 2016, when PC1 was notified, the NPS-FM 2014 was in force. PC1 is required to give effect to the NPS-FM. On 7 September 2017, amendments to the NPS-FM 2014 came into force. While the NPS-FM 2014 was updated to incorporate the amendments from the National Policy Statement for Freshwater Amendment Order 2017, the reference is still to the NPSFM 2014 (i.e. the name has not been amended).

32 Section 67(3)(a) of the RMA requires that a regional plan must give effect to any national policy statement. As the NPSFM 2014 (amended 2017) is now in force, and there are no transitional provisions contained within it, WRC must give effect to the NPSFM 2014 (amended 2017). In summary, the changes to the NPS-FM introduced in 2017 are:

Part A – Water Quality – amendment to Objectives A1 and A2, new Objective A3 and A4, amendment to Policy A4 and new Policies A5 to A7.

Part B – Water Quantity – new Objective B5 and Policy B8.

Part C – Integrated Management – amendments to Policy C1.

Part CA – NOF – amendments to policies, values, attributes and swimability.

Part CB – Monitoring plans – amendments, but not relevant to PC1.

Part CC – Accounting – No amendments.

Part D – Tangata whenua roles and interests – No amendments.

Part E – Progressive Implementation Programme – amendments, but not relevant to PC1.

3.2.2 Other Relevant NPS and NES

33 These are explained fully in the Section 32 Report.

3.2.3 Plantation Forestry NES

34 The National Environmental Standard for Plantation Forestry (NES-PF) came into force on 1 May 2018. Sections 43B and 44A of the RMA require that a regional plan must give effect to an NES and amendments to plans are to be made as soon as practicable. The NES-PF regulates eight plantation forestry activities and amendments to the WRP were made in July 2018. Regulation 6 of the NES-PF outlines a set of criteria whereby rules in a plan may be more stringent than those in the NES-PF.

35 During the development of PC1, it was considered that the existing WRP forestry rules were largely sufficient to control the adverse effects of contaminant loss to water over the life of the forestry rotation. PC1 introduces an additional requirement to the conditions for existing Permitted Activity Rule 5.1.4.11 and to the standards and terms for Controlled Activity Rules 5.1.4.14 and 5.1.4.16. This additional condition requires written notification of a harvest operation in a forest and the inclusion of a harvest plan. This addition was signalled by a draft of the NES-PF. The NES-PF requires a harvest plan is submitted to Council under the harvesting activities.

36 Similar to the NPS-FM, where there are inconsistencies with the Vision and Strategy and the NES-PF, the Vision and Strategy prevails.

3.2.4 MfE Work Programme

37 The Minister for the Environment announced a work programme in October 2018, documented as “Essential Freshwater – Healthy Water, Fairly Allocated”, to “noticeably improve freshwater quality in New Zealand within the next five years”.²

38 The workstreams of most significance to the PC1 process include proposed changes to the NPS-FM, a new NES for Freshwater Management (Freshwater NES), and the development of a ‘fair and efficient water allocation system’, pertaining to both the discharge of contaminants and the authority to take and use water.

39 The Minister intends that the amended NPS-FM and the new Freshwater NES will be in force in 2020. Issues and options for allocation of discharges will be discussed and consulted on through 2019 and 2020, and options on water take allocation will be developed in 2019/2020.

40 This work programme will not directly affect the PC1 hearings process because RMA decision-makers cannot have regard to non-statutory Government discussion documents or Ministerial

² From: <https://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/essential-freshwater.pdf>

announcements. However, some influence may be unavoidable in the latter stages of the PC1 hearing process. Officers will prepare further advice as required.

3.2.5 National Planning Standards

- 41 The purpose of the National Planning Standards, introduced as part of the 2017 amendments to the RMA, is to improve the consistency in plan and policy statement structure, format and content.
- 42 The draft first set of National Planning Standards were released for public consultation in June 2018. The submission period has now closed, and the final National Planning Standards must be approved by the Minister for the Environment by April 2019. Most councils will then have five years to incorporate the Gazetted planning standards into their plans and policy statements, although there will be an additional two years available for this plan review, given its timing.³
- 43 Once the Planning Standards have been Gazetted, it may be that the Hearing Panel will wish to explore the implications, particularly of any definitions, for PC1. It is unclear whether or not the Panel would be able to introduce new definitions, or amend existing ones in PC1, in the absence of submissions having sought those precise changes. Officers will prepare further advice as required.

3.3 Waikato River Vision and Strategy and Joint Management Agreements

3.3.1 River co-governance/co-management

- 44 There are three Acts that relate specifically to the Waikato and Waipā Rivers:
 - Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010;
 - Ngāti Tūwharetoa, Raukawa and Te Arawa River Iwi Waikato River Act 2010; and
 - Ngā Wai o Maniapoto (Waipā River) Act 2012.
- 45 The three River Acts establish co-governance arrangements for the Waikato and Waipā Rivers and their catchments. The iwi partners in the development of PC1 are Maniapoto, Raukawa, Ngāti Tūwharetoa, Te Arawa River Iwi and Waikato-Tainui. The process for preparing, reviewing, changing or varying the WRP is set out in the legislation. This includes a requirement for Council to establish a Joint Working Party with each of the River Iwi, for the purposes of making joint recommendations to the Council on the following aspects of the plan change:
 1. The process to be adopted for the preparation of the plan change;
 2. The general form and content of any document to be drafted for the purposes of consultation or notification; and
 3. The content of a planning document to be notified.
- 46 It was through these mechanisms that the scope of PC1 was agreed.
- 47 A single joint working party, Te Rōpū Hautū (TRH), comprising representatives from River Iwi and the council was established to fulfil the legislative requirements (set out above) and to provide

³ From: <http://www.mfe.govt.nz/rma/national-direction/national-planning-standards>

management oversight of the PC1 project. The WRC and TRH later established a co-governance committee referred to as the Healthy Rivers Wai Ora (HRWO) Committee, comprising equal number of representatives from iwi and the regional council (councillors). The purpose of the HRWO Committee was to make recommendations to the WRC on the content of PC1.

3.3.2 The Waikato River Vision and Strategy

- 48 In 2007 the Crown and Waikato-Tainui reached an Agreement in Principle regarding the outstanding claim to the Waikato River. This agreement included the formation of the Guardians Establishment Committee to develop a Vision and Strategy, which was published in 2008. In 2010, the WRA was established as the custodian of the Vision and Strategy and in 2012 legislation extended the boundaries of the Vision and Strategy to include the Waipā River.
- 49 The three River Acts referred to above, established the Vision and Strategy as the primary direction setting document for the Waikato and Waipā Rivers. The Vision and Strategy prevails over any inconsistencies in a national policy statement, New Zealand Coastal Policy Statement (NZCPS) or a NES, and is deemed to be part of the Waikato Regional Policy Statement (WRPS).
- 50 The Vision and Strategy states that the Waikato and Waipā Rivers are degraded and require, amongst other things, restoration and protection. The Vision is *for a future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come.*
- 51 The Vision and Strategy was developed to respond to four fundamental issues:
1. The degradation of the Waikato River and its catchment has severely compromised Waikato River iwi in their ability to exercise mana whakahaere or conduct their tikanga and kawa;
 2. Over time, human activities along the Waikato River and land uses through its catchments have degraded the Waikato River and reduced the relationships and aspirations of communities with the Waikato River;
 3. The natural processes of the Waikato River have been altered over time by physical intervention, land use and subsurface hydrological changes. The cumulative effects of these uses have degraded the Waikato River; and
 4. It will take commitment and time to restore and protect the health and wellbeing of the Waikato River.
- 52 In order to realise the Vision, thirteen Objectives were developed, and in order to pursue those Objectives it was recognised that a number of strategies would need to be implemented. The strategies include developing and actioning targets for improving the health and wellbeing of the rivers; developing, recognising and promoting best practice methods for restoring and protecting the health and wellbeing of the rivers; and ensuring that cumulative adverse effects on the rivers of activities are appropriately managed in statutory planning documents at the time of their review. The full achievement of the Vision, and a number of the Objectives, will require non-RMA processes and activities in parallel to PC1 and future plan changes.

4 Collaborative development process

- 53 Plan Change 1 was developed in partnership with iwi as a co-management project, and alongside the community as a collaborative planning project. The HWRO Joint Working Party prepared a Stakeholder Engagement Strategy which outlined a collaborative approach to working alongside stakeholders and the community during the plan development process. One of the main strategies for working alongside those with an interest in PC1 was to establish a CSG.
- 54 The purpose of the 24-member CSG was to bring stakeholders together to act as a central conduit for stakeholder and broader community involvement, where the members represented Māori interests, local communities and agricultural sectors. The CSG reviewed extensive technical information (environmental, cultural, social and economic) and used this information to inform recommendations regarding the content of PC1.
- 55 One aim of the collaborative approach to plan development was to enable those affected by PC1 to be part of developing the solution, with the expectation that the resulting solutions would be “better and more lasting” (as community input was at the front end of the planning process) and provide for improved outcomes for the rivers.
- 56 A Technical Alliance was established for PC1, comprising a Technical Leaders Group (TLG) and a wider Technical Support Group. These groups were established to provide technical support to the CSG. The membership of the CSG and TLG, and the process of appointing those members, are outlined in sections B.2 and C.1 (respectively) of the s32 report.
- 57 The development of PC1 was an iterative process, where the outcomes developed through the collaborative engagement process with the CSG were presented to TRH and then the HRWO Committee for their endorsement, ensuring that co-governance was exercised throughout the development of the plan change. The final suite of provisions was presented to the HWRO Committee for their approval, prior to WRC making a final decision on the proposed plan change.

5 Waikato Freshwater Strategy

- 58 Waikato Regional Council has developed the Waikato Freshwater Strategy in order to manage fresh water more effectively. The strategy, which was adopted by Council in June 2017, provides a roadmap that will deliver best use of fresh water over the next 50 years and beyond.
- 59 In summary, it identifies the programme of activities needed in order to reach this goal. It builds on the understanding of the fresh water situation within the region, which has been developed from scientific evidence, and by talking with external stakeholders and water users to arrive at the WRC’s view of the best way forward.
- 60 The strategy focuses on three themes:
1. focussed advocacy;
 2. smarter methods; and
 3. better information.

- 61 A lot of work aimed at protecting and improving the region’s water quality and quantity is underway by iwi, landowners, organisations and communities. However, the Strategy builds on existing WRC freshwater initiatives such as Variation 5 Taupō-nui-a-Tia (protecting Lake Taupō), Variation 6 to the WRP which dealt with water allocation, Healthy Rivers/Wai Ora: PC1, the Waipā Catchment Plan, various zone plans, and the Waikato Waipā River Restoration Strategy.

6 Water quality and ecosystem health

- 62 The Vision and Strategy acknowledges that the Waikato and Waipā Rivers are degraded and require, amongst other things, restoration and protection. To enable a better understanding of the need for PC1, this section describes the lake and river catchments within the area of PC1 and provides an overview of the current state of the Waikato and Waipā Rivers, including their tributaries, lakes and wetlands. This section also describes the relationship between land use (and diffuse discharges) in the Waikato region and water quality.

6.1 Overview of the Waikato and Waipā River Catchments

6.1.1 The Waikato River

- 63 The Waikato River is the longest river in New Zealand. Its catchment covers 14,260 square km, 12 per cent of the area of the North Island. The headwaters start in the central North Island volcanic zone (Mt Ruapehu), 2797 metres above sea level, in the form of several tributaries of Lake Taupō, including the Tongariro River. From Lake Taupō, the Waikato River flows north across the volcanic plateau, passing through eight hydro-electric dams, and onto the lowlands from Cambridge to Mercer. The river finally flows into the Tasman Sea at Port Waikato after a journey of 425 km from Lake Taupō.
- 64 While the Waikato River is fed by more than 17,000km of tributary streams, it is considered to be a lake-fed river. For the purposes of PC1, the Waikato River is separated into three FMUs: Upper Waikato River; Middle Waikato River and Lower Waikato River.
- 65 The Waikato River provides a habitat for a variety of freshwater flora and fauna, with at least 21 species of native fish and crustaceans (including Nationally Vulnerable Shortjaw kokopu and Lamprey) and 13 species of introduced fish, including trout and salmon. Some introduced fish, such as koi carp and gambusia are pest species.
- 66 The Waikato River is a tupuna (ancestor), a taonga (treasure), and the mauri (life force) of Tainui Waka and Ngāti Tūwharetoa. The river has significant cultural, environmental, economic and social/recreational values both locally and nationally. These values (both intrinsic values and use values) have been articulated through the process outlined in the NPS-FM and form part of PC1.
- 67 The predominant land uses in the Upper Waikato River FMU are pasture and cropping, 49% and exotic forest, 39%. The remaining area is covered with indigenous vegetation, 13%, and very small areas of lakes, wetlands and urban areas. The land use in the Middle Waikato FMU is predominantly pasture and cropping, 74%, with indigenous vegetation covering 19%. The remaining area is exotic forest, 5%, with small amounts of urban and lake and wetlands area, less than 2%. The Lower Waikato FMU land

use is also dominated by pasture and cropping, 75%, with 12% indigenous vegetation. The remainder is made up of urban environments, 3%, with exotic forest and lakes and wetland areas making up the final 10%.

6.1.2 The Waipā River

- 68 The Waipā Catchment covers 306,569 ha and is dominated by the Waipā River channel and associated tributaries (see Figure 1). The Waipā River is the single largest tributary of the Waikato River. The Waipā River starts at the Pekepeke wetland adjacent to the Rangitoto Range in the southern King Country, southeast of Te Kuiti. From there it flows through land which was once native bush, wetlands and peat bogs, but is now mostly farmland and steep hill country. The Waipā River flows northwards through rolling lowland areas to the towns and villages of Otorohanga, Pirongia and Whatawhata, before meeting the Waikato River at its confluence in Ngāruawāhia, 115km from its headwaters in Pekepeke.
- 69 The Waipā River is a tupuna (ancestor), a taonga (treasure), and the mauri (life force) of Ngāti Maniapoto.
- 70 The Waipā River catchment is represented by a diverse array of ecosystem types and associated aquatic flora and fauna. A unique and valuable aspect of this system is the lack of any major mainstem barriers to migratory fish passage. Together with a relatively flat gradient, this enables non-climbing migratory species such as common smelt and mullet to reach significant distances inland. These same aspects have also enabled access for numerous non-migratory invasive species including koi carp, brown bullhead catfish and gambusia. Recreational (e.g. trout angling), commercial and customary harvest (e.g. eels, koura) is common in the wider system. With respect to particular ecosystem types, of particular note are:
- Productive mid to lower valley oxbow habitats on the Puniu and Waipā systems providing feeding and resting habitat for iconic longfin eels, giant kokopu and native waterfowl.
 - Relatively intact higher gradient streams draining off Mount Pirongia providing valuable thermal refuges and specific under-represented habitat for numerous threatened fish species including endemic torrentfish, shortjaw kokopu, lamprey and koaro.
 - Swampy Kahikatea remnants providing unique wetland habitat for threatened endemic mudfish species.
- 71 The peat lakes within the catchment are valued for their unique genetic diversity, scientific interest and recreational opportunities. They are also valued for their cultural and spiritual values. Peat lakes are a valuable habitat for many unique animals and plants, but are under threat due to drainage, nutrients and plant and animal pests.
- 72 In terms of vegetative cover, 78% of the catchment area is in pasture, 21% is native vegetation, scrub and other land uses, and 1% is production forestry.

6.1.3 Lakes

- 73 There are more than 60 named lakes in the Waikato-Waipā catchment. The lakes can be classified into five types – geothermal, volcanic, peat, riverine and dune. The three geothermal lakes do not form part of PC1 as geothermal waters are outside the scope of the plan change.

- 74 Peat lakes are the most numerous of the remaining lake types. Peat lakes tend to be small, with two-thirds having an area less than 10 ha. All 35 peat lakes have catchments dominated by non-native vegetation. Eight of these lakes are currently monitored by WRC.
- 75 There are four named dune lakes, all less than 10 ha in size and all with nearly 100% non-native vegetation. None are currently monitored by WRC, but three have historic data available.
- 76 The 15 riverine lakes include the largest shallow lakes in the catchment (Waikare, Whangape, Waahi). Four of the lakes are currently monitored. The five volcanic lakes in the catchment are relatively poorly known. Only two of the five have any environmental data available.

6.2 Overview of the “Four Contaminants”

- 77 Plan Change 1 focuses on four key contaminants as the largest contributors to poor water quality in the Waikato region. The four water contaminants of primary concern within the PC1 area are N, phosphorus (P), sediment and microbial contaminants. The main pathway for nitrate-nitrogen loss (referred to as nitrogen losses) is via leaching from the plant root zone. P, sediment and microbial contaminants are generally lost to rivers and lakes via overland flow or artificial drainage.

6.2.1 Sediment

- 78 Sediments are a natural part of a stream, lake, or river, and the type and amount found is influenced by the geology of the surrounding area. However, human activities around a waterway such as deforestation, farming and land use change can greatly increase the amount of sediment that enters the system. Significant damage to ecosystems can occur by large amounts of suspended sediment clogging the gills of fish, reducing the amount of light penetrating into the water which affects plant and algae growth and the ability of fish to locate and capture prey. In addition, freshwater habitats can be degraded by siltation. Sedimentation can reduce water clarity and increase water turbidity, impacting on recreational and cultural uses of the rivers, especially swimming.

6.2.2 Microbial pathogens

- 79 Microbial pathogens can have a significant impact on water quality and mahinga kai. In particular, contaminated water can make mahinga kai unsuitable for harvesting and water becomes unsuitable for swimming, recreational use and for drinking. Contamination of freshwater may occur when the faeces of animals are deposited near or in a waterway, for example when a cow crosses a stream, or when cattle and sheep graze alongside unfenced waterways. Similarly, microbial contaminants can come from birds and other non-farmed animals that are in or near water bodies. Pathogens may also be washed into waterways indirectly through surface runoff from the land, especially after periods of heavy rain.

6.2.3 Nutrients – Nitrogen and Phosphorus

- 80 Nutrients in streams are essential for the growth of aquatic plants (algae and macrophytes) that are an important food source for invertebrates and fish. The main nutrients in waterways come in the form of inorganic nutrients called N and P. However, only small amounts of each are required in a natural ecosystem and any increase of these nutrients in waterways can quickly become a nuisance by causing excessive algae and plant growth. Increases in nutrients are nearly always as a result of land use activities or direct discharges from urban areas and industry. An increase in the available nutrients in waterways is called eutrophication, which can have adverse environmental effects, including reduced recreational suitability. Such effects include loss of species, loss of habitat, increased turbidity and decreased visibility.
- 81 Phosphorus is a highly reactive chemical nutrient, and is typically used on agricultural land as a P-based fertiliser. P readily binds to soil particles, and is typically lost to rivers via overland flow or artificial drainage, particularly if cultivation and stocking of animals occurs close to the river margins, or there is reduced riparian planting.
- 82 Nitrogen is an important nutrient for plant growth, and consequently, an important nutrient for agricultural land uses in New Zealand. N is introduced into a farming system via N-fixing plants (such as clover), bought-in feed or as N-based fertiliser. N is also reintroduced to the soil in the form of urine, dung and leaf litter. A small proportion of N is converted to milk, meat and wool or harvested plants. Pasture typically contains a much higher level of N than livestock can use, so excess N is returned to the soil in a concentrated form as urine. Any excess nitrate-nitrogen that cannot be taken up by plant roots can flow across land or be leached through the soil to groundwater. Once in groundwater, nitrate is very difficult to remove, with lag-times up to 80 years before the contaminated groundwater re-enters a surface water body.

6.3 Overview of Water Quality Monitoring and Modelling

6.3.1 Rivers and streams

- 83 Waikato Regional Council has a comprehensive river water quality monitoring programme, with over 100 sites being sampled monthly for a suite of water quality parameters. This monitoring network has been relatively consistent since 1993. Within the Waikato-Waipā catchment there are 62 river water quality monitoring sites.
- 84 Waikato Regional Council has deployed equipment to continuously measure dissolved oxygen (DO), pH, temperature and chlorophyll a at two sites (Hamilton and Tuakau). There are ten Waikato River sites, where the following attributes are monitored on a monthly basis:
- Chlorophyll a;
 - Total Nitrogen (TN);
 - Total Phosphorus (TP);
 - Nitrate-N;
 - Ammonia;
 - Clarity; and
 - E. coli

85 The other 52 sites on tributaries have the same suite of indicators with the exception of chlorophyll a. In general, the spatial coverage of monitoring sites and data availability has not been a constraint to describing current state and trends or to the catchment modelling carried out as part of the Healthy Rivers process. There are representative monitoring sites across the four river FMUs, with 21 sites in the Upper Waikato FMU, 10 in Central Waikato, 16 in Waipā and 17 in the Lower Waikato FMU.

6.3.2 Shallow lakes

86 Eighteen shallow lakes are monitored by the WRC, and Hamilton CC monitors water quality in Lake Rotoroa (Hamilton Lake). The following attributes are routinely monitored by the WRC:

- TN;
- TP;
- Chlorophyll a; and
- Clarity

87 E. coli levels are not routinely measured in WRC's lake monitoring network.

6.3.3 Groundwater

88 Waikato Regional Council has a regional groundwater monitoring network of over 110 bores and uses data from an additional 80 community sites, many of which are within the Waipā and Waikato River catchments. Groundwater quality samples are taken for micro-organisms, nitrate-nitrogen and pesticides.

6.3.4 Updating the Monitoring Network

89 In response to changing demands through planning processes, sub-catchment delineation, swimability monitoring and attributes and monitoring methods set out in the NPS-FM, WRC is reviewing and updating its monitoring programme and changing a number of monitoring sites.

6.4 Current State of the Waikato and Waipā River Catchments

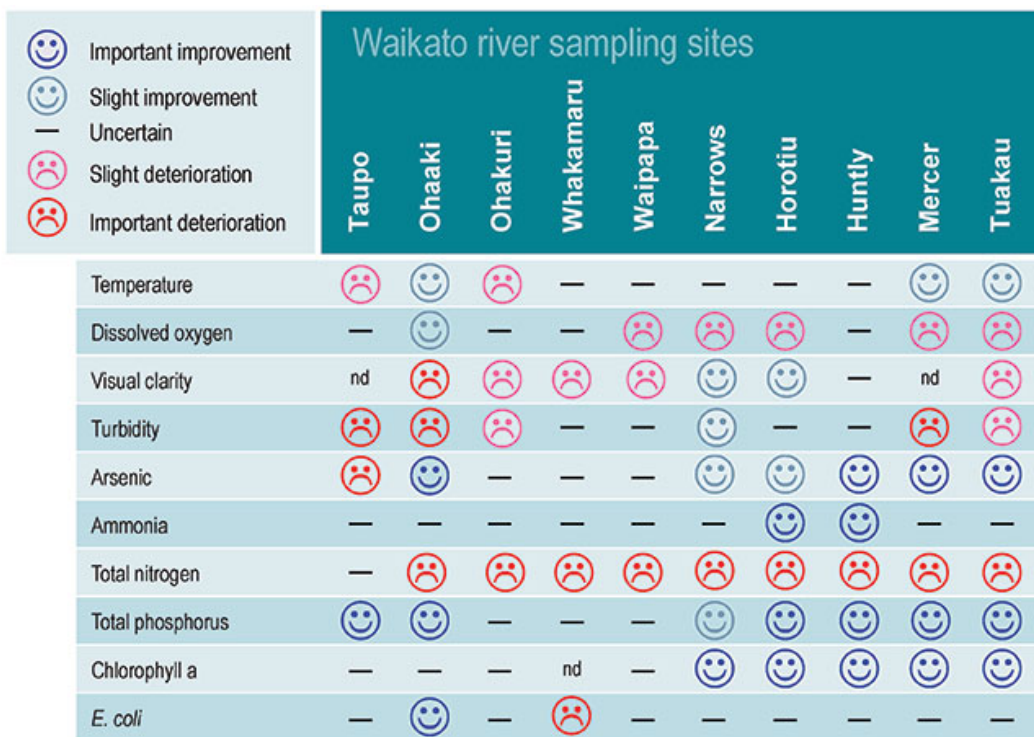
90 Water quality varies systematically across the Waikato and Waipā River catchments. In general terms, water quality is good in the main stem of the upper Waikato River. Water quality is poor in the Waipā River, lower Waikato River, many low-land tributaries and the shallow lakes. Trend data generally show that water quality is declining.

91 Point source inputs of pollutants have been reduced significantly since the 1970s but continue to degrade water quality in a few locations.

92 Nitrogen levels in both the Waipā and Waikato rivers have been slowly but steadily rising over the last 20 years. N in groundwater can take many decades to emerge into surface water, and as a result, it is likely N levels will continue to increase over time. Sediment levels in the lower reaches of both rivers are high and have increased over the past 20 years. Microbial contaminant levels are low in the main channel of the Upper Waikato River, but high in the tributaries. Microbial contaminant levels are high

in the Waipā, and moderate from below Karāpiro to the mouth of the Waikato River. From 2012 to 2017, 85% of Waipā River and 86% of lower Waikato River water samples were unsatisfactory for swimming (based on bacteria and sediment levels for the five sites on each stretch).

- 93 Table 1 shows the changes in several water quality measures in the ten monitoring sites on the Waikato River over the years between 1993 and 2017. Overall, 19% of water quality measures improved at individual sites, and 16% deteriorated.
- 94 The records of temperature and DO have shown small changes.
- 95 Trends show an improvement in TP and chlorophyll a overall, with less algae in the river, particularly its lower reaches. But turbidity has shown some deterioration. Levels of TN increased at several sites along the river, probably as a result of land use changes over recent decades. The overall rate of increase in TN over the period measured is about 1-2% per year.



nd = no data Flow-adjusted data, n ≤ 300 LOWESS span 30% Seasonal Kendall slope and test Significance: p < 5%
 Note: visual clarity, turbidity and arsenic are for the period since 1995, and E. coli is for the period since 1998.

- 96 Table 1: Water quality trends in the Waikato River between 1993 and 2017 (based on methods from WRC’s Technical Report 2013/20.)
- 97 Most lakes in the catchments breach the NPS-FM national bottom lines for TN, TP, and chlorophyll a, and significant improvement is needed to meet these bottom lines. E. coli levels in the lakes are not currently monitored. The best water quality can be found in two of the dune lakes, and the worst in the riverine lakes, such as Lake Waikare.
- 98 There are 60 long-term groundwater monitoring sites in the PC1 area. Current status in respect to drinking water guideline exceedances and related medians are set out in the table below. A total of 21.67% exceeded the guidelines, predominantly for nitrate. Of the nitrate monitoring sites there were equal numbers of increasing and decreasing concentrations (about a third each).

Determinand	% Exceedance	Median (g m ⁻³)
NO ₃ -N	13.33	5.65
As	5	0.0037
Mn	3.33	0.0041

- 99 Ground water quality data for 74 sub-catchments in the Waikato and Waipā River catchments were sourced from WRC and the National Ground Water Monitoring programme. The fundamental data set for the catchments comprise ~4,840 samples for 83 analytical parameters collected at 531 wells. Parameters for environmental indicators representing total dissolved solids (electrical conductivity), aquifer redox status (iron, manganese) microbiological indicators (*E.coli*) and nutrients (dissolved reactive phosphorus, nitrogen species) were used in the analysis of state and trends in ground water chemistry. Trend analysis was run on the entire record of each well. The table below summarises the state and trends in the environmental indicators.⁴

Summary of groundwater chemistry in sub-catchments in the Waikato and Waipā catchments

Chemical parameter, trends and information on data sources	Upper Waikato: (number of sub-catchments in which observation occurs)	Waipa: (number of sub-catchments in which observation occurs)	Lower and middle Waikato: (number of sub-catchments in which observation occurs)
Median N measured greater than MAV ¹⁷ for nitrate-nitrogen	6	2	10
Median N between ½ of MAV and MAV for nitrate-nitrogen	7	3	4
N increasing > 0.1 mg/l per decade	0	2	5
Electrical Conductivity increasing	2	0	6
<i>E. coli</i> cfu > than MAV	1	3	11
Mn > MAV	6	4	3
Fe > guideline	12	3	9
Sub-catchments with few wells/poor data	4	13	17
Sub-catchments with no ground water chemistry data	7	7	8
Number of sub-catchments in area	21	31	29

⁴ This groundwater quality summary description was also previously provided via the Technical Leaders Group (Tony Petch, doc 3483783).

B1. Overall Direction for PC1 Analysis and Recommendations

- 100 Plan Change 1 was developed by a CSG. The development process included the exploration of and agreeing on a set of outcomes, along with detailed planning provisions for how to achieve those outcomes.
- 101 Those outcomes fundamentally relate to the achievement of the Vision and Strategy, and the timeframe within which this will occur. The CSG considered a significant range of technical input, in terms of environmental, economic, cultural and social implications. The CSG recognised that there were few ‘answers’ to the water quality issue, and certainly no answers that would be universally accepted.
- 102 The CSG, in addition to setting these outcomes and the 80-year timeframe to get there, established what could broadly be described as a “straight line” path from the present water quality state to those 80-year outcomes. It set this out at an objective and policy level, by acknowledging the need for actions to begin straightaway, along with an explicit set of short-term, or 10-year, targets to set that immediate direction of travel. Essentially, continuing existing practices will lead to further water quality decline – so continuing with the status quo is not a viable option.
- 103 There were some other principles underpinning the CSG outcomes, which can be summarised as follows:
- every individual, community, industry sector and business will need to do their part toward achieving the water quality outcomes
 - we cannot achieve the desired water quality in the Waikato and Waipā rivers within the 80-year time frame with current technologies and practices within an economically and socially acceptable framework
 - PC1 is just the first step in the process and further plan changes will further constrain current activities
 - the highest emitters of contaminants should reduce the most
 - non-regulatory methods and good farming practices from the farming community will not be sufficient on their own to meet the targets.
- 104 A significant number of the over 1000 submissions are from individual farmers and their representative groups. There is also a range of submissions from local authorities and industry, a range of submissions from individuals, submissions from tangata whenua and submissions from what could broadly be described as environmentally oriented groups or organisations. The submissions from individual farmers, foresters or farming interest groups raise a number of common themes. Many of the submitters lodged the same or similar submission points to almost all provisions in PC1 and all seek fundamental changes, in part to the outcomes to be delivered by PC1, but in the main to the mechanisms in PC1 by which these outcomes are to be achieved.
- 105 Due to the very significant number of these submissions and the way in which they are lodged on PC1 as a whole, or to specific objectives, policies, rules or appendices, the Officers have broadly summarised the submissions and provide comment in terms of an overall direction for PC1, rather than addressing individual submissions point by point. Given the number of submissions, and the fine-grained detail in the positioning of many submitters, addressing the bigger picture issues once and at the beginning of this Report will hopefully provide some clarity and significantly reduce repetition.

106 This is done without diminishing the importance of every individual submission and the rights and opportunity of every submitter to advance their particular solution to the Hearing Panel. Submitters dealt with in this section, or other sections with a large number of submitters, will generally not be named, other than by way of example, and the Officers sincerely apologise to any party that is not identified by name and feels they have been omitted or mis-represented.

B1.1. Submissions on the Plan as a Whole

107 In order to get an overall impression of the key issues for many submitters, and before responding to some of these issues, the very large number of submissions to the whole of PC1 provides a useful overview. This section is not intended to respond to individual submission points, but rather build a picture of, and respond to, the more general issues raised.

108 Many submissions to PC1 as a whole oppose PC1 and request that it be withdrawn. There are a range of reasons cited for this, including:

- PC1 should not be a one size fits all approach
- More clarity is needed on the impact of sheep and beef on water quality
- Concerns about the cost of implementing PC1 and the impact it will have on businesses
- All land should be treated the same
- PC1 does not give effect to the NPS-FM, RMA or the Vision and Strategy
- PC1 does not take into account topography climate, soil structure, farming practices and systems
- Best Management Practices, Best Practicable Option (BPO) or other methods should be adopted instead
- A Land Use Capability approach to managing N losses should be used
- More consultation and education on water quality and alternatives to PC1 is required
- There is no certainty after the first (PC1) stage
- A cost/benefit analysis is needed to determine the actual effects

109 Some submissions request a sub-catchment approach be implemented in PC1 and seek more certainty around what contaminants in specific sub-catchments are causing water quality decline and the actual effects of the contaminants. Another general theme is a request for PC1 to be implemented on a farm by farm basis, with a focus on farms that are overstocking or operating at a high discharge level.

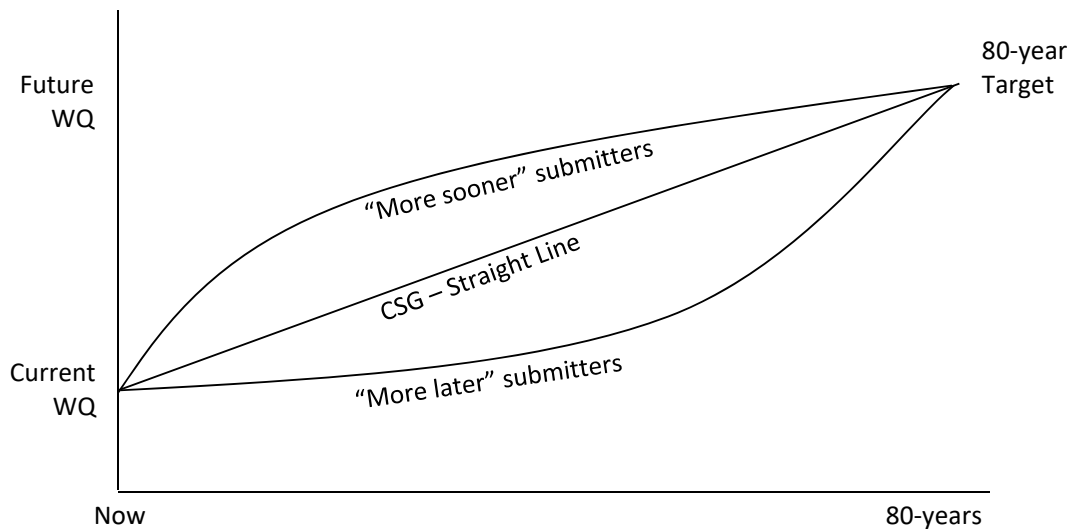
110 The NRP and the 75th percentile, FEPs, stock exclusion and the land use change provisions are largely opposed. Many submitters request the NRP is removed from PC1 and the FEPs, stock exclusion and land use change provisions are made less restrictive. Also, the use of Overseer as a regulatory tool in PC1 is largely opposed.

111 Tangata Whenua suggest the contribution that relatively less-developed Māori Land has made in offsetting the discharge of contaminants from other developed land should be recognised. Other submitters suggest PC1 should recognise those that have implemented environmental mitigations in the past.

112 The cost of implementing PC1 is of concern to many submitters and many suggest funding is made available to help submitters implement PC1. Increased consultation and education on PC1 is also suggested.

B1.2. The 80 Year Targets and Timeframes

- 113 Many hundreds, if not thousands, of submission points relate to the general concept of what PC1 is trying to achieve, whether this is appropriate, realistic, or achievable. Similarly, a great many submission points relate to the changes required to achieve those outcomes.
- 114 Many submission points, particularly from agricultural interests, note the high costs for the farming community to reduce their contaminant losses, and in particular raise the consequences of limiting options for individual farmers or foresters to vary their activities on a year-to-year basis, and more fundamentally through development and intensification of farming activities. The submission points are many and varied, and raise issues as diverse as individual financial situations, fairness and equity, succession planning, social cohesion and risks of mental health issues in the rural community.
- 115 Many submission points take issue with the 10-year and 80-year timeframes. These include some submissions that suggest the 80-year timeframe should be extended, and many more that seek the amount of change within the initial 10-year period be reduced, either through changing expectations or extending timeframes.
- 116 On the other hand, there are a number of submissions from a range of iwi groups, individuals and organisations that support the 80-year targets. Some submissions suggest additional criteria and consider that the long-term targets should be achieved sooner. More commonly, some submitters consider that more should be achieved within the 10-year planning interval of PC1.
- 117 In some ways a graph helps to explain this overall diversity of views. The diagram below shows time on the horizontal axis and water quality on the vertical axis. While it is by no means agreed, WRC officers have accepted that there is a common start point of the present state, and a long-term target. It is the officers' understanding that the CSG identified a more or less direct straight-line improvement path. Some submitters, identified by the upper line, consider that more should be done initially, and possibly that the long-term target should be achieved earlier. The majority of submitters consider that something akin to the lower line should be progressed, in order to minimise short-term social and economic disruption and enable both planning by rural communities and individuals, and the gathering of more information and science.



- 118 As with many things, there is a full spectrum of views, and a wide spectrum of interests and perspectives. Within the farming community, there is also a significant range of start points for individual farmers. Some farmers have existing relatively intensive farming operations, others low intensity. Some may have changed intensity recently or will be planning to change intensity in the near term. Others may have invested significantly in infrastructure, technologies education and farming practices that significantly reduce their loss of contaminants, while others may not be in that position or may be unaware of options and opportunities to do so. This diversity of views and individual circumstances are fully evident in the submissions received.
- 119 In many ways it was in response to this diversity of views and positions that the CSG was established to work towards giving effect to the Vision and Strategy through the PC1 process. Rightly or wrongly, the CSG established how the planning framework should give effect to the Vision and Strategy and the timeframe is to do so.
- 120 Changing the WRP to give effect to the Vision and Strategy is as a legal requirement, rather than an option. The legislation makes this clear⁵, and at the outset the Officers’ recommend the rejection of submissions that either suggest that the Vision and Strategy does not need to be achieved or suggest amendments that would not give effect to the Vision and Strategy.
- 121 The Vision and Strategy states that the Vision is:
Our vision is for a future where a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come.
- 122 This Vision is supported by a number of Objectives and Strategies. In the Officers’ view, some of these are particularly relevant, and directive, about what PC1 needs to achieve. Several others relate to processes and activities that are outside of the RMA framework or the Council’s functions. Without

⁵ For example s13(4) of the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010 states:
 Every local authority must—
 (a) review its regional or district plan to see whether it gives effect to the vision and strategy; and
 (b) if the regional or district plan does not give effect to the vision and strategy, initiate an amendment to it to ensure that it does so, using the process in Schedule 1 of the RMA.

reducing the emphasis on any other part of the Vision and Strategy, the following of the Objectives are particularly pertinent to PC1:

- g. The recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within its catchments on the health and wellbeing of the Waikato River.*
- h. The recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities.*
- k. The restoration of water quality within the Waikato River so that it is safe for people to swim in and take food from over its entire length.*

123 Officers are also of the view that the CSG made informed and deliberate choices in its establishment of the 80-year and 10-year targets, and the associated timeframes. Objective K of the Vision and Strategy is a strong indicator of what some of the 80-year targets should enable. Those targets and timeframes were deliberately chosen in order to achieve the Vision and Strategy in the longer term, and specifically identify the need for an immediate halt to activities that may cause additional decline in water quality (which is informed particularly by Vision and Strategy Objectives G and H) and immediate steps toward those long-term goals. The 80-year timeframe was chosen due to the significant change that would be required to achieve those Objectives and to enable individuals and communities to change and adjust in a manageable way.

124 Neither the Officers or submitters (or CSG at the time) consider that the implementation of PC1, and more particularly the achievement of the Vision and Strategy, will be able to be done without significant cost. If there was a way to achieve it without cost this would certainly have been identified through the CSG process. That cost has been attempted to be identified through the science and economic modelling, in order to inform the decision making. That modelling identifies that the costs are significant. It also identifies that they will fall more strongly on some individuals or communities than others.

125 Overall, it is the Officers' view that the Vision and Strategy must be given effect to, and the CSG position of what that entails through the 10-year and 80-year targets are broadly appropriate. This is particularly in the light of the Objectives G, H and K of the Vision and Strategy, that provide specific and incontrovertible direction on what needs to occur. Officers are also of the view that the process identified by the CSG, effectively a straight line towards achieving those Objectives, thereby setting out a 10-year and 80-year timeframe, is appropriate.

126 The vast majority of submitters who have opposed the direction set by PC1 have not identified another mechanism by which the Vision and Strategy and NPS-FM could be achieved. Officers have yet to see evidence that demonstrates with confidence that in the absence of PC1 the Vision and Strategy will be achieved and that there will be no further decline in water quality, as required by the Vision and Strategy and the NPS-FM, but would welcome that at the hearing.

B1.3. Preliminary Views on Key PC1 Issues

127 The following three sections are included to outline the Officers' initial thinking, based on analysis of the submissions and PC1 documents. They are included here, as they are usually inextricably linked to views of submitters on PC1 as a whole. These positions are likely to evolve over the course of the hearing, particularly in response to any direction from the Hearing Panel following the Topic A hearings.

B1.3.1. Management of Nitrogen

128 Plan Change 1, at a very basic level, manages N, P, sediment and microbial contaminants, collectively known as the four contaminants. In the rule framework, N is subject to particular scrutiny, by way of a "nitrogen reference point" or NRP. FEPs are the intended mechanism for managing all four contaminants, with particular emphasis on farming activities staying within their NRP, or reducing their N losses if they are one of the more contaminating farming activities in each FMU.

129 There are thousands of submission points, generally opposing the NRP, the focus on N, and other measures that explicitly identify N in a manner that submitters consider is out of context with the other three contaminants. There are a range of reasons for this opposition including:

- the cost of administering such a system, particularly in terms of professional advice to run the Overseer model or similar, with greater relative cost likely to fall on those who have lower N losses or more complex farming systems;
- the effect on property values;
- the inflexibility of a set cap on N losses, particularly for dryland and low discharging farming activities;
- a view that in some areas (sub catchments) water quality is good and has capacity to absorb more contaminants;
- perceptions of inequity, with a cap based on existing N losses, commonly referred to as "grandparenting";
- an inability to intensify farming activities either where this is planned, underway, or may be a desire for the future; and
- the limitations on the main available methods and models (Overseer) to accurately represent the N losses of a specific farm.

130 On the other hand, there are a range of submitters who explicitly support the controls on N, and some even suggest a more rigorous control and reduction regime, particularly in areas where there are greater N losses. Some submitters identify that the ability of the Overseer model to quantify on-farm N losses adds rigour and certainty to the PC1 regime.

131 At the outset, Officers wish to make it clear that N is not considered to be any more important than the other three contaminants. N, and in particular increased N losses, can be a good indicator of farming intensity. However, it would appear clear from the reporting on water quality in the Waikato and Waipā catchments that sediment and *E. coli* are significant issues and clearly affect the river system in terms of both ecology and recreational use, and on balance the River system would appear to be more sensitive to increases or reductions in P load⁶. For example, the Section 32 Report states: *Based on the above evidence the TLG concluded that phosphorus is more important than nitrogen in controlling annual median phytoplankton biomass in the Waikato River, but that nitrogen is likely to limit biomass at times and at places during summer and autumn. While efforts to control*

⁶ See Current State data and Page 66 of the s32 Report

phytoplankton biomass should focus on phosphorus, the evidence suggests that nitrogen should also be controlled.

- 132 Officers broadly agree with a number of the submitters who consider that the PC1 regime with respect to N is costly, inflexible and potentially has a range of unintended consequences. Officers are likely to recommend, in subsequent sections of this Report that are yet to be published, that the following adjustments to the management of N are made:
- Increase clarity that no individual can expect to cause an increase in losses or any of the four contaminants, and that the direction of travel is improvement;
 - The NRP is maintained as a tool, but for some farming systems it will need to be prepared on a one-off basis and subsequently only on demand;
 - Reducing the need to use Overseer and NRPs for activities that are currently not well represented in the Overseer algorithms, including horses, various less common livestock, and complex farming systems such as commercial vegetable growing;
 - Maintaining the need for, and possibly increasing, reductions in losses from properties with very high levels of N loss at the time of notification of PC1 and signalling expectations of reductions from those with above-average losses; and
 - Greater reliance on controls on farming activities through FEPs, particularly by requiring adherence to Good Farming Practices (GFP), demonstration that existing farming activities are not intensifying, and continued specific limitations on significant land use intensification.
- 133 The analysis, reasoning and detailed recommendations will be set out fully in Section C1 of the Report, which is yet to be published.
- 134 Two particular elements are worthy of additional comment at this early stage. The first relates to moving towards an explicit requirement for the adoption of GFP, formerly known as Good Management Practices or GMP⁷. As notified, PC1 relies on FEPs to identify specific mitigation actions and timeframes within which they need to occur. Early testing of this framework with some resource consent applications has identified some shortcomings, and at the same time nationally, and in other regions, there is an increased emphasis on the GFP framework. In the Officers' view this GFP framework has a number of advantages, at a philosophical level in setting outcomes with continuous improvement, in terms of national research and consistency, and in terms of ongoing flexibility. It is only on the basis of widespread adoption of GFP, with positive changes to ensure public confidence in the farming improvements that lead to a reduction in the discharges of all four contaminants, that a reduction of the emphasis on N can be suggested. The second relates to Certified Industry Schemes. As notified, PC1 provides for farming to be a permitted activity, provided the farming activity is "registered to a Certified Industry Scheme". Schedule 2 sets out the criteria for Certified Industry Schemes. Several submitters have questioned the legality of the Certified Industry Scheme provisions, others have sought a 'level playing field' for all farming activities, and others have questioned how WRC will provide oversight and enforcement. Officers note the management efficiencies of farming sector involvement and grouping multiple farming activities under a single management framework, but question whether the Certified Industry Scheme framework provides for improved practices and reduction in discharges, and whether the permitted activity framework meets the requirements of section 70 of the RMA.

⁷ For more information, please see: <https://www.beehive.govt.nz/release/good-farming-practice-plan-step-forward-water-quality>

B1.3.2. Sub-catchments vs Whole of Catchment View

- 135 A common theme of some hundreds of submissions is the view that PC1 should place more emphasis on sub-catchment planning. Without wanting to overly generalise the content of the submissions, the submitters are often from upper parts of the catchment, parts of the catchment where water quality is currently good, hill country areas with a lower stocking rate, or areas where a different kind of farming activity typically occurs, such as forestry or commercial vegetable production.
- 136 Commonly, these submissions highlight the current good water quality in the relevant sub-catchment, often to the extent that the 10-year or 80-year targets are already met, or highlight that the more pressing concern in the relevant sub-catchment is a contaminant other than N. For example, in much of the Waipā catchment, sediment, P and *E. coli* would appear to be more pressing concerns than N management. In some areas of the Upper Waikato catchment the 80-year water quality targets equate with current water quality. The modelling and limit and target setting purposefully used the available monitoring data for the sub-catchments, inherently recognising the contribution of sub-catchments to overall water quality in the river's main stems.
- 137 In these circumstances, the arguments for a sub-catchment approach are compelling. In the Officers' view, part of this emphasis on sub-catchment planning has arisen due to the way that the modelling and targets have been generated, which is at a sub-catchment level. While some of the main-stem monitoring sites equate with a monitoring site that would represent an FMU, or the catchment as a whole, PC1 does not seem to draw attention to this "bigger picture".
- 138 Plan Change 1 has a range of objective, policy and implementation method support for sub-catchment planning, which is generally referred to as non-regulatory methods, particularly to establish mitigation measures in those parts of the catchment or sub-catchment where they would be most useful. Constructed wetlands are a good example, where every individual farm is unlikely to have the best location for a constructed wetland or able to install one efficiently, whereas by pooling resources and choosing the best location a much more effective and less costly solution may result.
- 139 The WRC has been, and will continue to, undertake non-regulatory programmes targeted at sub-catchments. This non-regulatory approach typically involves additional research on the particular issues in that sub-catchment, and working with groups of farmers to facilitate improved on-farm practices, and identify opportunities for joint mitigation efforts.
- 140 Submitters have generally sought to extend the sub-catchment framework to a more permissive regulatory approach in PC1, or a means to 'share' or offset N losses. In some submissions this is well specified in terms of policy and methods, while in the vast majority it is a just a conceptual approach.
- 141 Officers agree that sub-catchment planning could be a very useful tool, but it is addressed in a wide variety of ways in the submissions, with submitters seeking a range of approaches that may require further plan changes, resource consents that apply to a wide area or non-regulatory methods. Refining these options, and establishing some common themes may help with certainty for all parties.
- 142 However, officers are concerned that shifting the regulatory focus to sub-catchments is not well supported by the higher-level planning documents – the Vision and Strategy and the NPS-FM. The Vision and Strategy has a particular focus on cumulative effects and the avoidance of any further degradation in the river system. In the Officers' view this includes local degradation, as well as for the entire river system. The NPS-FM, as amended in 2017, includes increased emphasis on ki uta ki tai (from the mountains to the sea). This philosophy recognises that a whole catchment approach is needed.

143 While Officers wish to keep an open mind at this time, the river system as a whole, as well as some sub-catchments, are not able to reach the 10-year or 80-year water quality targets without ceasing increases in contaminant losses throughout the whole catchment, and positive reductions in contaminant losses in many sub-catchments. For some sub-catchments there is also a 'load to come' in that recent losses to groundwater are only just starting to show in monitoring records. The Officers' preliminary view is that focusing on sub-catchments could have real benefits in terms of implementing local solutions and community commitment, but risks not having an 'eye on the prize', which is the health and restoration of the whole river system.

B1.3.3. Other Frameworks - Land Use Capability and "Enhanced Mitigation"

144 Over 75 submitters seek amendments to PC1 in pursuit of a new approach to managing diffuse discharges and water quality, largely described as the "land use capability approach". These submissions typically seek that PC1 provides for a nutrient allocation regime that aligns with land use capability (also referred to in submissions as "land use suitability" and "natural capital of soils") rather than being tied to property-based limit based on historical land use (the PC1 NRP framework)⁸. In addition to a land use capability approach to managing N discharges, some submitters also request a permitted activity for low leaching farm systems of up to 20kg/N/ha/year.

145 A considerable number of submitters suggest that the PC1 framework is unfair for low emitters, or those with considerable development potential such as forestry companies, and suggest a framework based on some form of 'enhanced mitigation' would be more appropriate. This 'enhanced mitigation' framework is variously labelled by submitters as 'BPO', 'best management practice', 'most practicable option', and other similar terms. For example, around 15 submitters sought amendments to remove the requirement to adhere to an NRP and rely instead on a Best Management Practice approach. The general theme is that intensification should be enabled, provided that the farming system is operated in a way that minimises the losses of contaminants, particularly N. Some submitters have suggested that concepts such as BPO are already well known within the RMA framework, particularly for point source discharges and that that concept could be readily transferred to farming systems.

146 In the Officers' experience, it is difficult to reach agreement within farming sectors (and between different sectors) as to what these kinds of enhanced mitigation frameworks entail and what reductions and contaminant losses can realistically be achieved. The GFP or GMP framework has been under development for some years, and still suffers from a considerable lack of specificity, and is subject to ongoing adaptation and improvement as farming sectors, central and local government and research institutes invest more in it. Other options, such as BPO, best management practice, and most practicable option do not appear to have any general agreement as to what they entail or how they would be applied, other than that some are likely to be more rigorous than GFP.

147 A common theme from all of these submissions is that the proposed nutrient management regime in PC1 (typically described by submitters as "grandparenting") is inherently unfair for those landowners with low intensity farming systems or those who have already undertaken considerable steps to reduce N losses.

148 While some of the alternative approaches put forward by submitters may have some merit and may result in a redistribution of contaminant losses across different land uses, there is very limited information provided to demonstrate whether or not the alternative approaches would result in freshwater objectives and water quality outcomes being met for the Waikato and Waipā catchments.

⁸ For example, G Gleeson submits that nitrogen loss rates need to be computed for each farm considering LUC class of land, soil type, rainfall, and proximity to a waterway. He describes limits based on live-weight per hectare in detail, and similar suggestions are made by a number of other submitters, albeit generally with less detail.

This was a particular issue for the CSG process, and Officers understand that there was disagreement within the CSG group as to the best approach. Officers are also aware that central Government agencies are grappling with this issue and there may be some Government direction on this form of allocation in the future. At this time, Officers do not consider that there is adequate information to make wholesale changes to the PC1 N loss framework. This applies equally to the introduction of a land use capability framework, or a framework that enables large-scale intensification, with some form of 'enhanced mitigation' applied to the intensifying land, or all land in the catchment.

- 149 The main reason for this is that the overall level of N loss from farming activities within the entire catchment needs to decrease. Allowing even minor increases in some areas, for whatever reason, inevitably means that reductions in losses in other areas need to be even greater. This 'robbing Peter to pay Paul' approach was considered by Council as part of the Lake Taupō Variation 5 process and was largely rejected, other than in a minor respect for undeveloped and forested land where Rules 3.10.5.4 and 3.10.5.5 provided a limited development allowance of 2 kg N/ha/year above relevant deemed background leaching rates.

B2. Values and Uses

B2.1. Introduction

- 150 This section of the PC1 S42A report relates to Section 3.11.1 Values and Uses for the Waikato and Waipā Rivers. This section discusses the values and uses only, analysis of submissions relating to the relevant freshwater objectives and attributes is outlined elsewhere in the S42A report.
- 151 The NPS-FM requires that freshwater objectives are identified for the national values and any other values. Specifically, Policy CA2 sets out that for each FMU, freshwater objectives are to be established considering all national values and how they apply to the local and regional context. Values are to be set for each FMU and must include all compulsory values listed in Appendix 1 of the NPS-FM and any other national value or any other value that the Council considers appropriate.
- 152 As outlined in Part B5 of this Report, PC1 identifies eight FMUs, four “river” FMUs and four “lake” FMUs, and the values and uses identified in Section 3.11.1 apply to all units. The values and uses were developed by the CSG. The CSG considered values and uses from a range of different people, groups and perspectives, including taking feedback from a large stakeholder forum, presentations, field trips, community engagement, feedback from their sectors, feedback from river iwi staff, technical reports on iwi cultural values, river iwi environmental management plans and other relevant documents. Following an intensive consultation and feedback process, the CSG recommended a comprehensive list of values and uses to the HRWO Committee for endorsement.

B2.2. Submissions Addressed

- 153 A full list of the submitters and submission points addressed in this section is included in Appendix B2.

B2.3. Provisions

- 154 Section 3.11.1 of PC1 describes the values and uses of the Waikato and Waipā Rivers in terms of Te Mana o te Wai (integrated and holistic well-being of a waterbody) which is represented by Mana Atua and Mana Tangata.
- 155 Mana Atua is the intrinsic values of water including the mauri (the principle of life force), wairua (the principle of spiritual dimension) and inherent mana (the principle of prestige, authority) of a waterbody and its ecosystems. Mana Atua values described in PC1 are Ancestry and History, Ecosystem Health and Natural Form and Character.
- 156 Mana Tangata refers to the value of water arising from its use by people for social, economic and cultural purposes. Mana Tangata values described in PC1 are Wai Tapu; Geothermal; Mahinga Kai; Human Health for Recreation; Transport and Tauranga Waka; Primary Production; Water Supply; Commercial, Municipal and Industrial Use; Electricity Generation and Mitigating Flood Hazards.

- 157 The Vision and Strategy identifies a strong connection between land and water and this is demonstrated through the values and uses. The diagram included in Section 3.11.1 highlights the relationship between the different values. The interconnectedness of land and water and its importance to community and the identity of those within the region is central to the values identified.
- 158 Variation 1 to PC1 proposes some minor amendments to Section 3.11.1. This includes:
- Extending the application of values to wetlands and springs;
 - Broadening the application of values to River Iwi and other iwi;
 - Inclusion of whanaungatanga in the description of identity and place; and
 - Expanding the Wai Tapu value to include Wai Kino (harmful waters).

B2.4. Submissions and Analysis

- 159 For the purposes of this assessment, the submissions have been analysed in the following topics:
- Common submissions across sections;
 - Vision and Strategy;
 - Te Mana o te Wai;
 - Mana Atua Values; and
 - Mana Tangata Values.

B2.4.1. Common submissions across sections

Alignment with NPS-FM

- 160 One main theme of submissions on Section 3.11.1 is how PC1 gives effect to the NPS-FM. As discussed above, the NPS-FM requires values to be established for each FMU which must include the compulsory values.
- 161 Submitters raise the following issues regarding how PC1 gives effect to the NPS-FM:
- PC1 does not provide a clear link between values, objectives and attributes;
 - Values are not identified for each FMU; and
 - There are inconsistencies in the wording of values between NPS-FM and PC1.
- 162 Beef and Lamb and Wairakei Pastoral Ltd seek that the link between the values and uses, freshwater objectives and attributes is clarified. Beef and Lamb state that the values and uses in Section 3.11.1 are intended to inform the objectives and policies but there is no express link between the values and the provisions of PC1. Beef and Lamb seek that the values be incorporated as objectives and PC1 should be amended to describe the link between the values and the subsequent sections of PC1.
- 163 Wairakei Pastoral Ltd seek an explanation or advice note in Section 3.11.1 to explain the relationship between the particular values and the freshwater objectives. No specific wording has been proposed but Wairakei Pastoral Ltd state the explanatory text should be similar to Chapter 3.3 of the WRP which explains the links between methods and policies.
- 164 Watercare seek clarification that the process prescribed in the NPS-FM for establishing values has been followed and if the values and uses included in PC1 are those required under the NPS-FM.

165 At the outset, Officers agree that the NPS-FM sets out a process to be followed. What is less clear is what components need to be included in a regional plan. The Officers note that some elements of the NPS-FM process have been included in the Section 32 Report, and Officers are not concerned by that. However, Officers agree that further clarity on how PC1 gives effect to the NPS-FM would be useful in PC1. Officers recommend that the introductory statement of Section 3.11.1 is amended to direct plan users to the specific sections of PC1 which give effect to the NPS-FM. It is also recommended to insert reference to the Vision and Strategy to specify that in some instances the approach adopted in PC1 is more stringent than required under the NPS-FM, to adhere to the Vision and Strategy, which has higher statutory weighting. The following amendments are proposed:

~~*The National Policy Statement – Freshwater Management Policy CA2 requires certain steps to be taken in the process of setting limits⁹. These include establishing the values⁹ that are relevant in a FMU⁹, identifying the attributes⁹ that correspond to those values⁹, and setting objectives based on desired attribute states⁹. This section describes values and uses for the Waikato and Waipā Rivers, to provide background to the objectives and limits⁹ in later sections.*~~

This section describes the values and uses for the Waikato and Waipā Rivers. The values and uses reflect the Vision and Strategy for the Waikato River. The values and uses set out below apply to all FMU's unless explicitly stated, and provide background to the freshwater objectives, and the attributes and attribute states outlined in Table 3.11-1.

166 DoC state that to give effect to the NPS-FM, values and uses need to be identified for each FMU, to provide appropriate guidance for setting freshwater objectives. Officers agree with the submitters' interpretation of the NPS-FM. The proposed wording of PC1 does not make it clear where the values and uses apply to which FMU. As the Officers understand it, the values and uses were developed by the CSG through consultation considering the entire catchment and therefore apply to all FMU's. However, there are some values which only apply to certain areas of the catchment, for example the geothermal value only applies where there are geothermal areas. To provide clarity to Plan users, Officers recommend an explanatory statement is included in the introduction of Section 3.11.1 as shown above.

167 In a more general sense, Officers consider that there potentially are matters of mis-alignment between the NPS-FM and PC1, particularly in terms of values and uses for each FMU, identification of freshwater objectives, and appropriate attributes. These potential mis-alignment issues may need further exploration through the hearing process.

Waterbodies

168 Plan Change 1 describes the values and uses associated to the Waikato and Waipā Rivers. The description of the values primarily refers to the 'rivers' but also mentions wetlands and their tributaries. Var1 proposes to insert references to wetlands and springs in the Ancestry and History value and in the description of the identity and sense of place.

169 DoC submit on several values and seek that they are amended to include lakes, wetlands and the coastal environment as well as the rivers.⁹ DoC state that greater attention needs to be paid to wetland systems to give effect to the requirements of the RMA. DoC is also concerned with the general lack of focus on the priority of lakes within PC1.

170 Fish and Game seek that the mahinga kai value and the human health for recreation value refer to wetlands and lakes as well as rivers.

⁹ Values and uses: Ancestry and History, Ecosystem Health, Natural Form and Character, Wai Tapu, Mahinga Kai, Human Health for Recreation, Transport and Tauranga Waka.

- 171 In relation to Var1 and the insertion of ‘wetlands and springs’ into some sections, Te Whakakitenga o Waikato Incorporated (Waikato-Tainui) and Federated Farmers oppose this and seek the deletion of this addition. Tūwharetoa Māori Trust Board and Waikato and Waipā River Iwi support this insertion and seek that it is retained.
- 172 Wairakei Pastoral Ltd oppose references to springs as the term is not defined and it creates uncertainty. Wairakei Pastoral Ltd seek that the term is either deleted or PC1 is amended to include an appropriate hydrological definition of springs.
- 173 Officers consider that to provide clarity, lakes and wetlands should be referred to alongside rivers where relevant. Currently, the proposed wording only refers to rivers or ‘the rivers’ but as the values apply to the whole catchment (all FMUs), amendments are recommended to specifically address the FMUs containing lakes and wetlands. This ensures PC1 clearly gives effect to the NPS-FM. In relation to “springs”, Officers note that the Oxford dictionary definition of spring is: *A place where water or oil wells up from an underground source, or the basin or flow formed in such a way.* This would appear to be consistent with common usage of the term, and hence, Officers do not consider a definition in PC1 is necessary.

Swimmability

- 174 Several submitters raise concerns regarding the outcomes sought and water quality standards set for swimmability in PC1. Swimming is a key recreational use outlined in the ‘human health for recreation’ value. Submitters seek that the values are amended to avoid the Escherichia coli (*E.coli*) water quality target having to be met at all times,¹⁰ swimmability is defined¹¹ and the water quality standard is reduced to a level that is achievable.¹² The issue of swimmability and the water quality standards set in PC1 are addressed more thoroughly in Section B5 of this Report. Based on the submissions received, Officers consider that no amendments to Section 3.11.1, specifically the human health for recreation value, are necessary. PC1 describes that rivers should be a safe place to swim which is consistent with the NPS-FM and more importantly, the Vision and Strategy.

Values and uses structure

- 175 Watercare submit on status of the values and the manner in which they are described. Watercare state that it is unclear if the values are policies or methods and how they are to be applied when assessing resource consent applications. Watercare also state that the tables used to present the values are unclear and that for each value there are three headings that use inconsistent language.
- 176 In response to the application of the values and uses in the resource consent process, Officers note that they are neither policies or methods. As the values are used to set the fundamental direction of PC1 through the freshwater objectives, attributes and attribute states, the values will be considered through the objectives, policies and rules that apply when assessing a resource consent application. It may also be appropriate to consider the values as an ‘other matter’ in accordance with Section 104(1)(c) of the RMA. While not recommended, an option may be to delete the values and uses from PC1, and record them in the Section 32AA Report.
- 177 The structure of the values listed in Section 3.11.1 does include three headings and a table for each value. Officers agree that the headings create some confusion and have been incorrectly duplicated. The first heading for each value should not be included in the section and Officers recommend that

¹⁰ P and A Buckthought; Federated Farmers; A Noakes

¹¹ M Ballantine, Tuaropaki Trust

¹² I Dorreen and B Nugent

these headings are removed. Each value should include a heading in Te Reo with an English translation and a sub-heading.

- 178 Officers agree that the wording of the values and uses are sometimes inconsistent. That is not uncommon for wording that is developed out of a consultative and collaborative process. As one of the main purposes of setting out the values and uses is to then set freshwater objectives and attribute states, which has been undertaken by the CSG, Officers are hesitant to recommend wholesale changes after the event, particularly when the submissions do not set out clear alternative wording.

Shared responsibilities

- 179 Several submitters comment that PC1 does not reflect fairly the shared responsibilities amongst communities for improving water quality. Such comments include that all landowners are responsible and should be required to take actions and that PC1 fails to meet the Vision and Strategy. Hamilton CC, for example, seeks amendments in several places in Section 3.11.1 to refer to urban communities as well as rural communities. Officers consider that this matter is more appropriately addressed via the policies of PC1, which are discussed in Section C3 of this Report, rather than in the values and uses section, and as such do not recommend any changes to address these submissions.

Iwi references

- 180 Iwi of Hauraki submit on the references to 'other iwi' and seek the deletion of the term as it draws an improper distinction between River Iwi and Iwi of Hauraki. Te Whakakitenga o Waikato Incorporated (Waikato-Tainui) seek the term is retained and state that the term 'river iwi' is used in legislation relating to the co-management of the Waikato and Waipā Rivers. Without further evidence from Iwi of Hauraki, Officers consider that references to 'other iwi' should be retained.

B2.4.2. Vision and Strategy for the Waikato River

- 181 Seventeen submission points are on the Vision and Strategy statement in Section 3.11.1. Of these submissions, six support the statement and seek that it is retained as notified.
- 182 All but one of the remaining submissions support the Vision and Strategy but seek amendments. One submitter opposes the section. All submitters seek amendments to PC1 but none of the requested changes are to the statement in Section 3.11.1, rather they seek wholesale changes to PC1 or amendments to objectives, policies or rules. As the statement in PC1 reflects the Vision and Strategy for the Waikato River and no changes to this statement have been requested, no amendments are recommended. The concerns raised by submitters have been addressed in Section B1 of this Report.

B2.4.3. Te Mana o te Wai

- 183 Six submission points are on the section *Te Mana o te Wai: Mana Atua, Mana Tangata*. Four submission points support this section, including the diagram and seek that it is retained as notified.
- 184 Iwi of Hauraki submit that intergenerational equity and use of tangata whenua ancestral lands are components of Mana Tangata and these values should be expressly included. Iwi of Hauraki propose a new section of the diagram and a Mana Tangata value is included. The proposed value is assessed further below, but recognises the ability for tangata whenua to fully exercise their relationship with ancestral land. As discussed below, it is not recommended to adopt this value. Therefore, it is not recommended to amend the diagram as requested.
- 185 Wairakei Pastoral Ltd raise a concern regarding the use of the term 'springs'. This has been addressed above.

B2.4.4. Mana Atua Values

186 Numerous submissions are on the Mana Atua – Intrinsic Values, seeking specific additions to or deletions from the values and uses identified. The submissions received on each value are assessed below.

Ancestry and history

187 The ancestry and history value identifies the relationship iwi have with the Waikato and Waipā Rivers. Eight submissions are on this value, two submitters support the provisions and seek the value is retained. Of the remaining submissions, three matters are raised where amendments are sought. Submissions on the waterbodies the value applies to and iwi groups referenced have already been addressed.

188 Heritage NZ submit that PC1 does not give effect to Section 6(f) of the RMA as the values described do not include historical heritage, specifically archaeological sites. Heritage NZ state that the Waikato and Waipā Rivers and environs are the location of a significant archaeological resource and that a large range of works could be undertaken in riparian areas as a result of PC1. Heritage NZ seek that an additional sentence is included stating that *“Riparian zones may contain physical evidence, known or as yet undiscovered, of the relationship between iwi and the river.”*

189 Officers consider that the amendment sought by Heritage NZ is not appropriate to include in the Ancestry and History value as it does not align with the existing statements. The statements describing the intrinsic value define intangible matters regarding relationships, identity and spirituality. The suggested amendments from Heritage NZ are focused on physical attributes and protection of them during mitigation work that PC1 may lead to and therefore are considered to not align with the intention of this value. However, a note to this effect may be appropriate, possibly in the FEP section.

Ecosystem health

190 Twelve submissions are on the intrinsic value of ecosystem health, of these, two submitters supported the provisions and seek no changes.

191 Fish and Game seek that a new bullet point is included to state “freshwater standards are set to achieve ecosystem health”. Officers consider it unnecessary to include this statement as it does not describe a use or provide additional context to the significance of ecosystem health as an outcome, rather it seems to provide a link to the water quality standards Table 3.11-1. The link between the values, freshwater objectives, attributes and attribute states is already addressed through the recommended changes to the introductory paragraph of Section 3.11.1.

192 Several submitters¹³ have suggested a number of amendments to the values or statements associated with ecosystem health. The suggested additions include:

- Greater emphasis on the significance of wetlands, including recognition that wetlands require clean water to achieve ecosystem health and that artificial flood storage can be detrimental;
- Recognition of the importance of rivers for spawning and in providing access to food sources; and
- Specific acknowledgement of lakes, ensuring lake water quality is good and lakes are dominated by submerged native aquatic plants.

¹³ DoC, Fish and Game, Hamilton, M

- 193 Officers consider the suggested changes are not required as the current value already captures these matters or is recommended to be changed to recognise these values, albeit in a more generic way. It has already been recommended to insert a reference to lakes in the fourth bullet point and four of the five other bullet points simply refer to clean fresh water and do not differentiate between waterbodies. The amendments sought by submitters either seek to provide more specificity or to qualify the statements which Officers consider is unnecessary due to their high level and positive intent of the value statements.
- 194 Federated Farmers and J Hahn seek the deletion of the term 'clean' used to describe fresh water. Federated Farmers submit that 'clean' is subjective and uncertain while J Hahn states that clean water is sterile and devoid of life. Officers consider the term clean is sensible and appropriate in the context where it is used and is readily understood by the public. Clean fresh water is critical to support ecosystem health and the objectives, policies and water quality limits in PC1 provide further interpretation as to what clean means for the catchment. Officers do not consider it is appropriate to delete the term.

Natural form and character

- 195 Eight submission points are on the value *natural form and character*, of these, two submitters support the value and seek no changes.
- 196 Four submitters seek additional statements to reflect the value. Fish and Game seek that the value includes reference to the appearance of water, including colour and clarity which is relevant to the aesthetic qualities and that an additional point is included noting *wetlands enable people to experience wilderness*.
- 197 DoC seek an additional bullet point to recognise the attributes that contribute to natural character. The attributes include natural elements, processes and patterns, natural landforms, the natural movement of water and sediment and experiential attributes.
- 198 The NPS-FM includes natural form and character as an 'other national value'. The requested amendments from DoC and Fish and Game include several matters that are in the description of this value in the NPS-FM. Officers consider that is not necessary to directly adopt the wording from the NPS-FM but that the proposed PC1 value, as recommended to be amended to refer to lakes and wetlands, already addresses the matters raised by the submitters. Specifically, the wording, as recommended, already seeks to retain the aesthetic qualities of lakes, rivers and wetlands which would include attributes of colour and clarity and it is considered that 'naturalness values' encompasses natural character and its qualities.
- 199 J Hahn seeks that an additional point is noted stating *Rivers are a powerful force* to recognise that rivers are not always safe and need to be respected in high flows. Again, Officers consider that this is already addressed in a more general way, and does not warrant further amendment.

New values

- 200 J Reeve supports the Mana Atua – Intrinsic values but seeks additional values are included in this section. J Reeve states that this section should include reference to groundwater and swamps that supply rivers and the geothermal use value should be moved into this section.
- 201 Officers consider that it is not appropriate to include the geothermal value as a Mana Atua – Intrinsic value as it represents how water and its properties are used rather than an intrinsic quality. In response to recognising swamps, Officers consider that the significance and role of wetlands (which would include 'swamps') has been acknowledged, particularly as it is recommended to insert

additional references to wetlands in the values. In relation to groundwater, the purpose of Section 3.11.1 is to identify the values associated with the Waikato and Waipā Rivers, lakes and wetlands within those catchments, as the focus of PC1 is on surface water quality of those surface water bodies. Officers acknowledge that in many areas there are strong linkages between groundwater and surface water. At this point, Officers consider that it is not necessary to insert a groundwater value or make specific reference to the groundwater resource in describing the proposed values but would welcome further information from submitters on this issue in the hearing process.

B2.4.5. Mana Tangata Values

202 Numerous submissions are on the Mana Tangata – Use values seeking amendments, additions and deletions. The geothermal and electricity generation values were supported and no changes sought. These values are not discussed further. Submissions seeking amendments to the other use values are discussed below.

Wai Tapu and Wai Kino

203 Five submission points are on the value Wai Tapu, of those two submitters support the value and seek that it is retained as notified.

204 DoC generally support the value but seek that it includes lakes, wetlands and the coastal environment. This matter has been assessed above and it is recommended that the value also applies to lakes and wetlands.

205 PLUG raise a concern in relation to the value description which states:
Area of water body set aside for spiritual activities that support spiritual, cultural and physical wellbeing, or have properties that require additional caution or care.

206 PLUG submit that the inclusion of the word “or” implies additional care is required in managing water that is subject to this section beyond that required to achieve spiritual, cultural and physical well-being. PLUG seek the following amendments:
... that support spiritual, cultural and physical well-being, ~~or have properties require~~ requiring additional caution or care.

207 Officers do not agree with the interpretation of PLUG. The two aspects of the value reflect wai tapu and wai kino. Wai kino water (harmful waters) require additional caution or care and are not set aside for spiritual activities. Officers suggest the provision should be retained as notified to ensure this distinction is clear.

208 Te Whakakitenga o Waikato Incorporated (Waikato-Tainui) seek the deletion of the third bullet point which states:
The rivers have different states of wai tapu and wai kino that are adhered to and respected.

209 Waikato-Tainui state that it is inappropriate and unnecessary, on the premise that Wai and Wai Kino already have a dedicated Vision and Strategy towards the restoration of wai kino and the Waikato River generally and that restoration sits at the apex of the Vision and Strategy.

210 Officers acknowledge that the Vision and Strategy sets the first objective of restoring and protecting the health and wellbeing of the Waikato River. However, PC1 is giving effect to the Vision and Strategy and through consultation with Iwi of Hauraki, the third bullet point was inserted. Officers consider the statement does not conflict with the Vision and Strategy and acknowledges there is variability of wai

tapu and wai kino. Officers recommend the submission of Waikato-Tainui is not accepted but welcome additional evidence from the submitter on this issue at the hearing.

- 211 Wairakei Pastoral Ltd submit that PC1 does not provide a mechanism for consent applicants to establish whether there are any wai kino/harmful waters that need to be respected and seek that an advice note is inserted on how to engage with Māori to identify such sites. Officers consider that such an advice note is not necessary as the process of consultation with iwi to identify wai kino will be no different than identifying and assessing other possible cultural impacts that is already undertaken. The WRC website and Module 2 of the WRP provides information on local iwi and how to contact them.

Mahinga kai

- 212 Fourteen submission points are on the mahinga kai value, of these three submitters supported the provisions and seek no changes. Submissions regarding the waterbodies where the mahinga kai value applies and the issue of swimmability have already been addressed.
- 213 Fish and Game seek amendments to include fisheries, specifically brown and rainbow trout and to include the Macroinvertebrate Community Index (MCI) as an indicator to ensure the food supply of the ecosystem is considered. Fish and Game state that PC1 needs to have regard to section 7 of the RMA.
- 214 Officers recommend the submission from Fish and Game is not accepted as the value already encompasses fisheries by referencing ‘freshwater game and introduced kai species’ which demonstrates regard to section 7(h) of the RMA. Officers also consider it would be inappropriate to include an indicator or attribute in the values section.
- 215 Federated Farmers oppose the mahinga kai value and seek that it is amended to clarify it applies to the Waikato and Waipā Rivers and the deletion of the last bullet point which states *The rivers provide for recreation needs and social well-being*, as recreation needs and social well-being do not relate to mahinga kai. Officers agree with the submission of Federated Farmers and recommend that the last bullet point is deleted.
- 216 J Hahn supports the values but seeks an amendment to recognise the danger of river systems. J Hahn seeks that the fourth bullet point is amended as follows:

The rivers should be safe to take food ~~from~~ in non-hazardous flow conditions, both fisheries and kai.

- 217 Officers acknowledge that flow conditions influence the safety of food gathering. However, the mahinga kai value is focused on water quality and the ability to consume food and consider that the proposed amendment shifts that focus and intent. As such, Officers recommend the submission of J Hahn is not accepted.
- 218 A Robson and Save Lake Karapiro Inc oppose the mahinga kai value as it refers to intergenerational harvest and the transfer of knowledge and PC1 sets a timeframe for events beyond the life of the plan. Officers recommend the submissions from A Robson and Save Lake Karapiro Inc are not accepted. PC1 is intended to set the direction for future plan changes and the transfer of knowledge is occurring now.
- 219 Tuaropaki Trust seek clarity on what it means to be able to take food. Tuaropaki Trust state that the Vision and Strategy does not provide certainty on the expectations of food gathering, specifically whether it is food sourced directly or if it is subject to further processing. Tuaropaki Trust seeks to ensure that PC1 adopts an appropriate outcome that aligns with the Vision and Strategy.

- 220 The Vision and Strategy sets an objective of restoring water quality so that it is safe to take food from the entire length of the Waikato River. Officers consider that this sets the standard of being able to consume food taken directly from the river and not subject to further processing. Officers believe that PC1 sets appropriate water quality targets to improve water quality to work towards achieving this objective and no amendments to the mahinga kai value are necessary to address this matter as it is consistent with the Vision and Strategy.
- 221 F Turton opposes the mahinga kai provisions as it gives unconditional rights to private property and creates a health and safety issue. F Turton seeks that the value is amended to provide for mahinga kai subject to landowner approval. Officers recommend the submission from F Turton is not accepted as PC1 is unable to provide access to private property. The value is intended to portray the significance of being able to take mahinga kai to the Waikato community. Property rights and the ability to access mahinga kai is a civil issue and not able to be addressed via PC1.

Human health for recreation

- 222 Eight submission points are on the value human health for recreation, of those two submitters support the provisions and seek no amendments. Submissions regarding the waterbodies where the mahinga kai value applies and the issue of swimmability have already been addressed.
- 223 Fish and Game support the provisions, as it is a compulsory value under the NPS-FM. However, Fish and Game seek an amendment to include the use of rivers, lakes and wetlands for recreational hunting and angling. Fish and Game consider this should be included to recognise the policies of the Eastern Fish and Game and Auckland/Waikato Fish and Game Sport Fish and Game Bird Management Plans. Officers consider that it is unnecessary to refer specifically to hunting and angling as the value is intended to reflect recreation activities more generally. Including specific reference to these activities could portray that they are more important than other recreational pursuits and Officers consider that is inappropriate.
- 224 Federated Farmers have identified differences between the NPS-FM and PC1 in relation to the values of 'human health for recreation'. Federated Farmers state that the human health for recreation value is more stringent than the NPS-FM as it states that the rivers are an environment that poses 'minimal' risk to human health whereas the NPS-FM refers to 'moderate' risk.
- 225 The NPS-FM includes human health for recreation as a compulsory value, therefore it must be included in PC1. The description of the value in Appendix 1 of the NPS-FM details that in a healthy waterbody people are able to connect with water through a range of activities and that there are several factors that contribute to a water body being in a healthy state for recreation. The Vision and Strategy for the Waikato River seeks to achieve water quality of a level where the Waikato River is safe to swim in along its entire length. This outcome likely requires water quality to be better than that required by the NPS-FM, as such the value for recreation reflects this aspiration. As the Vision and Strategy has a higher statutory ranking than the NPS-FM, it is recommended the value is retained as notified.

Transport and tauranga waka

- 226 Three submission points are in relation to transport and Tauranga waka. Two submitters support the value and seek that it is retained as proposed. DoC generally support the value but seek that it includes lakes, wetlands and the coastal environment. This matter has been assessed above and it is recommended that the value applies to lakes and rivers.

Primary production

- 227 Twenty-six submission points are on the primary production values, of those nine submission points support the provisions and seek no amendments.
- 228 Federated Farmers support the provisions but seek amendments to include the irrigation, cultivation and food production value from the NPS-FM if the primary production value is not broad enough to include it. Irrigation, cultivation and food production is a national value in Appendix 1 of the NPS-FM. It states that the FMU meets the needs for irrigation and water quality and quantity is sufficient for irrigation including for the cultivation of food crops and production of food. PC1 does not specifically include this national value from the NPS-FM, however the value of primary production does refer to agriculture, horticulture and forestry and expressly states that these industries contribute significantly to regional and national food production. Officers consider that the proposed wording of the primary production value is broad enough to encompass the purpose of the NPS-FM national value and no amendments are necessary.
- 229 Hamilton CC supports the primary production value but seeks an amendment to recognise the rivers and surrounding land contribute to the lifestyle, sense of community, pride and culture of urban Waikato as well as rural Waikato. Officers agree that primary production is of significance to the urban community as well as the rural community and this is already reflected in the wording of the primary production value where it states *These industries and associated primary production also support other industries and communities within rural and urban settings*. Officers recommend the submission of Hamilton CC is accepted and the fourth bullet point is amended to refer to 'rural and urban Waikato.'
- 230 A number of submitters¹⁴ support the primary production value but seek amendments to PC1 to provide for this value, specifically to recognise the importance of the Pukekohe and Pukekawa commercial vegetable production systems in the national domestic food chain. Officers consider that the submitters' concerns are better addressed via the objectives, policies and rules and that no amendments are necessary to the value provisions. The primary production value already states that the rivers are regionally and nationally significant for horticultural purposes.
- 231 G Kilgour, A McGovern and Waipāpa Farms Ltd and Carlyle Holdings Ltd submit in support of the value but consider that it should also recognise the contribution of rivers to primary production to achieve not just economic well-being, but environmental, social and cultural well-being of local communities, the region and nationally. Officers agree with the submitters that primary production is also significant for environmental, social and cultural well-being but that the value provisions as proposed already reflects this. The value includes the statement:
These industries contribute to the economic, social and cultural wellbeing of people and communities, and are the major component of wealth creation within the region.
- 232 Officers therefore do not recommend any amendments to address these submissions.
- 233 J Lawson and V and N van der Voorden support the primary production value but raise concerns regarding activities that contribute to the generation of sediment run-off and seek amendments to PC1 to address the issues of sedimentation. The submitters seek a number of changes, but not specifically to the values section. Officers consider that these concerns are more relevant to the objectives, policies and rules of PC1 and that no amendments are necessary to the primary production value to address this submission.

¹⁴ PVGA, HortNZ, A S Wilcox & Sons Ltd, Jivan Produce and P Meier

- 234 Oji Ltd support the use value of primary production but considers that the language adopted creates a hierarchy of sectors conveying a preference between primary production and industry. Oji Ltd seek that the language used in the primary production value and the commercial, municipal and industrial use value is consistent to avoid the implication that one sector could be prioritised over the other.
- 235 Officers do not consider that the proposed wording of the primary production value or the commercial, municipal and industrial use value creates a hierarchy of competing issues. Both value statements reflect the importance and contribution of fresh water to the different sectors and how each sector provides for economic and social well-being. Whilst there is a difference in the language used, Officers do not consider this is of concern and do not recommend any changes. Each value or use included in Section 3.11.1 is no more or less important than another and each value or use contributes to the objectives and water quality targets adopted.
- 236 A Robson and Save Lake Karapiro Inc oppose the use value for primary production as it implies that the service sectors are dependent on primary production. A Robson states that tourism is also a significant sector and it is not mentioned. The submitters also raise concerns with the economic models used to develop PC1 and identify a number of deficiencies. A Robson and Save Lake Karapiro Inc seek that if economic models are used to develop PC1, the missing factors identified need to be considered.
- 237 The provisions as notified reflect the relationship between the primary sector and supporting industries, but Officers do not agree the wording portrays service sectors are reliant on primary production. The commercial, municipal and industrial use value demonstrates the significance of fresh water to those sectors and this includes the importance of the catchments to tourism. In relation to the use of economic models, this is not appropriately addressed in the values and uses section of this report and is addressed elsewhere.

Water supply

- 238 Seven submission points were received on the use value of water supply, all seeking amendments to the provisions.
- 239 Federated Farmers oppose the provisions in part and seek the following amendment:
The rivers provide for community water supply, municipal supply and drinkable water supply ~~and health~~.
- 240 Federated Farmers state that 'health' does not fit with the rest of the sentence and it is a subjective and uncertain term. Officers agree that the inclusion of the term 'health' is not necessary in this statement. The value of water supply reflects the significance of fresh water for drinking water and other non-potable purposes and it is unclear how water supply provides for 'health' other than for potable use. As the statement already refers to 'drinkable water supply' and meeting 'appropriate health standards', Officers recommend the amendments proposed by Federated Farmers are accepted.
- 241 Hamilton CC oppose the use value of water supply, specifically as it does not recognise water supplies for community, industrial and commercial uses that may be provided for via municipal water supplies or take directly from the Waikato River. Hamilton CC seek amendments to recognise the different water users and the various purposes water is used for. Officers acknowledge that water taken for community supply may be used for a number of purposes and that there may be industrial or commercial entities abstracting water directly from waterbodies. Officers consider that the values already recognise these matters as the commercial, municipal and industrial use value addresses this

and the water supply value refers to the use of water for non-potable purposes. As such no changes are recommended.

- 242 Ata Rangi, Southern Pastures Ltd Partnership, Theland Tahī Farm Group Ltd and Waeranga Partnership seek amendments to the use value of water supply to recognise additional uses of abstracted water such as commercial, industrial and primary production purposes and the economic benefits of these uses. As discussed above, Officers consider that the commercial, municipal and industrial use value recognises these uses and the benefits to the community, therefore no amendments are required to address these submissions.
- 243 Watercare support the water supply value but seek amendments to refer to ‘domestic or municipal supply’ as the term is defined in the WRP and the water supply table should also recognise the need for water to be available for existing and future domestic or municipal supply. Watercare also seek that the location of the Mangatawhiri and Mangatangi waterbodies in the Waikato River catchment are reference and the need to protect them as municipal supply water bodies.
- 244 The WRP Glossary of Terms does include a definition of domestic or municipal supply which states:
A reticulated supply publicly or privately owned where the net take is;
- 1. For the primary purpose of human drinking, or sanitation or household needs wherever they arise; or*
 - 2. For the purpose of enabling local authorities to meet their general responsibilities (wherever they arise) under the Local Government Act 2002, the Health Act 1956 and relevant legislation, including supply for the purposes of industrial and agricultural use.*
- 245 To avoid confusion, Officers agree that the value should refer to domestic or municipal supply and consider that the definition is consistent with the intent of the value. In relation to Watercare’s request to recognise the need for future water supply and the two specific waterbodies, Officers consider that this is not appropriate in the value and uses section and that this would be better addressed via the objectives or policies of PC1.
- Commercial, municipal and industrial use*
- 246 Twelve submission points are on the use value commercial, municipal and industrial use, of these one submitter supported the provisions and seeks no changes.
- 247 Ata Rangi supports the value but seeks amendments to incorporate the commercial, municipal and industrial use value with the water supply value and recognise positive economic outcomes. Additionally, Ata Rangi states that it is not just the assimilative capacity of rivers which provides economic opportunities. Officers do not consider it appropriate to combine the two values as the consultation with the community identified these separately. The importance of fresh water in supporting positive economic outcomes is already identified in the commercial, municipal and industrial use value and this value also recognises the significance of freshwater for tourism and economic wellbeing more generally.
- 248 C Falconer and J Hahn are opposed to the value, specifically the term ‘assimilative capacity’ as it portrays a desire to continue to discharge waste to waterways and water data shows that water does not assimilate contaminants. C Falconer seeks that the term is deleted and no provision is made for on-going consent to discharge. F Turton opposes the commercial, municipal and industrial use value and associated policies and rules as it allows the discharge of contaminants into waterways. F Turton seeks amendments to the value to provide for WRC to invest in systems and infrastructure to stop stormwater run-off.

- 249 Officers recommend these submissions are not accepted as discharges to waterways will likely always be necessary, specifically stormwater which inevitably enters surface water bodies. The provisions of PC1 seek to address the implications of discharges to surface water by setting water quality targets and appropriate policy direction (policies 10-12).
- 250 Federated Farmers supports the value as it is consistent with the NPS-FM and the Vision and Strategy but seek amendments to include irrigation, cultivation and food production if it is not broad enough to include it. Officers consider that irrigation, cultivation and food production is not relevant to the commercial, industrial and use value and is more appropriately addressed in the primary production value. As discussed above, Officers consider the primary production value already addresses these activities.
- 251 Hamilton CC opposes the provisions and seeks amendments as there are deficiencies, overlapping values and inconsistent expression of the value. Hamilton CC seek amendments to recognise the Waikato and Waipā Rivers supply water, provide drainage, generate electricity and support primary production. Hamilton CC also seek that the value includes reference to the role of the rivers in providing opportunities and supporting economic growth and development which contributes to the region's rural and urban areas.
- 252 Officers do not consider it is necessary to amend the value as suggested by Hamilton CC as these matters are already addressed in this value or other values. The fourth bullet point of this value recognises the role of the rivers in providing drainage and electricity generation and primary production are already included as separate values. Officers consider the values and uses when read together clearly demonstrate the significance of the Waikato and Waipā Rivers to the social and economic wellbeing of both the rural and urban communities.
- 253 Oji Ltd support the value but as outlined above considers that the language adopted creates a hierarchy of sectors conveying a preference between primary production and industry. Oji Ltd seek that the language used in the primary production value and the commercial, municipal and industrial use value is consistent. To provide this consistency Oji Ltd seek that an additional value statement is included that recognises the contribution industries make to the economic, social and cultural wellbeing of communities and that they are a major component of wealth creation in the region.
- 254 As previously discussed, Officers do not consider that the proposed wording of the primary production value or the commercial, municipal and industrial use value creates a hierarchy of competing issues. The first bullet point of this value highlights the manner in which the rivers provide for economic wellbeing how this supports community.
- 255 Southern Pastures Ltd Partnership, Theland Tahī Farm Group Ltd and Waeranga Partnership seek amendments to the value to recognise additional uses of water not just the assimilative capacity, including a drainage function. As previously discussed, other aspects of water important to commercial, municipal and industrial uses are already recognised as the value references that the rivers provide for economic wellbeing more generally. In relation to drainage, the importance for the rivers for stormwater discharges is already reflected in the fourth bullet point.

Mitigating flood hazards

- 256 Five submission points are on the value of mitigating flood hazards, of those submission points one submitter supports the provisions and seeks they are retained as notified.

257 Ata Rangi, Hamilton CC and Southern Pastures Ltd Partnership seek that the provision recognises the value of flood management systems to protect livestock as well as people. Hamilton CC seeks the following amendment to the value description:

Flood management systems protect land used and inhabited by people and livestock.

258 Officers agree that flood management systems do serve to protect livestock in addition to people. Whilst the description refers to land used by people which would include farmed livestock in addition to other farming activities such as horticulture, the suggested amendments provide clarity of the importance of flood management systems in protecting livestock. Officers' recommend the description is amended as proposed by Hamilton CC.

259 A Robson opposes the provision due to the reliance on heavily engineered drainage systems and their effects. A Robson considers the goal of managing stormwater is to get rid of it as quickly as possibly resulting in adverse environmental outcomes and seeks that drainage systems are addressed as part of the solution to the current poor water quality.

260 Officers consider that the concerns raised by A Robson are relevant to the effects of drainage discharges which are better addressed via the policies and rules of PC1. The role of the rivers in providing drainage and the associated importance of flood management systems has been identified by the community and Officers consider it should remain as notified.

New Values

261 Hamilton CC and Watercare seek that a new value is included, separate from the other values to clearly articulate the importance of the role of the rivers in providing for municipal activities, specifically a drainage function for discharges. The submitters consider that the role of rivers for providing drainage for stormwater and treated wastewater and how this supports social, economic and cultural wellbeing should be recognised.

262 As discussed above, the role of rivers for stormwater drainage is inevitable. The commercial, municipal and industrial use value already recognise the importance of this function and Officers disagree that this is not clearly articulated. With regards to the disposal of treated wastewater, Officers consider that it should not be assumed that rivers are always the appropriate receiving environment as, unlike stormwater, there can be alternative discharge options. Officers do not consider it is necessary or appropriate to insert a new value as proposed by Hamilton CC and Watercare.

263 Iwi of Hauraki seek a new value to recognise the uses associated with Tangata Whenua Ancestral Land. Specifically, Iwi of Hauraki seek the value highlights the ability for tangata whenua to exercise their relationship with ancestral land and acknowledges Treaty Settlements. This issue relates more broadly to the PC1 provisions for Māori Land and is addressed in Section C2 of this Report.

264 J Reeve seeks to include the intrinsic ancestry and history value as a Mana Tangata – Use value. No further explanation is provided in the submission. Officers do not recommend accepting this submission as the ancestry and history value does not reflect physical uses of fresh water in a similar way to the other Mana Tangata – use values. Officers consider the ancestry and history value should remain in the Mana Atua – Intrinsic Value section.

B2.5. Recommendation

265 Officers recommend that the introduction to Section 3.11.1 is amended as follows:

~~*The National Policy Statement – Freshwater Management Policy CA2 requires certain steps to be taken in the process of setting limits. These include establishing the values that are relevant in a FMUA, identifying the attributes that correspond to those values, and setting objectives based on desired attribute states. This section describes values and uses for the Waikato and Waipā Rivers, to provide background to the objectives and limits in later sections.*~~

This section describes the values and uses for the Waikato and Waipā Rivers. The values and uses reflect the Vision and Strategy for the Waikato River. The values and uses set out below apply to all FMU's unless explicitly stated, and provide background to the freshwater objectives¹⁵, and the attributes and attribute states outlined in Table 3.11-1.

266 Officers recommend that the first heading from each value is deleted.¹⁶

267 References to lakes and wetlands are added to a number of the value and use statements.¹⁷

268 Officers recommend that the mahinga kai value is amended as follows:

<p>The ability to access the Waikato and Waipā Rivers, lakes, and wetlands and their tributaries to gather sufficient quantities of kai (food) that is safe to eat and meets the social and spiritual needs of their stakeholders.</p>	<ul style="list-style-type: none"> ▪ The lakes, rivers and wetlands provide for freshwater native species, native vegetation, and habitat for native animals. ▪ The lakes, rivers and wetlands provide for freshwater game and introduced kai species. ▪ The lakes, rivers and wetlands provide for cultural wellbeing, knowledge transfer, intergenerational harvest, obligations of manaakitanga (to give hospitality to, respect, generosity and care for others) and cultural opportunities, particularly at significant sites. ▪ The rivers should be safe to take food from, both fisheries and kai. ▪ The lakes, rivers and wetlands support aquatic life, healthy biodiversity, ecosystem services, flora and fauna and biodiversity benefits for all. ▪ The rivers are a corridor. ▪ The lakes, rivers and wetlands provide resources available for use which could be managed in a sustainable way. ▪ The rivers provide for recreation needs and for social wellbeing.¹⁸
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269 Officers recommend that the primary production value is amended as follows:

<p>The rivers support regionally and nationally significant primary production in the catchment (agricultural, horticultural, forestry). These industries contribute to the economic, social and cultural wellbeing of people and communities, and are the major component of wealth creation within the region. These industries and associated primary production also support</p>	<ul style="list-style-type: none"> ▪ The rivers support a wide variety of primary production in the catchment, including dairy, meat, wool, horticulture and forestry. ▪ Due to the economies of scale of these industries, other service sectors, such as agritech, aviation and manufacturing, are able to operate. ▪ These industries combined contribute significantly to regional and national GDP, exports, food production and employment. ▪ The rivers and the surrounding land offer unique opportunities for many communities and industries to operate, contributing to the lifestyle and sense of community, pride and culture in rural and urban¹⁹ Waikato.
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¹⁵ Wairakei Pastoral Ltd PC1-11260, DoC PC1-8131

¹⁶ Watercare V1PC1-888

¹⁷ DoC PC1-8136, 8189, 8152, 8532, 8533, 8535, 8540

¹⁸ Federated Farmers V1PC1-106

¹⁹ Hamilton CC PC1-10067

other industries and communities within rural and urban settings.	
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270 Officers recommend that the water supply value is amended as follows:

The rivers provide for community water supply, municipal supply <u>and</u> drinkable water supply. and <u>health</u> . ²⁰	<ul style="list-style-type: none"> ▪ The catchments’ surface and subsurface water is of a quality that can be effectively treated to meet appropriate health standards for both potable and non-potable uses.
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271 Officers recommend that the mitigating flood hazards value is amended as follows:

Flood management systems protect land used and inhabited by people <u>and</u> <u>livestock</u> . ²¹	<ul style="list-style-type: none"> ▪ River engineering, including stopbanks and diversions, protect land and infrastructure from damage by flooding.
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272 Recommendation on submissions:

1. **Accept all those submissions that supported the plan provisions which are recommended to remain unchanged or largely unchanged**
2. **Reject those submissions who sought the deletion of the Plan Provisions which are recommended to remain unchanged or largely unchanged**
3. **Accept, or accept to the extent, those submissions that sought the changes recommended as set out in the revised plan provisions**
4. **Reject, or reject to the extent, those submissions that do not support the changes recommended as set out in the revised plan provisions**

²⁰ Federated Farmers V1PC1-117

²¹ Hamilton CC PC1-10167

B3. Science and Economics

B3.1. Introduction

- 273 This section of the PC1 S42A report relates to submissions made on the science and economic information and modelling that supports and underpins PC1. For a general description of the science and economic modelling, please see Section A of this Report.
- 274 As directed by the Hearing Panel, an independently facilitated Information Forum was held in November 2018. On the first day presentations were made by members of the TLG²², seeking to explain the modelling undertaken and answering questions put to them by the audience. Attendees of the second day considered what issues related to water quality science and economic modelling would benefit from expert caucusing. The facilitators prepared a memorandum²³ which summarised the agreed topics and sub-topics identified by the submitters present at the Forum. The memorandum is attached as Appendix B3.2 to this report.
- 275 The facilitators considered that “the underlying issues discussed at the Forum are of such fundamental significance that it is unlikely in the available time...that useful progress would be made.” The Hearing Panel subsequently issued a Minute where they determined not to continue further with the Forum process and to proceed to hearing those matters. This section of the S42A report outlines the key issues raised in submissions related to the science and economics and the associated topics that are likely to form discussion as part of evidence presented at the hearing.
- 276 At the outset, it is important to note two things:
1. The matters directly raised in submissions on the science and economics is generally related to ‘reasons’ for the opposition to the provisions. Generally, submission points are stated in simple terms, and Officers anticipate that further information will need to be revealed in evidence. For example, the detailed matters raised at the Information Forum are generally not raised in any submissions.
 2. Ahead of evidence being presented, the Officers consider the science and economic analysis and modelling to be both comprehensive and adequate to enable the RMA requirements in s32 to be fulfilled. The scientific and economic information, along with a raft of other information covering other environmental, social and cultural matters informed the policy choices of the CSG in formulating PC1. As the Officers understand it, the need to achieve the Vision and Strategy and the NPS-FM is the over-riding consideration.

B3.2. Provisions

- 277 A significant amount of scientific and economic data and modelling was used in the development of the objectives, policies, water quality targets/limits and rule framework within PC1. As such,

²² A copy is attached as Appendix B3.1

²³ Hill, D & Shepherd, S; 26 November 2018; *Memorandum from Facilitators to Waikato Regional Council's PC1 Hearing Panel: Expert Conferencing*

submissions on the science and economic topics traverse the whole of PC1 and do not apply to any particular provisions.

B3.3. Submissions and Analysis

- 278 For the purposes of this assessment, the submissions have been analysed in the following topics:
- Economic impacts of PC1;
 - Economic modelling; and
 - Water quality science and modelling.
- 279 This section of the report responds, in the main, to the reasons that submitters seek changes, rather than to specific changes sought to the PC1 provisions. Therefore, only a limited number of submitters are addressed specifically and listed in Appendix B3.

B3.3.1. Economic impact of PC1

- 280 A main theme of submissions on PC1 is the economic impact of the provisions on individual landowners, and the regional and national economy.
- 281 Numerous submitters raise concerns about the cost to individual farmers of implementing PC1. In particular, Federated Farmers submits that the costs to individual farmers for complying with the mitigations are likely to be significant. In their submission, they refer to a FEP case study project that was commissioned by Federated Farmers in collaboration with other industry bodies (including WRC), which identified that the costs for one farmer ranged from \$300,000 to \$785,000 (depending on how the stock exclusion requirements are interpreted) and \$0 to \$500,000 for other farmers in the case study. Federated Farmers do not consider that the economic cost of adopting this approach has been appropriately considered in the s32 report. They also request that the 10-year timeframe for the short-term targets is amended to provide for the delays in having an operative plan.
- 282 Submitters are also concerned that WRC has not appropriately considered the economic and social implications of requiring landowners to adhere to an NRP or reduce their N losses. Beef and Lamb consider that this approach rewards those who have historically been high emitters of N, while disadvantaging those that have historically been low emitters, including those who have already adopted good management practices. Oji Ltd submits that the s32 assessment does not recognise and quantify the significant economic implications for land owners who are restricted from changing land use. Submitters note that the requirement to adhere to an NRP or reduce N losses will not provide flexibility to react to market trends and weather adversities and raise concerns that the requirements will affect land values. J Reeves & A Taylor raise similar concerns and in their submission, they provide an analysis of the impacts on property values over the 80 year period.
- 283 A number of submitters paint a bleak picture of the wider impacts of PC1 on social and economic well-being for both rural communities and at a regional level, including impacts on employment, loss of population and associated impacts on health and education. Several submitters raise concerns with the s32 analysis in regard to the economic analysis of costs and benefits and the depth of analysis of the impact on small communities and the regional and national economy. The submission from J Reeves and A Taylor raises significant concerns about the adequacy of the economic modelling (discussed further below) and requests that thorough economic investigation into the regional and national macroeconomic impacts of PC1 is undertaken, building on the analysis already conducted,

with a focus to better understand the regional and nation-wide impacts throughout the various sectors of the economy.

- 284 Other submitters raise similar issues to those described in the submission from J Reeves and A Taylor, in particular, that the cost estimates in the section 32 are selective and have not included the full range of economic effects from the implementation of PPC1. Some submitters also consider that PC1 is contrary to the requirements of the NPS-FM (in particular Objective A4²⁴) and WRC's economic vision of supporting a strong export driven economy.
- 285 Officers point to the overall positioning outlined in Section B1 of this Report. The significant costs to some parts of the community of achieving the Vision and Strategy are recognised, but the achievement of the Vision and Strategy, and the NPS-FM, are mandatory. How best to do this was the key consideration for the CSG, informed by the TLG and the modelling undertaken. Officers agree that the estimates of costs are subject to numerous assumptions, including adjustment for incidental benefits. Officers also note that the 10-year RMA planning cycle enables more analysis as more information becomes available in terms of both progression toward the long-term goals and associated and costs and benefits.

B3.3.2. Economic modelling

- 286 While a significant number of submitters are concerned about the economic costs of implementing PC1, very few submitters specifically raise concerns about the adequacy of the economic modelling undertaken to support PC1. Regardless, it is apparent by the topics raised during the Information Forum on 21 and 22 November 2018, that there are specific concerns about the inputs and methods used by the TLG and CSG when determining the economic costs and benefits of the proposed provisions and the alternatives that were considered. The topics raised at the Forum range from fundamental concerns with the modelling (such as identifying errors, variances or degrees of confidence of inputs, outputs and assumptions of modelling), through to more significant concerns and possible solutions to concerns such as considering and assessing alternative modelling frameworks to that used in PC1. In their minute, the Hearing Panel has resolved to hear these matters, rather than provide for caucusing. As such, the following analysis responds to submissions on economic modelling and does not extend to all of the topics raised in the Forum.
- 287 The submission from J Reeves & A Taylor raises several concerns about the modelling of the costs of implementing the mitigation, in particular, they note that mitigations are defined as an "asset" but state that no evidence has been produced that demonstrates that implementing good farm practices produces additional revenue. They state that these mitigations should be considered "sunk costs" which would dramatically change the cost structure of the model. The submitters also raise concerns about an underlying assumption that farmers will be able to afford to implement mitigations and question the cost structure of the model, including inputs that were derived from WRC staff members, rather than professionals (such as fencers). They request that the economic model is revisited with detailed explanations given of how average mitigation costs were arrived at, and further analysis conducted accounting both for non-revenue generating mitigations as sunk costs, and average farm debt levels.
- 288 J Reeves & A Taylor also identify a number of additional costs that they do not consider were included when modelling the scenarios, including potential increase in rates. As was explained at the Information Forum, a 'typical' cost-benefit economic study has not been undertaken, but rather an assessment of the water quality and economic implications of various scenarios, and the policy mix

²⁴ *"To enable communities to provide for their economic well-being, including productive economic opportunities, in sustainably managing freshwater quality, within limits"*

ultimately chosen by CSG. The Officers consider that the modelling undertaken is fit for purpose, in that it has informed an assessment of the costs and benefits of PC1, as required to be assessed and reported on under s32 of the RMA. The modelling assumptions and methodology have been detailed extensively in the reporting, and while all submitters may not agree with the methodology or assumptions, Officers consider that it represents a high level of informed analysis and in the Officers' experience is more comprehensive and informative than many similar RMA policy development exercises.

- 289 Fish and Game submits that the economic analysis is flawed on the basis that it assumes that all reductions in nutrient loss will incur economic cost. Fish and Game states that it does not take into account the myriad economic benefits associated with improved water quality and that the economic modelling in Part C of the section 32 report should not be relied upon. The submission from Fish and Game does not identify any such economic benefits. J Reeves & A Taylor submit that they consider that both the HRWO economic modelling, and the S32 analysis conducted by the WRC, was missing a detailed assessment of the financial benefit to the community of the proposed rules, including quantification of those benefits. The submitters acknowledge that such benefits are difficult to quantify. They state that this analysis was conducted by the TLG and CSG yet does not appear to have been used in the economic analysis.
- 290 HortNZ opposes the economic modelling of the effects of achieving Scenario 1 and the reports that suggest a complete removal of the commercial vegetable sector within the Waikato catchment. HortNZ reiterate a need to protect key parts of the commercial vegetable sector as both an ecosystem service and an essential industry. The Officers note that the provisions contained in PC1 do provide for commercial vegetable production, and therefore any reports that suggest a complete removal of this sector appear to have little impact on the final policy mix selected for PC1.
- 291 Two submitters consider there is a lack of evidence to support the selection of "Scenario 1". The Officers note that s32 of the RMA requires the evaluation of the efficiency and effectiveness of the provisions in achieving the objectives to take account of the risk of acting or not acting, if there is uncertain or insufficient information about the subject matter of the provisions. Section E.2.7 of the s32 Report states that there was significant data collection, analysis and modelling undertaking to support PC1.
- 292 Fish and Game submit, that with regard to Option 3 Variation A (described on page 148 of the s32 Report), the flaws in the economic model led to flaws in the assessment methodology that was used to reject the option. They state that it is unclear how 'insufficient information in the public domain' can be used to reject this Variation A when the recommended approach also relies in information that is not in the public domain.
- 293 A summary of the assessment of Option 3 Variation A is set out on page 149 of the section 32 Report and describes the reasons for not using this option as part of PC1. The Officers note that sufficient information was obtained to model Scenario 1, whereas significant data would be required to understand the impacts of Option 3 Variation A. This information will likely become available as the provisions in PC1 are complied with, particularly the requirement to undertake Overseer modelling to determine the NRP. The availability of more specific property level data may be useful in future planning cycles. It is not recommended that Option 3 Variation A is further considered at this time.

B3.3.3. Science

- 294 Several submitters raise concerns about the appropriateness of the science and tools that support PC1. Several submitters raise general concerns about a lack of science and monitoring, particularly in the sub-catchments. C & W Clayton-Greene do not support PC1 as they consider it should not focus

on the polluters in Priority 1 areas which will have the least effect on water quality. They state that “more science needs to be done downstream where polluters are”. The Officers note that there is water quality data available for the lower Waikato catchment for the past 30 years. It is unclear from the submission what additional ‘downstream science’ is required.

- 295 Several submitters are concerned that some of the water quality attribute states listed in Table 3.11-1 are not sufficient to achieve the Vision and Strategy for the Waikato and Waipā Rivers. Submissions on the appropriateness of the water quality attributes and the associated limits or targets in Table 3.11-1 is discussed in Section B5 of this report.
- 296 One submitter²⁵ considers that PC1 is a blunt instrument that tries to deal with a complex, poorly understood natural environment and the science supporting PC1 is incomplete, with concerns that there may be no corresponding improvement in water quality. D Birchall submits that there is no scientific evidence that shows PC1 would result in the outcome of swimmable rivers. Officers note that while the CSG and TLG acknowledged that the full suite of mitigations that will be required to meet the 80-year targets may change or evolve, the implementation of mitigations as a part of PC1 will move towards that goal, but on their own will not result in swimability. Taking into consideration the obligations to improve or maintain water quality in accordance with the NPS-FM, and the requirement to achieve the Vision and Strategy, the Officers do not consider it feasible to wait until there is more data or information available to further model the outcomes of the policy mix, but do note that one of the aims of PC1 is to gather better information to inform future plan changes.
- 297 Submitters are also concerned about the use of the Overseer model, on the basis that it is not “accurate” or designed for use as envisioned by PC1. Federated Farmers submit that there is a lack of thought or provision for Overseer version changes. As an alternative to Overseer, one submitter²⁶ requests that the rules for reducing nitrogen outputs should follow the Horizons Regional Council by requiring a farm nutrient plan and best practice. L Bilby submits that PC1 should be extended to 15 years to allow for scientific work for the Overseer model to become workable, where PC1 should be implemented in stages over that 15 years as science becomes available. In their submission, Federation Farmers states that they understand the modelling relied upon by the CSG was based on Overseer and other modelled numbers as well as numerous assumptions about what the policy mix might deliver. They state that any data relied upon appears to be from Canterbury and Southland (with different soil types, rainfall etc) with no data from Waikato. Federated Farmers state that by not using Waikato data it is uncertain what the policy mix (e.g. FEP actions) will deliver in terms of water quality and are concerned that there will be significant over delivery on 10 year targets. With respect to the Federated Farmers point regarding information sources, Officers understand Waikato farming data was used in the modelling, but would welcome more information from Federated Farmers on this point.
- 298 Officers acknowledge the limitations of the Overseer model, however these limitations and the appropriateness of its use in the context of PC1 was considered at length by the TLG and CSG, where it was determined that it was appropriate to use in the modelling undertaken²⁷, and for establishing an NRP²⁸. Officers note that a full analysis of the use of the Overseer model will be undertaken in Section C of this report (yet to be published).

²⁵ R Atkinson

²⁶ D Bull

²⁷ TLG, 2016. *General principles underlying the development of the Healthy Rivers Wai Ora (HRWO) economic model* (Document 3615787) pp20-22

²⁸ [WRC, 2015. Options for using Overseer model to manage nitrogen and phosphorus at a property-level. Report to the CSG for agreement and approval \(Document 3507568\)](#)

WRC, 2015. *Policy option of a property-level limit for nitrogen and phosphorus. Report to the CSG for agreement and approval* (Document 3476854/v4)

B4. Objectives/Ngā Whāinga

B4.1. Introduction

- 299 Plan Change 1 and Var1 introduce six new objectives for the management of freshwater quality in the Waikato and Waipā River catchments. These objectives describe the outcomes sought by PC1 and include a description of the future state of the water quality in the catchments, with short term and long-term aspirations. The long-term goals signal changes that will be required in future planning cycles.
- 300 The analysis of the submissions on the objectives of PC1 is broken down into three parts:
- Submissions that make a general commentary on the objectives;
 - Submissions that support or oppose specific objectives, or seek changes to the objectives; and
 - Submissions seeking entirely new objectives.
- 301 A number of submissions on specific objectives seek relief related to implementation methods rather than the overarching outcome sought by the objective. For example, some submitters have lodged submission points that reflect a general relief against many provisions, an example being D & S Barron, who seek amendments to Objective 1 related to the fencing of waterways. In these instances, the submissions are addressed in the sections of this report relating to submissions on the plan, policies or rules at a more general level.
- 302 This section of the report addresses the submission points listed in Appendix B4.

B4.2. Submissions on the objectives generally

B4.2.1. Submissions and Analysis

- 303 There are 32 submissions that apply to the objectives of PC1 generally, with 13 submitters seeking that the objectives (or their intent) are retained, and two submitters seek that the objectives are deleted. One of these submitters is concerned that the provisions are unnecessary for parts of the catchment. The Officers do not recommend deleting the objectives as they are an integral part of ensuring water quality in the Waikato and Waipā catchments meets the Vision and Strategy for the Rivers and the requirements set out in the NPS-FM, where land uses in all parts of the catchment contribute to water quality. More fundamentally, under s67(1)(a) of the RMA PC1 must state the objectives for the region and in this case that requires the inclusion of objectives relating to the improvement of water quality in the rivers to which PC1 applies.
- 304 A number of submitters request the objectives are amended to include targets or limits for additional freshwater attributes. The freshwater objectives are described in Tables 3.11-1 and 3.11-2. These submissions are addressed in the section of this report that deals with these tables. DoC seeks general amendments to the objectives, including amendments to clearly identify freshwater objectives that recognise and provide for intrinsic values for each FMU. Several other submitters²⁹ make similar

²⁹ J Downie PC1-10137

requests. The description of the values contained in the introduction of the plan change are not specific to the individual FMUs however this has been addressed in Section B2 of this report. The freshwater objectives that correspond to the values identified for each FMU are outlined in Tables 3.11-1 and 3.11-2, and are specifically addressed in Section B5 of this report.

- 305 DoC also submits that the evaluation of the objectives does not meet the requirements of s32 of the RMA as being the “most appropriate way to achieve the purpose of the Act”, and requests that the objectives of PC1 not be progressed through the first schedule process until there has been analysis which complies with s32. The Officers note that the s32 report is a summary report and relies on a significant number of technical reports, recommendations and decisions made by the CSG, iwi partners and WRC. WRC considered the s32 report as adequate at the time of notification, and in response to amendments to the provisions, the Hearing Panel will revise the analysis under s32AA of the RMA. The council officers use s32 as guidance when considering specific amendments to each of the objectives, in order to determine whether or not the objectives (as notified) or as amended by submissions are the most appropriate way to achieve the purpose of the Act.
- 306 Two submitters³⁰ seek amendments to the provisions that enable sub-catchment groups to manage their land resources. One submitter also requests the plan is amended to acknowledge the importance of water quality monitoring at sub-catchment level. The development of sub-catchment groups and monitoring are not freshwater outcomes as such, rather these are types of plan implementation methods or monitoring of plan effectiveness, which are better described either in the policies or rules. It is not considered appropriate to include methods within the objectives and, as such, the Officers recommend that these submissions are not adopted.
- 307 Several submitters seek amendments to the timeframes referred to in the Objectives. Matamata-Piako DC and South Waikato DC submit that the objectives need to acknowledge the intergenerational time period will likely be at least 80 years and that PC1 should set realistic objectives. L Aston submits that the short life span of PC1 removes any confidence in farm ownership being viable in the long term and seeks additional certainty is provided by establishing science-based water quality targets and bottom lines for the next 20-30 years.
- 308 While it is understood that the community seeks certainty about potential restrictions, it is clear that significant changes in farming practices will be required over the next 80 years to achieve the long-term goals (as set in Objective 1). As outlined in Part A of this Report, PC1 and supporting documents, there is insufficient information to determine the most appropriate pathway to achieve the long-term targets. Given the likely changes in technology over the next decade and taking into account the short life of PC1 (10 years), the Officers do not consider it appropriate to specify interim targets. In addition, the Officers do not recommend adopting submissions that request a longer timeframe for achieving the 80 year targets. The 80 year timeframe to achieve water quality targets settled on by the CSG is intergenerational. The information supporting the development of PC1 indicates that the full achievement of the Vision and Strategy by 2096 is likely to be costly and difficult, however extending this timeframe will unlikely further reduce the difficulty or cost of meeting the targets. It is not recommended that these submissions are adopted.
- 309 W Cuttance requests that the objectives are amended to acknowledge that there is uncertainty in predicting how water quality attributes will change over time. W Cuttance raises concerns with implementing mitigation strategies if there is no corresponding improvement in water quality due to lag times. The submission from W Cuttance highlights the possibility that the observed water quality may not reflect the actions undertaken by landowners in the short-term. However, it is the Officer’s view that these issues are already appropriately addressed by PC1, where the acknowledgment of

³⁰ J Bailey PC1-4790; P & P Gaudin PC1-11652

impacts associated with lag times is described in the introduction of PC1 and they are accounted for in short-term and long-term freshwater objectives. It is not recommended this submission is adopted.

- 310 Several submitters³¹ seek that PC1 is amended to add load thresholds in sub-catchments and catchments, particularly those that are under resource use pressure. The inclusion of load limits may be the outcome of future planning processes. However, there is currently insufficient information to determine whether or not a load limit is appropriate, and if so, what those load limits should be. Without this additional information, it is not recommended these submissions be adopted, but the Officers acknowledge, that with better information, a move toward a longer term allocation framework in subsequent plan changes, load limits may be used.
- 311 Mangakotukutuku Stream Care Group Inc. support the objectives, however seek amendments to include provisions to protect remaining wetlands and gully seeps and create new incentives to encourage the creation or reinstatement of wetland areas. It is noted that the management of wetlands is already provided for in Sections 3.1 and 3.7 of the operative WRP, and the requested amendments fall outside of the scope of PC1. The Officers do not recommend adopting this submission as the amendments would not add significantly to the existing regional plan wetland provisions, of which a review is commencing.
- 312 Watercare submits that many of the objectives contained in PC1 are not well drafted and are not RMA statutory plan objectives and policies. Watercare seek that the objectives are amended so they better reflect best practice RMA plan drafting and so they clearly identify objectives that apply to farming activities and those that apply to municipal discharges. The submitter does not include specific relief in support of its submission. However, the Officers agree there are opportunities to amend the objectives so that they better reflect the outcomes sought in a more clear and concise manner. It is recommended this submission is adopted where amendments are considered appropriate to improve the objective, without altering the outcome. That said, there may well be opportunity to further adjust the wording to make it more 'plain-English'.
- 313 Forest and Bird highlight a disconnect between the body of Objective 2 and the reasons for the objective. They seek amendments to remove the ambiguity and ensure the objective is consistent with the reasons. However, this submission has brought attention to the wider issues associated with the inclusion of "principal reasons for adopting the objectives" in PC1. While this approach is consistent with the style used in the remainder of the WRP, the inclusion of reasons for the objectives is not a mandatory requirement of Section 67(1) of the RMA. It is the Officers' position that the Principle Reasons for Adopting the Objectives be deleted and any key points from the Reasons should be extracted and included within the body of the objectives, so they better reflect best practice RMA plan drafting and to clarify the outcomes sought by PC1.

³¹ J Downie; M Hamilton; J Lawson; V & N van der Voorden; G Macklow

B4.3. Submissions on specific objectives

B4.3.1. Objective 1

Long-term restoration and protection of water quality for each sub-catchment and Freshwater Management Unit/Te Whāinga 1: Te whakaoranga tauroa me te tiakanga tauroa o te kounga wai ki ia riu kōawaawa me te Wae Whakahaere i te Wai Māori

By 2096, discharges of nitrogen, phosphorus, sediment and microbial pathogens to land and water result in achievement of the restoration and protection of the 80-year water quality attribute targets in Table 3.11-1.

Principal Reasons for Adopting Objectives 1-6/Ngā Take Matua me Whai ngā Whāinga 1 ki te 6 Reasons for adopting Objective 1

Objective 1 sets long term limits[^] for water quality consistent with the Vision and Strategy. Objective 1 sets aspirational 80-year water quality targets[^], which result in improvements in water quality from the current state monitored in 2010-2014. The water quality attributes[^] listed in Table 3.11-1 that will be achieved by 2096 will be used to characterise the water quality of the different FMUs when the effectiveness of the objective is assessed.

B4.3.1.1. Submissions on Objective 1

- 314 There are 261 submissions on Objective 1, with 24 in support seeking that the objective is retained as notified. 15 submitters seek that the objective is deleted on the basis that the long-term targets create too much uncertainty for future land use, with implications on capital devaluation and impacts on investment decisions.
- 315 There are a number of submissions on Objective 1 that request amendments to Table 3.11-1. Any submissions requesting specific amendments to the long-term water quality targets in Table 3.11-1 are addressed in Section B5 of this report.
- 316 Sixteen submitters request amendments so that PC1 aligns with the NPS-FM or the Vision and Strategy. These submissions do not request specific amendments, nor do they highlight which parts of Objective 1 do not align with either document. J Bailey submits that Objective 1 and corresponding Table 3.11-1 does not give effect to the Vision and Strategy or the NPS-FM, in particular, he raises concerns that the target for *E.coli* is below the levels likely to have been present in 1863.
- 317 Waikato Regional Council seek that Objective 1 is amended to recognise climate change. In their submission they state that PC1 is required by the NPS-FM to provide for climate change. In addition, WRC notes that climate change will be addressed in subsequent plan changes, as further information and increased understanding of climate change becomes available. WRC does not provide specific relief to support its submission.
- 318 Several submissions in support of Objective 1 seek minor amendments so that where water quality targets are being met, water quality is maintained, consistent with the requirements (and terminology) of the NPS-FM (i.e. if water quality objectives are already met, then these are “limits” and not “targets” under the NPS-FM).

- 319 26 submitters seek amendments to Objective 1 and corresponding Table 3.11-1 to ensure the water quality targets are achievable. In addition, some submitters seek that the objective is amended to ensure that full achievement of Objective 1 and Table 3.11-1 does not result in an underachievement in the objectives relating to social, cultural and economic health and well-being of people and communities. A number of submitters seek additional information to support Objective 1, including robust scientific information, modelling or monitoring to demonstrate that the outcomes are achievable.
- 320 A number of submitters raise concerns with the timeframes contained in Objective 1, with some submitters requesting shorter timeframes for achieving water quality targets³². Others seek certainty regarding the likely long-term changes in land use that will be required to achieve the 80 year target. Submitters are concerned that the uncertainty associated with the long-term targets creates potential capital devaluation and unwillingness to invest.
- 321 A limited number of submitters request that Objective 1 is amended to provide guidance about specific activities, for example, farming activities near wetlands, or identifying priority waterways for stock exclusion and associated timelines.
- 322 30 submitters seek that PC1 is amended to include all sources of contamination (such as koi carp, Canadian geese and point source discharges), and not focus solely on diffuse discharges from farming activities. Several of these submitters also request that the freshwater targets are not to apply following flood events or other one-off events that impact on water quality. Submissions on point source discharges are addressed in a subsequent section of this report which will be published in the near future.
- 323 A number of submitters³³ request that Objective 1 is amended so that contaminants can be addressed on a sub-catchment basis. Submissions on the “sub-catchment” approach will be addressed in subsequent sections of this report. The majority of these submitters also request that the NRP and grandparenting approach is deleted from Objective 1. Submissions on “grandparenting” and the appropriateness of the NRP are addressed in Section C1 of this report.
- 324 Several submitters request that Objective 1 is amended to provide financial assistance to meet the freshwater goals.
- 325 Beef and Lamb supports Objective 1 however submit that PC1 fails to provide a clear link between the values, objectives, Table 3.11-1 and the policies, methods and rules. They also state that Objectives should clearly state what is to be achieved through resolution of a particular issue and should be clear enough to provide direction for policies and the subsequent methods and rules. They seek that Objective 1 is amended to provide for a sub-catchment approach.
- 326 The submission from Federated Farmers includes a comprehensive analysis of Objective 1. In their submission, Federated Farmers note that the introduction to PC1 refers to setting values, objectives and limits for FMUs. However, PC1 only sets values for the whole catchment and limits at a sub-catchment scale. They consider that the management of water quality more appropriately occurs at sub-catchment or groups of sub-catchments, where the assessment of water quality (i.e. against limits) should occur at “multiple sub-catchment” or FMU scale. As such, they request that the heading of Objective 1 is amended to read:

³² Including submissions from Tangata Whenua

³³ 22 submissions

Long-term restoration and protection of water quality for each sub-catchment and/or Freshwater Management Unit/Te Whāinga 1: Te whakaoranga tauroa me te tiakanga tauroa o te kouniga wai ki ia riu kōawaawa me te Wae Whakahaere i te Wai Māori

- 327 Federated Farmers also seek that the 80-year numeric targets are deleted on the basis that the targets reflect one interpretation of the Vision and Strategy, and that a more appropriate approach would be to set progression towards the outcomes anticipated by the Vision and Strategy as the long-term goal. In addition, they seek that the objective is amended to state that the management of discharges of contaminants will assist to achieve the water quality outcomes, however note that these will not be the only actions required to meet the Vision and Strategy. They also seek clarification that the discharges referred to in Objective 1 include both diffuse and point source discharges, and in the case of diffuse discharges, that the objective only applies to discharges to and where it may enter water (as opposed to general discharges to land).

B4.3.1.2. Submissions on Principal Reasons for Objective 1

- 328 Nine submissions were received on the Principal Reasons for Objective 1, two of which are in support and seek that it be retained. G Kilgour seeks that the targets for adopting Objective 1 are amended to be more realistic and achievable.
- 329 Fonterra, GBC Winstone and Fulton Hogan Ltd seek that the Principal Reasons for Objective 1 be amended so that the language is consistent with the terminology in the NPS-FM and to acknowledge that Objective 1 gives effect to the Vision and Strategy.
- 330 K & A Reese seek that the Principal Reasons for Objective 1 is amended to include an explanation as to why there are no values for chlorophyll, N and P for most FMUs.
- 331 Forest and Bird and HortNZ have both requested that the Principal Reasons for Objective 1 is amended to reflect their submissions on Objective 1. In the case of Forest and Bird, that the timeframe for achieving the water quality targets is amended to 2050, and in the case of HortNZ, that sub-catchment load limits are included in PC1.

B4.3.1.3. Analysis

- 332 Objective 1 sets aspirational 80-year water quality outcomes for the Waikato and Waipā catchments that align with the water quality objectives of the Vision and Strategy. The timeframe to achieve the long-term water quality objectives is intergenerational. The s32 report and the pre-amble to PC1 acknowledge that the changes required to restore and protect water quality are significant and that the targets in PC1 are ambitious. Given that the water quality targets set in Table 3.11-1 align with the water quality objectives of the Vision and Strategy, any amendments to the Objective so that the water quality targets are more achievable (as requested by many submitters) would mean that the Vision and Strategy would not be achieved, and consequently, WRC would not meet their obligations as set out in relevant legislation³⁴. It is not recommended that PC1 is amended to specify outcomes that 'lower the bar' set by the Vision and Strategy.
- 333 Submitters also request amendments that set a shorter timeframe for achieving the long-term goals, should that be possible. The information available at the time PC1 was prepared indicates that significant change will need to occur to meet the long-term goals, where future changes in land use

³⁴ Section 13(4) Waikato-Tainui Raupatu Claims Act

and technologies mean that the full extent of that change is currently unknown. As the achievement of the water quality targets will be intergenerational and sit outside the life of PC1 (10 years), it is not recommended to reduce the timeframe for the full achievement of the Vision and Strategy. Should additional information become available in the future that demonstrates that the outcomes are achievable in a shorter timeframe, then it is likely a shorter timeframe will be included in a future regional plan. It is the Officers' view that the amendments sought by Tangata Whenua appropriately indicate that a shorter timeframe for achieving the long-term goals may be possible in the future. It is recommended the submissions from Tangata Whenua are adopted.

- 334 Several submitters seek that there be provision for water quality to be maintained where water quality targets are being met. The objective provides for the protection of existing water quality where water quality targets are being met, which is consistent with the terminology used in the Vision and Strategy, whereas "maintain" is consistent with the wording used in the NPS-FM. The WRC is required to "give effect to" the Vision and Strategy³⁵, and is also required to prepare and change any regional plan in accordance with any national policy statement³⁶. It is the Officers' view that amending Objective 1 to refer to the maintenance of water quality does not improve the policy or change the outcomes sought by PC1. It is not recommended these submissions are adopted.
- 335 It is the Officers' view that the suggested amendments from Fonterra, GBC Winstone and Fulton Hogan Ltd more appropriately classify the long-term water quality targets as "water quality states", recognising that some sub-catchments already meet water quality targets (and therefore do not meet the NPS-FM definition of a "target"). It is recommended that the amendments sought by Fonterra are accepted. The Officers also note that the NPS-FM also requires that regional councils set freshwater objectives having regard to the reasonably foreseeable impacts of climate change (Policy A1(a)(i) of the NPS-FM). While the submission from WRC seeks to include reference to climate change in Objective 1, it is unclear what those amendments should be. Rather than include this reference, the Officers consider it more appropriate that these impacts are reflected in the policies and the limits and targets set in Table 3.11-1. The Officers do not recommend adopting the submission from WRC with respect to Objective 1.
- 336 Other submissions seek more general amendments to Objective 1 so that it aligns with the NPS-FM. However, it is unclear from these submissions which parts of the Objective are inconsistent with the NPS-FM and what particular amendments are necessary. It is not recommended these submissions are accepted.
- 337 A number of submitters seek amendments to PC1 to acknowledge the contribution of other sources of contamination in the Waikato and Waipā catchments, such as koi carp, Canadian geese, point source discharges and the presence of hydro dams.
- 338 Koi carp are present in the lower Waikato River where their feeding methods re-suspend sediments in the river. While PC1 seeks to address water quality issues within the Waikato and Waipā catchments (including sedimentation), the management of aquatic pest species sits outside the matters that are able to be managed or controlled via a regional plan. The management of aquatic pest species is the responsibility of DoC, where they control the possession and harvest of koi carp and are working to prevent their spread outside the Waikato River system. DoC and WRC are currently working together as part of a wider strategy to combat koi carp in waterways. There are similar difficulties in the management of other pest species in a regional plan, such as Canadian geese. It is the Officers' view that the long-term water quality targets expressed in Objective 1 appropriately signal the outcomes sought for the Waikato and Waipā catchments, which are predominantly dependent on the

³⁵ S13(4) Waikato-Taunui Raupatu Claims (Waikato River) Settlement Act 2010

³⁶ S66(1)(ea) RMA

appropriate management of land uses and diffuse discharges. While the achievement of the long-term targets will likely need specific control of pest species, it is not recommended that Objective 1 is amended to take into consideration the impact on water quality of factors that sit outside the control of WRC and the scope of the regional plan.

- 339 Submissions outlining concerns that water quality targets should not apply during flood or other climatic events are well founded and recognise the relationship between weather or flow events and short-term impact on water quality. To address the variability of water quality associated with seasonal or climatic events, the explanatory notes to Table 3.11-1 states that the achievement of the attribute targets in Table 3.11-1 will be determined through analysis of 5-yearly monitoring data. It is the Officers' view that no amendments are necessary to provide additional certainty that the water quality limits do not apply during or immediately following flood events. With respect to the WRC point in relation to climate change, the Officers consider that this matter more effectively sits at a Policy level, and is likely to be recommended to be added to Policies that seek to direct future planning actions, such as Policies 5 and 7.
- 340 The financial implications of PC1 have been considered in the development of the provisions, where throughout the s32 report it is acknowledged there will be a cost to comply with PC1 requirements. Whether there is financial assistance available to farmers for complying with new regulations is a matter that is outside the scope of the RMA process. However, should landowners have projects that directly enhance or benefit the environment, there are opportunities to apply to the WRC for funding under the Environmental Initiatives Fund or Small Scale Community Initiatives Fund.
- 341 Submissions requesting amendments to Objective 1 that provide additional guidance for specific activities (such as stock exclusion or wetlands) are related to the methods that will be used to meet water quality targets. Objectives are statements that describe the outcomes sought by the community and do not detail the methods used to meet these outcomes. Any further description or detail on how the Objectives will be met are more suitably contained in the policies, methods and rules of the plan. It is not recommended that Objective 1 is amended to provide this guidance.
- 342 The submission from Beef and Lamb provides useful commentary on the function of an objective in a regional plan. The Officers recommend that the submission is adopted in part to ensure the objective is clear, in particular, to provide direction for policies methods and rules. Submissions on the "sub-catchment approach" are yet to be addressed. For the reasons set out in that section of this report, the Officers do not recommend that Objective 1 is amended to provide for a "sub-catchment" approach.
- 343 Table 3.11-1 sets water quality limits and targets for multiple sites in each FMU. The NPS-FM defines freshwater objectives as describing an intended environmental outcome in a FMU. The NPS-FM is silent on whether or not water quality limits and targets (which allow a freshwater objective to be met) can only apply to the FMU as a whole, or if different limits and targets can apply to individual sites within an FMU. Federated Farmers seeks that the title of Objective 1 is amended so that the long-term restoration and protection of water quality occurs for each sub-catchment and/or FMU. It is the Officers' view that the targets and limits should be met at all sites within each FMU, particularly those sites that represent the 'FMU as a whole' and the inclusion of "or" would only create confusion for plan users. The Officers do not recommend amending the title of Objective 1 in response to the submission from Federated Farmers. However, in acknowledgement that the 'heading' for each objective (the text in bold) is potentially confusing insofar as it differs from the actual wording of objective that follows, the Officers recommend that the bold 'headings' are deleted.

344 Also, in response to Federated Farmers submission, the Officers do not recommend that the objective is amended to remove reference to numerical limits and targets. The inclusion of numerical limits and targets sends a clear signal of the likely changes that would be required to restore water quality, the deletion of these would remove an integral part of PC1 and could constitute a weakening of the direction set by PC1. Additionally, it is noted that the methods in the PC1 largely relate to diffuse discharges.

345 As discussed earlier in this report, the Officers recommend deleting “Reasons for adopting Objective 1”, and as such, it is not recommended the submission from K & A Reese is accepted (which seeks amendments to the ‘reasons’ to include an explanation as to why there are no values for chlorophyll, N and P for most FMUs).

B4.3.1.4. Recommendation

346 Amend Objective 1 as follows:

~~Long term restoration and protection of water quality for each sub-catchment and Freshwater Management Unit/Te Whāinga 1: Te whakaoranga tauroa me te tiakanga tauroa o te kounga wai ki ia riu kōawaawa me te Wae Whakahaere i te Wai Māori~~

1. ~~By 2096 at the latest³⁷, a reduction in the discharges of nitrogen, phosphorus, sediment and microbial pathogens to land and water results in achievement of the restoration and protection of the Waikato and Waipā Rivers, such that of the 80-year water quality attribute targets states³⁸ in Table 3.11-1 are met³⁹.~~

~~Reasons for adopting Objective 1~~

~~Objective 1 sets long term limits for water quality consistent with the Vision and Strategy. Objective 1 sets aspirational 80-year water quality targets, which result in improvements in water quality from the current state monitored in 2010-2014. The water quality attributes listed in Table 3.11-1 that will be achieved by 2096 will be used to characterise the water quality of the different FMUs when the effectiveness of the objective is assessed.⁴⁰~~

³⁷ Tangata Whenua

³⁸ Fonterra

³⁹ Watercare; Beef and Lamb

⁴⁰ Watercare; Beef and Lamb

B4.3.2. Objective 2

Social, economic and cultural wellbeing is maintained in the long term/Te Whāinga 2: Ka whakaūngia te oranga ā-pāpori, ā-ōhanga, ā-ahurea hoki i ngā tauroa

Waikato and Waipā communities and their economy benefit from the restoration and protection of water quality in the Waikato River catchment, which enables the people and communities to continue to provide for their social, economic and cultural wellbeing.

Reasons for adopting Objective 2

Objective 2 sets the long term outcome for people and communities, recognising that restoration and protection of water quality will continue to support communities and the economy. The full achievement of the Table 11-1 2096 water quality attribute^ targets^ may require a potentially significant departure from how businesses and communities currently function, and it is important to minimise social disruption during this transition.

B4.3.2.1. Submissions

- 347 There are 190 submissions on Objective 2, with 72 in support seeking that it be retained as notified. A number of these submitters request the remainder of PC1 is amended to give effect to Objective 2, including the requirement for all industries to contribute to the improvement in water quality, the removal of the NRP and setting targets that are more achievable.
- 348 Several submitters seek that a robust analysis of the costs and benefits of PC1 is undertaken so there is a better understanding of the implications on social, cultural and economic well-being.
- 349 Various submitters seek that Objective 2 is deleted and that the “three wellbeings” (social, economic and cultural) are included in Objective 1.
- 350 Several submitters have suggested amendments to the objective with the intention of improving the wording and structure without changing the intent or outcomes sought by Objective 2. Examples include the suggestion from F4PC who suggest that the reference to the “communities and their economy benefit from the restoration and protection of water quality” better sits in Objective 1. FANZ seek amendments to remove ambiguity from the objective and to better reflect wording which is consistent with the RMA definition of sustainable management.
- 351 Several submitters seek that Objective 2 is amended to also provide for short term social, economic and cultural well-being, where others seek that the objective is strengthened to ensure that well-being is not only maintained but healthy and vibrant communities are enabled to thrive and prosper. Tangata Whenua seek amendments to include spiritual well-being and prosperity to provide better balance to Objective 2. A number of submitters request that Objective 2 is amended to include measurable targets for social, cultural and economic wellbeing.
- 352 Several submitters seek amendments to the objective to better align the outcomes with the purpose of the RMA and/or the RMA definition of sustainable management. DoC submits that in order to achieve the purpose of the RMA the focus of Objective 2 should be on the sustainable management of natural and physical resources to ensure the resources are managed in a way, or at a rate, which enables people and communities to provide for the social economic and cultural well-being. DoC also notes that the use of the word “continue” could be interpreted as continue at the current level,

however note that the reasons for the objective acknowledge there may be significant departure from how business and communities currently function. DoC seeks that Objective 2 is amended to recognise the benefits to the environment from the restoration and protection of water quality. They also seek that the word “continue” is deleted from the objective.

- 353 Fletcher Trust and Charion Investment Trust seek that Objective 2 recognises that economic well-being is also reliant on the use of water. Several submitters request that Objective 2 recognises the importance of primary production activities to the economy of the Waikato Region and the need for an appropriate regime to sustainably manage natural and physical resources.
- 354 Mercury NZ Ltd supports Objective 2 but seeks that it is amended so that it refers to both the Waikato and Waipā catchments. In addition, they note that the restoration and protection of water quality in the Waikato and Waipā catchments has benefits beyond the immediate communities and this should be reflected in the objective.
- 355 Forest and Bird submit that there is a disconnection between the objective and the explanation. They note that the explanation of the objective refers to the benefits from restoration and enhancement of water quality, but the Objective does not state this. They seek specific amendments to Objective 2 to give effect to their submission.
- 356 Waikato Environment Centre submit that PC1 does not reference or account for the potential income opportunities and economic benefits associated with measures to improve water quality and swimmable, food-gatherable freshwater. They seek that PC1 is amended to recognise the potential off-sets to the costs of change, and the potential economic benefits, and that these will assist with limiting any social disruption.
- 357 Black Jack Farms submits that Objective 2 identifies water as the only factor that enables people and communities to provide for their social well-being. They seek that a new Objective 2a is included in PC1 that recognises the social, economic and cultural importance of low intensity farms that they believe have limited effect on water quality. Several submitters seek that the objective is amended to recognise the support that the landowners must give in order to achieve the water quality outcomes, and in some submissions, that financial support is provided (by way of compensation, subsidies or grants) to assist in meeting the plan’s objectives.

B4.3.2.2. Submissions on Principal Reasons for Adopting Objective 2

- 358 There are 10 submissions on the Principal Reasons for Adopting Objective 2, one of which seeks that it is retained as notified.
- 359 Fonterra, GC Winstone and Fulton Hogan Ltd seek that the Principal Reasons for Objective 2 is amended to improve consistency between the language used in PC1 and the NPS-FM.
- 360 HortNZ submit that the Reasons for adopting Objective 2 would be improved by noting that it is important to minimise both the “economic” and social disruption to the community during the transition to achieving water quality targets. Several other submitters seek similar amendments.

B4.3.2.3. Analysis

- 361 Objective 2 sets the long-term outcome for people and communities, with the recognition that the restoration and protection of water quality will also support communities and the economy. The

reasons for Objective 2 acknowledge that the full achievement of the water quality outcomes may require a significant departure from current practice and signals the importance of minimising social disruption during this transition. It is the Officers' view that amendments to Objective 2 to ensure that communities thrive and prosper are beyond the scope of PC1, as there are multiple external influencing factors that affect the community's ability to thrive and prosper. The wording of Objective 2, as notified, is considered to appropriately give effect to purpose of the RMA with respect to social, economic and cultural well-being. It is recommended these submissions are rejected.

- 362 Submitters seeking that the objective is amended to include measurable targets showing improvement or maintenance of social and economic wellbeing have not provided any suggested targets in include in PC1. It is the Officers' view that it is not feasible or appropriate to set targets for social and economic well-being when there are a significant number of influencing factors on these outcomes, and where the majority of the influencing factors are outside the scope of PC1. The Officers do not recommend these submissions are accepted Similarly, it is unclear from the submission from Waikato Environment Centre what particular amendments are necessary to recognise the potential economic benefits associated with achieving the water quality targets. It is not recommended that this submission is accepted.
- 363 As described earlier in this report, objectives are statements that describe the outcomes sought by the community. The Officers recommend rejecting submissions that request amendments to Objective 2 that do not describe an outcome for the Waikato and Waipā catchments, including requests for further analysis of the economic or social impacts; and amendments to recognise low intensity farming activities and exempt these from the provisions in PC1.
- 364 The rate at which land management change occurs has been considered as part of the development of PC1, where it has been acknowledged that significant change will need to occur to meet the water quality outcomes for the Waikato and Waipā Rivers. The acknowledgement of the likely changes required and the implications of this on landowners is catered for in the staged approach to meeting the Vision and Strategy, and was carefully considered by the CSG. Amendments to the objective to provide for the restoration and protection in a way and at a rate that enables people and communities to provide for their well-being are not considered necessary, as PC1 already provides for this in a way that balances the environmental, cultural, social and economic matters. It is not recommended these submissions are accepted.
- 365 In respect to amendments sought to include recognition of the importance of the use of water, it is noted that the focus of PC1 is water quality, and not the abstraction of water. These matters are addressed in Section 3 of the operative WRP. As this topic is outside the scope of PC1, it is recommended these submissions are rejected.
- 366 The submission from Mercury NZ Ltd highlights that the Waipā catchment was inadvertently excluded from Objective 2. For completeness, it is recommended this submission is accepted in part and Objective 2 is amended to include reference to the Waipā River. Mercury NZ Ltd also request that the objective is amended to recognise the benefits to communities outside of the Waikato and Waipā catchments. While this may be an outcome sought by the community, the evaluation undertaken in the development of PC1 did not extend to wider benefits, and as such, it is not appropriate to include such a statement without the necessary evidence and information supporting these outcomes. The Officers recommend this submission is rejected in part.
- 367 The submission from Forest and Bird highlights a disconnect between the body of Objective 2 and the reasons for the objective. The amendments sought have merit. However as previously discussed in this report, it is recommended that the "Reasons" for the objectives are deleted. In this case, the

Officers do not consider it necessary to include any part of the Reasons into Objective 2 as it does not provide any additional certainty or clarification regarding the outcomes sought by PC1.

B4.3.2.4. Recommendation

368 Amend Objective 2 as follows:

~~*Social, economic and cultural wellbeing is maintained in the long term/Te Whāinga 2: Ka whakaūngia te oranga ā-pāpori, ā-ōhanga, ā-ahurea hoki i ngā tauroa*~~

Waikato and Waipā communities and their economy benefit from the restoration and protection of water quality in the Waikato and Waipā⁴¹ River catchments, which enables the people and communities to continue to provide for their social, economic and cultural wellbeing.

~~*Reasons for adopting Objective 2*~~

~~*Objective 2 sets the long term outcome for people and communities, recognising that restoration and protection of water quality will continue to support communities and the economy. The full achievement of the Table 11-1 2096 water quality attribute targets may require a potentially significant departure from how businesses and communities currently function, and it is important to minimise social disruption during this transition.⁴²*~~

⁴¹ Mercury NZ Ltd PC1-9506

⁴² Forest and Bird

B4.3.3. Objective 3

Short-term improvements in water quality in the first stage of restoration and protection of water quality for each sub-catchment and Freshwater Management Unit/Te Whāinga 3: Ngā whakapainga taupoto o te kounga wai i te wāhanga tuatahi o te whakaoranga me te tiakanga o te kounga wai i ia riu kōawāwa me te Wae Whakahaere Wai Māori

Actions put in place and implemented by 2026 to reduce discharges of nitrogen, phosphorus, sediment and microbial pathogens, are sufficient to achieve ten percent of the required change between current water quality and the 80-year water quality attribute targets in Table 3.11-1. A ten percent change towards the long term water quality improvements is indicated by the short term water quality attribute targets in Table 3.11-1.

Reasons for adopting Objective 3

Objective 3 sets short term goals for a 10-year period, to show the first step toward full achievement of water quality consistent with the Vision and Strategy.

The effort required to make the first step may not be fully reflected in water quality improvements that are measurable in the water in 10 years. For this reason, the achievement of the objective will rely on measurement and monitoring of actions taken on the land to reduce pressures on water quality.

Point source discharges are currently managed through existing resource consents, and further action required to improve the quality of these discharges will occur on a case-by-case basis at the time of consent renewal, guided by the targets and limits set in Objective 1

B4.3.3.1. Submissions on Objective 3

- 369 There are 210 submissions on Objective 3, with 57 seeking that it be retained as notified and 17 seeking that it be deleted. Some of those seeking the objective be deleted state that the provisions create too much uncertainty about future land use requirements.
- 370 A number of submitters support the intent of the objective, with many seeking amendments that relate to providing clarification about the changes required between the short-term improvements and the long term goals.
- 371 A number of submissions are on the timeframes set in Objective 3 for putting in place actions to reduce discharges of contaminants and achieve short-term water quality targets. Submitters seek both shorter and longer timeframes for taking actions to improve water quality, whereas several submitters seek that timeframes are deleted from Objective 3.
- 372 Various submitters raise concerns that no timeframe has been defined for achieving the water quality targets. Several submitters seek amendments to clarify the timeframe for the 10% change in water quality, including whether “short term” means “by 2026”. Some submitters seek that the objective be amended so that the actions put in place are sufficient to “eventually” achieve the short-term water quality attribute targets, or take into account the lag period of nutrients. South Waikato DC seeks to qualify the timeframe for achieving the short-term targets to 2036.

- 373 Forest and Bird considers that the objective defers action to improve water quality for a further 10 years and that this is inappropriate. They state that PC1 should require immediate action to address deteriorating water quality and seek amendments to this effect.
- 374 Submitters also seek different percentage reduction in emissions ranging from “at least 10%” to 20%. DoC seeks a 20% improvement in water quality in lakes within 10 years. A number of submitters seek that the reference to 10% is removed in its entirety. Two submitters request amendments to make clear that the 10% improvement in the water quality attributes is an overall improvement in water quality, and not a requirement for each attribute.
- 375 DairyNZ seeks amendments to make clear that the water quality targets are not intended to be used directly as receiving water standards.
- 376 Reeves and Taylor seek that Objective 3 is amended to acknowledge that many of the sub-catchments meet some (or all) of the water quality targets set in Table 3.11-1. Fish and Game seek that PC1 includes attribute targets for all sites. B, J, K & J Osborne submits that there are no targets or base data set for their local sub-catchment (Moakurua). They note that without this information, any FEP aiming to improve water quality would be “shooting in the dark” and requests that additional water quality data is obtained over a suitable recording period in order to set water quality targets for this sub-catchment. They seek that the PC1 is withdrawn from the Moakurua sub-catchment until this information is available.
- 377 Two submitters seek that the FMUs set in Table 3.11-1 are redefined at a more appropriate scale for setting freshwater objectives and limits. Submissions on the identification of FMUs and use of sub-catchment attribute targets is discussed in Section B5 of this report.
- 378 Three submitters seek that the objective is amended to target high-contaminant problem areas or activities. In particular, K Roberts states that the objective should be amended to include a catchment by catchment monitoring system so that catchments with large amounts of discharge can be targeted rather than catchments with “appropriate discharge”. Others seek amendments that will require the WRC to monitor each farm and determine acceptable levels of containment.
- 379 HFM state that they support the intent of Objective 3 to achieve a measurable improvement in water quality to meet long term water quality targets, however they consider that the 10% change is somewhat arbitrary and, in the short term, difficult to measure. They are concerned that PC1 is not necessarily setting the region on a clear path towards the achievement of long term targets, they appear to be holding the status quo rather than making any real measurable improvement in land use practices by those contributing to water quality degradation. They request that Objective 3 is amended so that improvements are required now to set the region on a firm trajectory towards achieving the 80 year goals, with measurable improvements in the first 10 years and implementation of actions that are aligned with the long term goals.
- 380 Various submitters seek minor amendments to the objective that do not change the intent or outcome sought by the objective, and are typically related to clarity or drafting style. Several submitters seek minor amendments to align the terminology used with that set out in the NPS-FM. In particular, that numeric values in Table 3.11-1 are more accurately described as attribute states rather than “targets”. Another submitter seeks that the objective is amended so that its achievement is a measured increase in water quality, and not the “measurement and monitoring of actions”.
- 381 HortNZ and others seek that PC1 provides flexibility to landowners to collaboratively achieve reductions at catchment or sub-catchment scales. To enable this approach, HortNZ seeks a number of

amendments to the provisions, including the addition of catchment load limits. They seek that Objective 3 is amended to refer to the proposed load limits.

382 Similar to other submissions on Objective 1, a number of submitters seek that Objective 3 is amended to:

- ensure the targets are realistic and achievable;
- take into account the impact on social and economic wellbeing;
- make clear that numerical targets in Table 3.11-1 do not apply during flood events;
- clarify the application of water quality target provisions, particularly for non-farming activities;
- take into consideration the contribution of other discharges or factors on water quality, such as koi carp and urban discharges;
- remove reference to the NRP;
- delete targets and enable mitigations to be adopted through farm management practices articulated in FEPs; and
- acknowledge there is uncertainty in predicting how water quality attributes will change over time.

383 Several submitters also request amendments to provide additional data to enable future comparisons and additional modelling to show the required changes and their impacts.

B4.3.3.2. Submissions on the Reasons for Adopting Objective 3

384 There are 15 submissions on the Reasons for Adopting Objective 3, with one submitter seeking that it be retained as notified.

385 Several submitters raise concerns about the reference to point source discharges. Hamilton CC submits that the reasons for Objective 3 could be construed as requiring the water quality of point source discharges to meet targets from the day a renewed point source discharge content is granted. They state that such an interpretation would conflict with other provisions in PC1 that recognise the need for a staged approach, require application of the BPO and provide for offset measures to be implemented. They request amendments to give effect to their submission.

386 Wairakei Pastoral Ltd seek amendments to clarify that point source discharges are currently managed through existing resource consents and permitted activity rules. Several submitters request that Reasons for Adopting Objective 3 are amended to clarify that the water quality targets are not intended to be used directly as receiving water standards.

387 Forest and Bird submit that the approach of only seeking changes to point source discharges at the time of consent renewal and case by case does not enable a coordinated and consistent approach to be applied. They seek that a date be set for limits/targets within a rule to trigger the review of consents on a "sub-catchment of freshwater managing unit basis". Similarly, two submitters seek that reference to point source discharges be deleted from the Reasons for Adopting Objective 3 on the basis that it is inequitable that point source discharges will be handled in a manner any differently to sheep and beef farms.

388 HortNZ seek that the Reasons for Adopting Objective 3 is amended to reflect the inclusion of a collaborative approach to managing discharges at a sub-catchment scale, to achieve sub-catchment load limits.

- 389 K & A Reese oppose the lack of clarity regarding the measurement and monitoring of actions taken on the land to reduce pressures on water quality. They would like the Reasons for Adopting Objective 3 to be amended to specify how the effect of the actions taken on land will be measured and monitored, i.e. through FEPs or consent documents. They also note that landowners could collaborate with neighbours to test water quality at their respective boundaries.
- 390 Fonterra, Fulton Hogan Ltd and GBC Winstone request that the Reasons for Adopting Objective 3 is amended to state that Objective 3 is a freshwater objective for the purposes of the NPS-FM.

B4.3.3.3. Analysis

- 391 Objective 3 provides, with certainty, what improvements to water quality are required within the next ten years and subsequently, the expected improvements in management practices to reduce contaminant loss from farming activities. There is insufficient information available to determine what types of improvements and at what rate they would be required over the following years, which is indicated throughout PC1 (and particularly in Objective 1). Given that the uncertainty of future improvements has already been acknowledged within PC1, and taking into account that Objective 3 provides certainty for the life of PC1, it is not recommended that the objective is amended to provide additional guidance on what specific changes are required to land use practice to achieve the long-term goals.
- 392 Some submitters identify that some catchments already meet the limits set in Table 3.11-1. The Officers acknowledge that Objective 3 is not specific in stating that maintaining or protecting current (good) water quality is an appropriate or desirable outcome for these sub-catchments. However, it is important to acknowledge the cumulative impacts of land use of water quality, where small contributions in multiple sub-catchments can cumulatively result in exceedances in water quality targets in the wider catchment. As such, there is a need for all landowners to improve land use practices, regardless of whether their immediate sub-catchment is meeting water quality limits, to ensure that the targets are achieved at a wider catchment scale. It is not recommended that these submissions are adopted, as the objective needs to maintain direction for all land owners to take action to improve water quality so that all of the short-term targets are met.
- 393 Submissions on the “sub-catchment” approach will be addressed in subsequent sections of this report. Given the conclusions on that approach are yet to be reached by the Officers no recommendation is made such that Objective 3 be amended to enable flexibility for landowners to collaboratively achieve catchment reductions. In any event, as the objective is about achieving short term improvements, and not the methods to achieve the outcomes set out in the objectives, it may be that a change to the objective is not necessary in any event.
- 394 The technical information supporting PC1 indicates that the 10% reduction in emissions over the next 10 years is a difficult yet achievable goal. Submissions requesting a different percentage reduction or a different time for achieving those reductions are not supported by information provided by the submitters demonstrating whether or not those outcomes are achievable. In the absence of this information, the Officers do not recommend these submissions are adopted. Similarly, it is not recommended that submissions are adopted that erode from the requirement to achieve 10% reductions by 2026.
- 395 The difficulties associated with managing the effects of other discharges, natural events and pest species on water quality is discussed under Objective 1. For the reasons outlined in that section of this report, the Officers do not recommend that Objective 3 (and the water quality outcomes articulated

in Table 11.3-1) are amended to specifically provide for these matters. It is recommended these submissions are rejected.

- 396 The submission from Ravensdown seeks that an advice note is included to specify that the 10% change required by the objective is an overall improvement in water quality. It is unclear from the submission how “overall improvement in water quality” would be determined and appears to be a weakening of the outcome sought by Objective 3. It is not recommended that this submission is accepted.
- 397 The Officers recommend that, where the amendments requested improve the objective, these submissions be accepted in part⁴³, in particular, amendments that make it clear that the targets apply to both diffuse and point source discharges. Where the amendments sought do not provide additional clarity or transparency, the Officers do not recommend these submissions are accepted. This particularly applies to any submissions seeking that the objective is amended to include a description of the methods that will be undertaken to achieve the outcomes sought, or the monitoring or modelling that may be undertaken to determine compliance.
- 398 Submissions that seek similar amendments to Objective 1, including the provision of additional data or modelling, have already been addressed in the discussion of submissions on Objective 1. For the reasons set out in the discussion against Objective 1, it is not recommended these submissions be accepted.
- 399 It is the Officers’ view that specifying that Objective 3 is a “freshwater objective for the purposes of the NPS-FM” does not improve the objective or change the outcomes sought. At this time, it is not recommended the submissions on this point from Fonterra, Fulton Hogan Ltd and GBC Winstone are accepted. However, Officers acknowledge that there are differing views on what constitutes a freshwater objective, and welcome evidence on that matter from the submitters, particularly in light of the other changes suggested by the Officers.

B4.3.3.4. Recommendation

- 400 Amend Objective 3 as follows:

~~*Short term improvements in water quality in the first stage of restoration and protection of water quality for each sub-catchment and Freshwater Management Unit/Te Whāinga 3: Ngā whakapainga taupoto o te kōunga wai i te wāhanga tuatahi o te whakaoranga me te tiakanga o te kōunga wai i ia riu kōawāwa me te Wae Whakahaere Wai Māori*~~⁴⁴

~~*Actions put in place and implemented by 2026 to reduce diffuse and point source⁴⁵ discharges of nitrogen, phosphorus, sediment and microbial pathogens, are sufficient to achieve the short-term water quality attribute states in Table 3.11-1.⁴⁶ ten percent of the required change between current water quality and the 80-year water quality attribute targets in Table 3.11-1. A ten percent change towards the long-term water quality improvements is indicated by the short-term water quality attribute targets in Table 3.11-1.*~~

~~*Reasons for adopting Objective 3*~~

⁴³ Southern Pastures Ltd Partnership

⁴⁴ Watercare

⁴⁵ DoC

⁴⁶ Southern Pastures Ltd Partnership

~~Objective 3 sets short term goals for a 10-year period, to show the first step toward full achievement of water quality consistent with the Vision and Strategy.~~

~~The effort required to make the first step may not be fully reflected in water quality improvements that are measureable in the water in 10 years. For this reason, the achievement of the objective will rely on measurement and monitoring of actions taken on the land to reduce pressures on water quality.~~

~~Point source discharges are currently managed through existing resource consents, and further action required to improve the quality of these discharges will occur on a case by case basis at the time of consent renewal, guided by the targets and limits set in Objective 1.~~⁴⁷

⁴⁷ Watercare PC1-8450

B4.3.4. Objective 4

People and community resilience/Te Whāinga 4: Te manawa piharau o te tangata me te hapori

A staged approach to change enables people and communities to undertake adaptive management to continue to provide for their social, economic and cultural wellbeing in the short term while:

- a. considering the values and uses when taking action to achieve the attribute^ targets^ for the Waikato and Waipā Rivers in Table 3.11-1; and*
- b. recognising that further contaminant reductions will be required by subsequent regional plans and signalling anticipated future management approaches that will be needed to meet Objective 1.*

Reasons for adopting Objective 4

Objective 4 provides for a staged approach to long-term achievement of the Vision and Strategy. It acknowledges that in order to maintain the social, cultural and economic wellbeing of communities during the 80-year journey, the first stage must ensure that overall costs to people can be sustained. In the future, a property-level allocation of contaminant discharges may be required. Chapter 3.11 sets out the framework for collecting the required information so that the most appropriate approach can be identified. Land use type or intensity at July 2016 will not be the basis for any future allocation of property-level contaminant discharges. Therefore, consideration is needed of how to manage impacts in the transition. Objective 4 seeks to minimise social disruption in the short term, while encouraging preparation for possible future requirements.

B4.3.4.1. Submissions

- 401 There are 217 submissions on Objective 4. 45 submitters seek that it is retained as notified. Eleven submitters seek that it is deleted as the submitters consider that PC1 creates too much uncertainty for future farm planning.
- 402 Various submitters state that the meaning of Objective 4 is not clear, including the meaning of “values and uses”, the definition of “short term” and that Objective 4(b) implies that the targets set in Table 3.11-1 could be altered. DairyNZ seeks that the objective is amended to make the language more specific and clarify that the positive effect of a staged approach is that community resilience can be maintained. Other submitters have also sought specific amendments to Objective 4 to improve the objective and to reduce uncertainty.
- 403 Matamata-Piako DC submits that the reasons do not reflect what the objective currently states, and seeks amendments to the Objective to make clear the outcomes sought.
- 404 One submitter seeks that a measure of social, cultural and economic wellbeing be included in PC1.
- 405 Ballance and Hamilton CC submit that PC1 offers limited guidance on how communities are to undertake the adaptive management approach to provide for the economic, social and cultural wellbeing, as the implementation methods do not address adaptive management. They state that a lack of guidance creates uncertainty for plan users and seek that Objective 4 be amended so that reference to adaptive management is deleted. Ballance seeks that it is replaced with “implement management responses (including those set out in Implementation Methods set out under section 3.11.4)”. Forest and Bird also submits that adaptive management is not appropriate and seeks amendments that focuses on a staged approach.

- 406 Various submitters are concerned that PC1, as proposed, does not enable the achievement of Objective 4, as there is uncertainty about what will be required in the future, which fails to ensure resilience. Several submitters raise concerns about the costs of complying with the plan provisions and how this relates to providing for social and economic well-being. Relief sought in these instances include the deletion of the NRP, spreading the cost of complying equitably among all New Zealanders and increasing the timeframe for complying with the short-term goals. Amendments are also sought to strengthen the requirements to provide for economic well-being including vibrancy and resilience of farming in the region for both the life of the plan and in the long term.
- 407 W & K Oliver submit that it is important to acknowledge that it is the people and communities who will bear the cost of implementing PC1 and that compliance with PC1 will cause considerable hardship physically, economically and therefore mentally. They seek that a monitoring programme is set up around health issues and WRC acts to mitigate issues that may arise.
- 408 S & T Stark agree with the intent of the objective but state reports supporting the development of PC1 show that the objective cannot be met. In particular, they state that many landowners must fund “huge costs” for infrastructure (fencing, water reticulation, planting), where there is no certainty what further rules and regulations will be coming in the next 10 year plan which may negate some of the work and expense done under PC1. They seek that the objective is amended to provide public funding where there are negative economic impacts on landowners for the public good.
- 409 Several submitters request that Objective 4(b) be deleted as they consider it conflicts with Objective 4(a) and creates further uncertainty which is not beneficial to encourage resilience. K & A Reese seeks that Objective 4(b) is amended to alleviate uncertainty through a commitment by WRC to publicly consult before any future regional plan changes take effect.
- 410 Charion Investment Trust also submits that solutions are likely to emerge which may not require the need for future contaminant reductions to be the only options, and states that locking in a program for future intervention is not an objective. They request specific amendments in support of their submission. FANZ seeks similar amendments.
- 411 Various submitters seek that Objective 4 is amended to recognise that PC1 is transitional and stages should be set progressively to allow changes to occur at the most opportune time.
- 412 Beef and Lamb submit that Objective 4 fails to recognise sub catchment specific conditions (including that some are not overallocated) and fails to provide a pathway for individuals and communities to work together to achieve the vision and strategy. HortNZ also seeks amendments to encourage communities who choose to develop a more accurate accounting framework at a sub-catchment scale to manage contaminant reductions collectively. H Macdonald seeks that a sub-catchment approach is combined with a natural capital approach.
- 413 Several submitters request additional data and modelling to determine the likely impacts of the proposed provisions.
- 414 DoC submits that the use of the word “continue” can be interpreted to mean continue at the current level, however in order to achieve the restoration of water quality real changes in the management of discharges are necessary.
- 415 Waikato Environment Centre seeks amendments to recognise the potential off-sets to the costs of change, and the potential economic benefits, that will assist in limiting any social disruption.

B4.3.4.2. Submissions on Reasons for Adopting Objective 4

- 416 There are several submissions on the Reasons for Adopting Objective 4. Three submitters seek amendments to better recognise or investigate the financial and economic implications of PC1. One submitter seeks amendments to explain the basis for future allocation, whereas another submitter seeks that any pre-judgement for future allocation mechanisms be deleted.

Wairakei Pastoral Ltd supports the Reasons for Adopting Objective 4 and seeks that it is amended to encourage enterprises to apply for sub-catchment management resource content applications.

B4.3.4.3. Analysis

- 417 Objective 4 provides for a staged approach to the long term achievement of the Vision and Strategy, to minimise social disruption in the short term, while encouraging preparation for possible future requirements. The submission from Charion Investment Trust identifies that describing a programme for future intervention is not an objective. The Officers have reviewed Objective 4 in response to this submission and the submission from Watercare. It is the Officers' view that Objective 4 does not describe an outcome or future state, but rather outlines implementation methods and a programme for future intervention, which are typically contained in policies and rules (s67(1) (b) and (c) of the RMA). On this basis, the Officers recommend that Objective 4 be deleted, noting that the deletion of the objective will have little consequence as these matters are well covered by Policies 5 and 7. While the Officers recommend that the objective is deleted, the Hearing Commissioners may reach a different view on whether or not Objective 4 is indeed an objective and not an implementation method. In this event, to assist the Hearing Panel in making a decision whether any amendments to Objective 4 are necessary, an analysis of the submissions on Objective 4 has been undertaken below.
- 418 Some submissions seek assurance that future planning processes are publicly notified. The Officers' note that any future planning framework proposed by the WRC will be required to follow the prescribed process set out in Schedule 1 of the RMA, which includes public participation. The Officers' do not consider that any amendments are necessary to provide for this. A number of submitters have requested that reference to the NRP be deleted from PC1. While this is not included in Objective 4, the submitters are concerned with the relative costs of different farming types complying with the provisions in the plan, which is somewhat related to the provision of social and economic well-being as described in Objective 4. Submissions related to the NRP will be addressed in later stages of the s42A report.
- 419 Various submitters seek amendments to the objective that have the effect of making the objective more certain or clear, without altering the outcome sought by PC1. The Officers recommend submissions be accepted where they offer improvements that include making it clear that the staged approach referenced in the objective applies to a reduction in contaminant losses, and removing the requirement to "considering the values and uses" when taking action to achieve the water quality targets.
- 420 In response to submitters seeking that reference to "adaptive management" be removed, it is acknowledged that adaptive management is a specific management approach that has been described by the Environment Court as "*an experimental approach to management, or "structured learning by doing". It is based on developing dynamic models that attempt to make predictions or hypotheses about the impacts of alternative management policies. Management learning then proceeds by systematic testing of these models, rather than by random trial and error. Adaptive management is*

most useful when large complex ecological systems are being managed and management decisions cannot wait for final research result"⁴⁸. The regime set out in PC1 to reduce contaminant losses does not align with the common understanding of "adaptive management". While the Officers agree that the words "adaptive management" are better represented by "implement management responses". the recommended amendments described in the previous paragraph above have resulted in this being removed from the Objective.

- 421 In regard to submissions seeking amendments that recognise that PC1 is transitional or should provide staging, the Officers consider that PC1 provides for this and that no additional amendments are necessary to make this clear. Similarly, in regard to recognising and enabling sub-catchment approaches, the policies in PC1 already provide a pathway forward as a way of implementing the objectives. The Officers do not consider that further amendments are necessary to provide for this in Objective 4.
- 422 As described previously, all landowners are required to take action to improve water quality, regardless of whether their particular sub-catchment meets water quality targets as relatively small contributions in multiple sub-catchments can cumulatively result in exceedances in water quality targets in the wider catchment. It is not recommended that these submissions are adopted as the objective needs to maintain direction for all land owners to take action to improve water quality.

B4.3.4.4. Recommendation

- 423 Delete Objective 4, or in the alternative, amend Objective 4 as follows:

People and community resilience/Te Whāinga 4: Te manawa piharau o te tangata me te hapori

A staged approach to reducing contaminant losses ~~change~~⁴⁹ enables people and communities to ~~undertake adaptive~~ to continue to provide for their social, economic and cultural wellbeing in the short term while:

- a. ~~considering the values and uses when~~⁵⁰ taking action to achieve the attribute^ targets^ ~~states~~⁵¹ for the Waikato and Waipā Rivers in Table 3.11-1; and***
- b. recognising that further contaminant reductions will be required by subsequent regional plans and signalling anticipated future management approaches that will be needed in order⁵² to meet Objective 1⁵³.***

Reasons for adopting Objective 4

Objective 4 provides for a staged approach to long-term achievement of the Vision and Strategy. It acknowledges that in order to maintain the social, cultural and economic wellbeing of communities during the 80-year journey, the first stage must ensure that overall costs to people can be sustained.

In the future, a property level allocation of contaminant discharges may be required. Chapter 3.11 sets out the framework for collecting the required information so that the most appropriate approach can be identified. Land use type or intensity at July 2016 will not be the basis for any future

⁴⁸ Golden Bay Marine Farmers v Tasman District Council W19/2003 at [405]

⁴⁹ Rotorua Lakes DC PC1-2468

⁵⁰ Southern Pastures Ltd Partnership PC1-11096 and Ata Rangī PC1-6113

⁵¹ Fonterra

⁵² Southern Pastures Ltd Partnership PC1-11096 and Ata Rangī PC1-6113

⁵³ Rotorua Lakes DC PC1-2468

~~allocation of property-level contaminant discharges. Therefore, consideration is needed of how to manage impacts in the transition.~~

~~Objective 4 seeks to minimise social disruption in the short term, while encouraging preparation for possible future requirements.~~

B4.3.5. Objective 5

Mana Tangata – protecting and restoring tangata whenua values/Te Whāinga 5: Te Mana Tangata – te tiaki me te whakaora i ngā uara o te tangata whenua

Tangata whenua values are integrated into the co-management of the rivers and other water bodies within the catchment such that:

- a. *tangata whenua have the ability to:*
 - i. *manage their own lands and resources, by exercising mana whakahaere, for the benefit of their people; and*
 - ii. *actively sustain a relationship with ancestral land and with the rivers and other water bodies in the catchment; and*
- b. *new impediments to the flexibility of the use of tangata whenua ancestral lands are minimised; and*
- c. *improvement in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.*

Reasons for adopting Objective 5

Objective 5 seeks to ensure that this Plan recognises and provides for the relationship of tangata whenua with ancestral lands, by ensuring the other provisions of Chapter 3.11 do not provide a further impediment to tangata whenua making optimal use of their land. Historic impediments included customary tenure in the nineteenth century, public works, rating law, Te Ture Whenua Māori Act, and confiscation. Some impediments or their effects continue currently, including issues of governance, fragmentation and compliance with central and local government regulations such as regional and district plans, or the emissions trading scheme. Land relevant to this objective is land returned through Treaty of Waitangi settlement, and land under Māori title that has multiple owners.

B4.3.5.1. Submissions

- 424 There are 96 submissions on Objective 5. Twenty-nine submitters seek that the objective is retained as notified, nine submitters seek that it is deleted, and eight submitters did not request a specific decision.
- 425 Several submitters request that all landowners are equally responsible for the health and well-being of the Waikato River, particularly in relation to provisions on the flexibility of land use. Some of these submitters seek that Objective 5(b) is deleted in its entirety. One submitter⁵⁴ seeks flexibility based on contaminant effects from an activity and not the ownership of land.
- 426 Various submitters seek that the objective is amended to acknowledge primary production as a core value, as they suggest co-management should occur with not only tangata whenua but also industries, markets and communities.
- 427 Tuaropaki Trust supports Objective 5 and seeks a consequential controlled activity rule as the Trust consider that this would be a more efficient way to give effect to Objective 5 and Policy 16.
- 428 Two submitters⁵⁵ seek clarification of the minimisation of new impediments to the flexibility of use of tangata whenua ancestral lands. DoC seek amendments to clarify that the intrinsic values are not

⁵⁴ E Henson PC1-10482

⁵⁵ Pouakani Trust PC1-6282; Miraka Limited PC1-8809

considered 'impediments' under clause (b). They also request an amendment to clearly outline that intrinsic values are recognised and provided for as required by sections 5 and 6 of the RMA.

429 J Hahn suggests, under PC1, future generations will be required to offset the flexibility of the use of Māori Land. She considers that these offsets should be provided for by Central Government and not through PC1 as issues were caused by past heads of state. She requests Objective 5(b) is amended as follows:

b. new impediments to the flexibility of the use of tangata whenua ancestral lands are minimised by central government providing for all offsets to achieve water quality for the catchment; and

430 Forest and Bird considers Objective 5 clause (a)(ii) suggests tangata whenua can undertake activities which could contribute to the degradation of water quality and may risk the ability to meet the attribute limits and targets. They therefore request Objective 5 is amended to clarify that a relationship with ancestral land and with the rivers and others water bodies in the catchments are actively sustained while achieving the water quality attributes and targets in Table 3.11-1.

Iwi of Hauraki request Objective 5 is amended as follows:

- a. *tangata whenua have the ability to:*
 - i. *use and develop land acquired as cultural and commercial redress to support their social, cultural and economic development; and*
 - ii. *manage their own lands and resources including tangata whenua ancestral lands, by exercising mana or mana whakahaere, for the benefit of their people; and*
 - iii. *actively sustain a relationship with tangata whenua ancestral land and with the rivers and other water bodies in the catchment; and*
- b. *~~new impediments to the flexibility of the use~~ and development of tangata whenua ancestral lands are minimised; and*
- c. *overall improvement in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.*

B4.3.5.2. Submissions on the Reasons for Adopting Objective 5

431 There were four submissions on the reasons for adopting Objective 5. Forest and Bird request the same amendments as to the Objective itself noted above. J Reeves and I Kerr both suggest all landowners should be treated the same and it is the responsibility of everyone for clean waterways. Federated Farmers suggests PC1 needs to adopt a consistent approach to land types that is effects based and tangata whenua ancestral land owners concerns should be addressed through a framework which considers the effects of development rather than an exemption. They request the reasons for adopting Objective 5 are amended to remove the idea that PC1 is a new impediment and that historic impediments should not determine exemption.

B4.3.5.3. Analysis

432 Many of the submission points relate to the issue of the development of Māori Land, and are related to the 'package' of related provisions, including the values and uses, this Objective, Policy 16 and related rules. These matters will be addressed more fully and cohesively in Section C2 of this Report.

433 Objective D1 of the NPS-FM requires Councils to provide for the involvement of iwi and hapu, and to ensure that tangata whenua values and interests are identified and reflected in the management of fresh water including associated ecosystems, and decision-making regarding freshwater planning.

Policy D1 requires local authorities take reasonable steps to achieve the above. Objective 5 of PC1 gives effect to this.

- 434 The Vision and Strategy is given effect to through Objective 5 by providing for and acknowledging the relationship of River iwi according to their tikanga and kawa. Providing for this relationship is consistent with Objectives B, C, D and J of the Vision and Strategy⁵⁶ while still achieving the overall goal of PC1 to protect and restore the Waikato and Waipā River Catchments. As discussed in Section B1 of this report, amendments to PC1 (as requested by most submitters), to provide the same flexibility to all landowners would not give effect to the Vision and Strategy, in providing for the relationship of tangata whenua and their lands or achieving the objectives and limits and targets set out in PC1. Therefore, and accepting that there will be more discussion in relation to hearings on the more detailed provisions that give effect to this objective, Officers do not recommend removing the provisions relevant to tangata whenua or providing similar provisions to all landowners.
- 435 The Officers do not consider it appropriate to adopt the request by various submitters to acknowledge primary production as a core value, as it is a significant departure from the content and intent of this Objective. Further, the legislation for the management of the Waikato and Waipā Rivers establishes a co-governance framework, which is reflected in Objective 5.
- 436 Officers note the activity status of the land use change rule in terms of flexibility for tangata whenua ancestral land is discussed further in Section C2 Māori Land of this report. Therefore, the amendment requested by Tuaropaki Trust is addressed in that section as it is not directly addressing Objective 5.
- 437 Waikato Regional Council must to give effect to the Vision and Strategy as it is set out through the legislation⁵⁷. Therefore it is WRC's obligation to provide for the inclusion of tangata whenua values and provisions for the flexibility of the use of land through PC1 due to legislation and also the historical and contemporary impediments preventing or inhibiting the use of such land in the past. As such, Officers do not consider it appropriate to adopt the amendments sought by J Hahn.
- 438 The intent of Objective 5 is to provide for the relationship of tangata whenua with their ancestral land and particularly to ensure other provisions of PC1 do not create new impediments to tangata whenua being able to use their land. For Treaty settlement land to be developed to its 'full' potential it is likely to mean increases of diffuse discharges of N, P, microbial pathogens and sediment. The non-complying activity rule is a significant barrier, and could be considered to create a new impediment to the use of Māori Land. Objective 5 recognises this, and it (together with Policy 16) provides a 'consenting pathway' through section 104D(1)(b) of the RMA for decision-makers assessing applications relating to for Māori Land.
- 439 Objective 5 does not intend to authorise the use and development of Māori Land, it recognises the relationship of tangata whenua and their ancestral lands. Officers do not agree with the Forest and Bird that Objective 5(a)(ii) suggests tangata whenua can undertake activities which could contribute to the degradation of water quality and may risk the ability to meet the attribute limits and targets. Any non-complying activity that passes through the Section 104D(1)(b) gateway must still be assessed under section 104 in terms of the effects of the activity. While both Objective 5 and Policy 16 provide policy support for consideration at the consenting stage, they do not mean that a consent application relating to Māori land will be approved in all cases, and there are other, directive, objectives and policies that also need to be had regard to.

⁵⁶ River iwi 2015. Outcome statement and principles for implementing Te Ture Whaimana – the Vision and Strategy for the Waikato and Waipā Rivers. Dated July 2015. CSG workshop 14, 10-11 August 2015

⁵⁷ Section 13(4) Waikato-Tainui Raupatu Claims Act

- 440 In regards to the submission from the Iwi of Hauraki, clause (a) is intended to recognise the relationship of tangata whenua and their ancestral lands through cultural concepts, not to enable the use and development of such land. The Officers recommend that the addition requested by the Iwi of Hauraki is not adopted.
- 441 The request by the Iwi of Hauraki to amend clause (c) to refer to ‘overall’ improvement is generally contrary to the thrust of several other submissions, particularly from the River Iwi, who do not consider that ‘overall’ is appropriate as it may imply that worsening of some areas or attributes may be acceptable. Officers concur with these views and consider that this would be a weakening of PC1 and lacks alignment with the Vision and Strategy. Further reasoning on the inclusion of mana in the Iwi of Hauraki submission should be presented at the hearings.

B4.3.5.4. Recommendation

- 442 Amend Objective 5 as follows:

~~**Mana Tangata – protecting and restoring tangata whenua values/Te Whāinga 5: Te Mana Tangata – te tiaki me te whakaora i ngā uara o te tangata whenua**~~

Tangata whenua values are integrated into the co-management of the rivers and other water bodies within the catchment such that:

- a. *tangata whenua have the ability to:*
 - i. *manage their own lands and resources, by exercising mana whakahaere, for the benefit of their people; and*
 - ii. *actively sustain a relationship with ancestral land and with the rivers and other water bodies in the catchment; and*
- b. *new impediments to the flexibility of the use of tangata whenua ancestral lands are minimised; and*
- c. *improvement in the rivers’ water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.*

~~**Reasons for adopting Objective 5**~~

~~**Objective 5 seeks to ensure that this Plan recognises and provides for the relationship of tangata whenua with ancestral lands, by ensuring the other provisions of Chapter 3.11 do not provide a further impediment to tangata whenua making optimal use of their land. Historic impediments included customary tenure in the nineteenth century, public works, rating law, Te Ture Whenua Māori Act, and confiscation. Some impediments or their effects continue currently, including issues of governance, fragmentation and compliance with central and local government regulations such as regional and district plans, or the emissions trading scheme. Land relevant to this objective is land returned through Treaty of Waitangi settlement, and land under Māori title that has multiple owners.**~~

B4.3.6. Objective 6

Whangamarino Wetland/Te Whāinga 6: Ngā Repo o Whangamarino

- a. *Nitrogen, phosphorus, sediment and microbial pathogen loads in the catchment of Whangamarino Wetland are reduced in the short term, to make progress towards the long term restoration of Whangamarino Wetland; and*
- b. *The management of contaminant loads entering Whangamarino Wetland is consistent with the achievement of the water quality attribute[^]targets[^] in Table 3.11-1.*

Reasons for adopting Objective 6

Objective 6 seeks to recognise the significant value of Whangamarino Wetland, a Ramsar site of international importance, and the complexity of this wetland system. It seeks to recognise that the bog ecosystems (which are particularly sensitive to discharges of contaminants) need protection over time. The effort required to restore Whangamarino Wetland over 80 years is considerable and as a minimum needs to halt and begin to reverse the decline in water quality in the first 10 years. This objective describes how wetland restoration needs to be supported by restoration of the Lower Waikato Freshwater Management Unit sub-catchments that flow into Whangamarino Wetland.

B4.3.6.1. Submissions

- 443 There are 38 submissions on Objective 6, with 34 submissions seeking the objective is retained as notified. Fish and Game, Federated Farmers and Balle Bros Group support Objective 6, but seek amendments to the objective for various reasons. W Smith opposes Objective 6 and seeks it is amended.
- 444 Fish and Game consider Objective 6 requires an overarching objective to provide context for parts (a) and (b). Fish and Game also consider an integrated approach and active management of the hydrological regime of Whangamarino Wetland is required to ensure water quality attribute targets can be met and the NPS-FM and Vision and Strategy are given effect to. The following relief is sought: *The Whangamarino Wetland is restored over the long term, and protected and enhanced in the short term.*
- a. *Nitrogen, phosphorus, sediment and microbial pathogen loads in the catchment of Whangamarino Wetland are reduced in the short term, to make progress towards the long term restoration of Whangamarino Wetland; and*
 - b. *The management of contaminant loads entering Whangamarino Wetland is consistent with the achievement of the water quality attribute[^]targets[^] in Table 3.11-1; and*
 - c. *An integrated approach is taken and the hydrological regime of the Whangamarino Wetland is actively managed to ensure the short, medium and long term targets can be achieved.*
- 445 Similar to relief sought for Objective 1, Federated Farmers seek the deletion of the 80-year numerical targets as the targets reflect one interpretation of the Vision and Strategy. Additionally, Federated Farmers request some changes to Objective 6, intended to clarify that the management of contaminant loads will assist with the achievement of water quality outcomes. The following relief is requested:
- b. *The management of contaminant loads entering Whangamarino Wetland are managed to assist with is consistent with the achievement of water quality outcomes anticipated by the Vision and Strategy and values[^]. attribute[^]targets[^] in Table 3.11-1.*

- 446 A submission made by Balle Bros Group considers the management of pest species, such as koi carp, in Whangamarino Wetland is necessary to achieve water quality attribute targets in Table 3.11-1. Further, Balle Bros Group seeks that the contaminant load leaving Whangamarino Wetland, in addition to the contaminant load entering, are managed. No specific relief is provided.
- 447 W Smith does not provide specific relief but, raises concern over the 80-year timeframe to achieve targets and seeks stricter targets to be achieved within a 10-year timeframe to be more appropriate.
- 448 Two submissions seeking changes to Objective 6 were received following notification of PC1 but did not make a submission on Var1. L Paine supports Objective 6 in part, however considers part (a) will result in excessive regulation. G Kilgour opposes Objective 6 seeking references to Table 3.11-1 are removed and part (a) is amended to clarify the catchment referred to and the lag in water quality effects resulting from historic landuses. There is no specific relief set out in their submission.
- 449 Six submissions were received on the reasons for adopting Objective 6. Four submissions are supportive of the reasons and seek no changes. Fish and Game and Federated Farmers support the reasons for adopting Objective 6 but seek minor amendments.
- 450 Fish and Game consider the significance of Whangamarino Wetland as an interconnected system of multiple wetland types (marsh, swamp, fen and bog) should be acknowledged in the reasons statement and seek relief which recognises that all wetland systems require protection to protect and restore the bog ecosystem. Federated Farmers seek the following change to the reasons statement: *“Objective 6 seeks to... bog ecosystems (which are particularly sensitive to discharges of contaminants) need management and/or protection over time. The effort required to restore Whangamarino Wetland over 80 years is likely to be considerable and as a minimum needs to halt and begin to reverse the decline in water quality in the first 10 years. This objective describes how wetland restoration needs to be supported by restoration of the Lower Waikato Freshwater Management Unit sub-catchments that flow into Whangamarino Wetland.”*

B4.3.6.2. Analysis

- 451 Whangamarino Wetland is a wetland of regional, national and international significance. A large portion of the Wetland is listed under the Ramsar Convention as a Wetland of International Significance. The Wetland is an integral component to the Lower Waikato/Waipā Flood Protection Scheme and has been modified for this purpose. The flood protection scheme protects approximately 17,000ha of urbanised and productive land from inundation during flood events in addition to nationally significant infrastructure (including road and rail corridors). The intent of Objective 6 is to minimise the decline in water quality in the Whangamarino Wetland Catchment. Part (a) of Objective 6 seeks the reduction of contaminant⁵⁸ loads in the Whangamarino Catchment and long term progress towards the restoration of Whangamarino Wetland. Part (b) of Objective 6 seeks consistency between the management of contaminant loads entering Whangamarino Wetland and the water quality attribute targets in Table 3.11-1.
- 452 With regards to relief sought by Fish and Game, it is considered by Officers that the long term restoration and short term protection and enhancement of Whangamarino Wetland is set out in part (a) of Objective 6 and Objectives 1 and 3 of PC1. Objective 3.16 of the RPS also requires the management of wetlands to result in the maintenance or enhancement the wetland. As the relief requested is already provided by the objectives of PC1 and the RPS, Officers recommend the submission point be rejected. The integrated and active management of the hydrological regime of

⁵⁸ Nitrogen, phosphorus, sediment and microbial pathogens

Whangamarino Wetland was also raised in Fish and Game's submission. It is the Officers' view that an objective should not set out the action required for implementation as this is the role of policies and methods, and goes beyond the scope of PC1 as it is not closely related to the management of diffuse discharges of the four contaminants. Officers understand that WRC is currently developing a catchment management plan specific to the Lake Waikare and Whangamarino Wetland Catchment. On this basis, Officers do not recommend adopting this submission point. Additionally, it is the Officers' view that Objective 6 largely duplicates the outcomes set out in Objectives 1 and 3, and while the significance of Whangamarino Wetland is acknowledged, there is an opportunity, should the Hearing Panel agree that Objectives 1 and 3 largely address the same matters and Objective 6, to rationalise the objectives contained in PC1 by deleting Objective 6 and relying on the outcomes set out in Objectives 1 and 3. The Officers consider that the outcomes sought by PC1 would not change as a result of this deletion.

- 453 The Officers' view of the Federated Farmers' submission concerning the 80-year numerical targets is detailed in the earlier section about Objective 1. The recommendation set out in Objective 1 still stands and Officers do not recommend that Objective 6 is amended to remove reference to numerical targets as requested by Federated Farmers and K Gilgour. Federated Farmers also seek a minor amendment to part (b) of Objective 6 which results in the management of contaminant loads to 'assist' in achieving water quality outcomes instead of being 'consistent with'. Officers consider the intent of PC1 is to achieve short term and work towards long term water quality attribute targets, utilising both statutory and non-statutory methods. Recommending such relief would remove an integral component of PC1 and could constitute a weakening in direction set by PC1 that may hamper the ability to achieve the Vision and Strategy.
- 454 Officers agree with points made in Balle Bros Group's submission regarding the significant impacts on water quality resulting from the aggressive feeding methods of pest fish. As stated in sections above, PC1 seeks to address water quality issues within the Waikato and Waipā catchments, but the management of aquatic pest species sits outside of the matters that are able to be controlled by a regional plan. DoC and WRC are currently working together as part of a wider strategy to combat koi carp in waterways. Officers have not considered this submission point further. In terms of managing contaminant loads discharged from the Whangamarino Wetland, PC1 allows no further decline in water quality and is intended as the first stage of a reduction in contaminants entering the Wetland. Whangamarino Wetland is strongly influenced by contaminants discharged via Lake Waikare, Maramaura River, Whangamarino River, Reao Stream and other tributaries. As such, the integrated management of sub-catchments within the Lower Waikato FMU will support Whangamarino Wetland in this first stage towards restoration. On this basis, Officers do not recommend Objective 6 require the management of contaminant loads discharged from Whangamarino Wetland. Additionally, it is difficult to conceive how that might be achieved in practice.
- 455 A submission made by W Smith seeks stricter targets with 10 year-timeframes. Submissions requesting specific amendments to long-term water quality targets in Table 3.11-1 are addressed in Section B5 of this Report. With regards to a submission made by L Paine, it is the Officers' view that the actions to reduce contaminants in the short term are set out in the policies of PC1. As such, Officers do not consider such detail should be included in Objective 6.
- 456 The altered hydrology of Whangamarino Wetland, as a result flood management and land use changes with the catchment, has resulted in nutrient enrichment of bog wetland types within the wider wetland complex. The intent of Objective 6 is to minimise further degradation of remaining high value bog areas within Whangamarino Wetland, in addition to making progress towards restoration of the wetland and providing for mahinga kai. It is the Officers' view that the reasons statement adequacy

recognises the significant value of the Whangamarino Wetland as an interconnected whole. As such, Officers do not recommend adopting relief sought by Fish and Game.

- 457 With regards to relief sought by Federated Farmers, it was identified during the preparation of PC1 that significant improvements must take place to restore Whangamarino Wetland. While specific management can be targeted at the Wetland, it is also strongly influenced by the contaminants entering the Wetland via the in-flowing water from Lake Waikare and other tributaries. As such, integrated management of sub-catchments within the Lower Waikato FMU is integral to the achieving Objective 6. On this basis, it is not recommended this relief be adopted.

B4.3.6.3. Recommendation

- 458 Amend Objective 6 as follows:

~~**Whangamarino Wetland/Te Whāinga 6: Ngā Repo o Whangamarino**~~

- ~~*a. Nitrogen, phosphorus, sediment and microbial pathogen loads in the catchment of Whangamarino Wetland are reduced in the short term, to make progress towards the long term restoration of Whangamarino Wetland; and*~~
- ~~*b. The management of contaminant loads entering Whangamarino Wetland is consistent with the achievement of the water quality attribute^targets^ in Table 3.11-1.*~~

~~**Reasons for adopting Objective 6**~~

~~**Objective 6 seeks to recognise the significant value of Whangamarino Wetland, a Ramsar site of international importance, and the complexity of this wetland system. It seeks to recognise that the bog ecosystems (which are particularly sensitive to discharges of contaminants) need protection over time. The effort required to restore Whangamarino Wetland over 80 years is considerable and as a minimum needs to halt and begin to reverse the decline in water quality in the first 10 years. This objective describes how wetland restoration needs to be supported by restoration of the Lower Waikato Freshwater Management Unit sub-catchments that flow into Whangamarino Wetland.**~~

B4.3.6.4. Alternative Recommendation

- 459 As a preference, Officers recommend deleting Objective 6 and rely on Objectives 1 and 3.

B4.3.7. Submissions seeking new objectives

B4.3.7.1. Submissions

- 460 There are 31 submissions that request the addition of new objectives to PC1.
- 461 A number of submitters⁵⁹ seek the addition of a new objective which provides for people and community resilience, adaptive management, and sub-catchment approaches lead by communities. In particular, J Bailey seeks that the sub-catchment approach is enabled and incentivised by the development of sub-catchment governance groups that will help the WRC identify edge of field mitigations to help provide catchment specific solutions to water quality issues.
- 462 Several submitters seek the addition of a new objective that provides a balanced approach to enable rural landowners to provide for their economic well-being, and recognise the value of primary production activities. They also seek a new objective to recognise historical land uses and the effect of some contaminants discharged from land have a lag period⁶⁰.
- 463 J Reeve seeks that a new objective is included in PC1 to recognise actions already taken and an objective to protect non-Māori values.
- 464 Two submitters⁶¹ seek that the provisions related to grandparenting of nutrient losses are deleted from PC1 and the allocation of nutrients is based on the natural capital of soils and the assimilative capacity of the land, water and their attributes.
- 465 Fish and Game seek the addition of two new objectives to provide for the restoration and protection of ecosystem health, and to provide for the classification, maintenance and enhancement of Significant Wetlands, as follows:
- New Objective: Restoration and protection of ecosystem health*
Ecosystem health is achieved in Waikato rivers, lakes and wetlands within 80 years as a result of staged reductions in point and non-point source discharges.
- New Objective: Classification, Maintenance and Enhancement of Significant Wetlands*
a) All wetlands within the Waikato and Waipā catchments are assessed and added to Table 3.7.7 of the parent plan. b) Wetlands within the Waikato and Waipā catchments are maintained or enhanced to protect their ecosystems, including hydrological functioning and extent."
- 466 DoC also seeks the addition of several new objectives in relation recognising and protecting the significant values of wetlands, safeguarding ecosystem health and the health of indigenous species, and recognising and providing for the values of freshwater fish species. They also seek the addition of an objective which recognises that *"all sediments and nutrients in the region ultimately accumulate in the Waikato Estuary, and which seeks restoration of healthy ecosystems from the mountains to the sea, including in estuaries"*.
- 467 HFM and Oji Ltd submit that an objective is required to reflect the social and economic contribution of existing industry in the region. They seek the addition of the following new Objective:

⁵⁹ F4PC; J Bailey; Beef and Lamb, Maraekowhai Ltd;

⁶⁰ Waipāpa Farms Ltd and Carlyle Holdings Ltd; G Kilgour

⁶¹ M Wallace and J Bailey

The management of discharges onto or into land or directly into water and land use activities affecting groundwater and surface water quality in a manner that:

- a) *Safeguards the life supporting capacity of water and recognises and provides for the restoration and protection of the 80 year water quality attribute goals in Table 3.11-1, through the adoption of the best practicable option;*
- b) *Where a discharge is onto or into land, avoids, remedies or mitigates adverse effects on surface water or groundwater.*
- c) *Recognises that discharges contribute to social and economic well-being and in some cases significant investment relies those discharges, including rural based activities such as agriculture, perishable food processing and industry;*
- d) *Recognises that new regionally significant industrial discharges contribute to social and economic well-being and may be appropriate where such activities increase the net efficiency of resource use or where changes to land use.*

468 Tangata Whenua request the addition of a new objective for the management of the Lake FMUs as follows:

Objective 6:

Dunes, Riverine, Volcanic and Peat Lakes Freshwater Management Units. Restore and protect water quality within lakes by managing activities in the Lakes Freshwater Management Units to achieve the water quality attribute targets in Table 3.11-1."

Reasons for adopting Objective 6 to read: "Objective 6 seeks to ensure that the water quality of all lakes within the Lakes Freshwater Management Units is restored and protected as part of achieving the Vision and Strategy. This will require the implementation of a lake-by-lake approach guided by Lake Management Plans for the management of activities in the Lakes Freshwater Management Units over the next 10 years.

B4.3.7.2. Analysis

469 It is the Officers' view that the new objectives sought by submitters are either already provided for within the provisions of PC1, Var1 or within the WRP (in particular, Objective 3.1.2⁶²), or are more appropriately considered as implementation methods.

470 As discussed under "Submissions on the objectives generally", it is the Officers' view that the development of sub-catchment groups is not a freshwater outcome as such, rather these are types of plan implementation methods, which are better described either in the policies or rules. It is not considered appropriate to include methods within the objectives and, therefore, the Officers recommend that these submissions are not adopted. For the similar reasons, the Officers do not recommend the addition of objectives that provide for allocation of nutrients based on the natural capital of soils or the assimilative capacity of the land, water and their attributes. Again, they are theoretical examples of ways by which the objectives might be achieved.

471 Objective 4 of PC1 provides for community resilience and for an adaptive management approach. As discussed in that section of this report, it is the Officers view that this Objective should be deleted. In the event that the Hearing Commissioners seek to retain Objective 4, it is recommended that reference to adaptive management is removed, as this has a particular meaning which is not reflected in the implementation methods in PC1 (see discussion under Objective 4). It is also the Officers view that the staged approach to reducing contaminant losses is the most appropriate mechanism to

⁶² DoC PC1-10521

balance community resilience and providing for economic wellbeing with the required improvements to water quality. The Officers do not recommend that any additional objectives are necessary to provide for these matters.

- 472 It is noted that the management of wetlands is already provided for in Sections 3.1 and 3.7 of the operative WRP, or is provided for in Objective 6 of PC1. It is not recommended that submissions seeking new objectives relating to the management of wetlands are accepted.
- 473 Fish and Game seek the addition of a new objective that provides for the restoration and protection of ecosystem health. The water quality outcomes set out in Objectives 1 and 3 (and Table 3.11-1) specifically provide for the values identified for each FMUs, which in this case, includes ecosystem health. As the objectives already provide for ecosystem health, the Officers do not consider that further amendments are necessary to include a new objective as requested by Fish and Game. In any event, the type of additional objective sought by Fish and Game merely replicates Objective A1 of the NPS-FM and on that basis provides no useful additional guidance to decision-makers.
- 474 In regards to the request for a specific objective for the management of the Lakes FMUs by Tangata Whenua, it is noted that Objectives 1 and 3 are inclusive of all FMUs including the Lakes FMUs. It is the Officers view that an additional objective that specifically provides for the management of the Lakes FMUs would duplicate the requirements set out in other objectives. The Officers do not recommend these submissions be accepted.

B4.3.7.3. Recommendation

- 475 **The Officers do not recommend the inclusion of any new objectives in PC1.**

B4.3.7.4. Recommendation on Submissions:

- 1. Accept all those submissions that supported the plan provisions which are recommended to remain unchanged or largely unchanged**
- 2. Reject those submissions who sought the deletion of the Plan Provisions which are recommended to remain unchanged or largely unchanged**
- 3. Accept, or accept to the extent, those submissions that sought the changes recommended as set out in the revised plan provisions**
- 4. Reject, or reject to the extent, those submissions that do not support the changes recommended as set out in the revised plan provisions**

B5. FMUs, Sub-catchments and Tables 3.11-1 and 3.11-2

B5.1. Introduction

476 The NPS-FM requires the identification of FMUs and appropriate limits and targets. PC1 does this, and also breaks some of the FMUs into a series of sub-catchments and provides limits and targets for each of these. This section of the report addresses the spatial context of Chapter 3.11 and the limits and targets. In particular the section addresses:

- The area covered by Chapter 3.11 and FMUs
- The spatial extent of sub-catchments
- Targets and limits in Table 3.11-1
- Sub-catchment priority

477 Many of the submission points in this chapter overlap, in that the topics are closely related. Issues to do with sub-catchment planning, which has been raised by many submitters, are dealt with in Section C8 of this Section 42A Report, which will be published at a later date. The submissions this section addresses are listed in Appendix B5.

B5.2. Spatial extent of Chapter 3.11 and Freshwater Management Units (FMUs)

478 Chapter 3.11 of PC1 applies to the Waikato and Waipā River Catchments. Map 3.11-1 depicts the general catchment boundary and establishes the boundaries of each FMU in the Waikato and Waipā Region. There are eight FMUs. Lake FMUs are divided into four FMUs based on lake type and the River FMUs are further divided into four separate FMUs based on a combination of location and the properties of the river in each part e.g. upper Waikato reflects impoundment section and lower Waikato the flood riverine/flood control part. The FMUs established in PC1 include:

- Upper Waikato River
- Middle Waikato River
- Lower Waikato River
- Waipā River
- Peat Lakes
- Riverine Lakes
- Dune Lakes
- Volcanic Lakes

B5.2.1. Submissions

479 There are 22 submissions on the introduction to Chapter 3.11 and the FMUs in Map 3.11-1, with three submissions in support seeking that the introduction and FMUs be retained as notified.

- 480 Five submissions⁶³ oppose the spatial scale of FMUs in Map 3.11-1 and seek they are replaced with sub-catchments depicted in Map 3.11-2⁶⁴. Some submitters consider the FMUs in PC1 do not meet the requirement in the NPS-FM for Regional Councils to establish FMUs at the appropriate scale for setting freshwater objectives and limits. Federated Farmers consider FMUs should be at a smaller scale, and that aggregated sub-catchments with similar geographical features and should be subject to review 10 years following PC1.
- 481 Some submitters have sought slight amendments to the introduction of Chapter 3.11. WRC seek a minor change to clarify that PC1 applies to the Waikato and Waipā catchments in addition to the other parts of the existing WRP that also deal with those two catchments. Fonterra, Fulton Hogan Ltd and GBC Winstone seek amendments so that the language is consistent with the terminology in the NPS-FM and to acknowledge the Vision and Strategy. The Oil Companies) are generally supportive of Chapter 3.11 but seek some specific amendments to the introduction to clarify that PC1 predominantly applies to farming activities.
- 482 Some submissions seek administrative amendments to Map 3.11-1. DoC is supportive of Map 3.11-1 but considers a more detailed (and larger) map will enable the extent of each FMU to be clearly identified. WRC seek the blue shading of some water bodies in Map 3.11-1 is included in the legend. Among other submitters, WRC have also identified that some properties straddle the boundary between the area regulated by PC1 and other catchment areas as property boundaries do not generally follow catchment boundaries, which will result in two regulatory approaches applying to an individual property. WRC seeks that Section 3.11 “Area covered by Chapter 3.11” is amended to allow consideration of alternatives to the current boundary approach, which will assist in avoiding implementation issues that arise where properties straddle plan boundaries.
- 483 Several submissions seek that Map 3.11-1 is amended to delineate a separate FMU for Whangamarino Wetland. DoC and Fish and Game consider a separate FMU for Whangamarino Wetland is appropriate to recognise the significant values associated with this wetland complex, in addition to attributes, targets and values specific to Whangamarino Wetland. Fish and Game also seek such an FMU is allocated Priority 1 in Table 3.11-2.
- 484 A number of submissions were received relating specifically to Lake FMUs in PC1. WRC are supportive of Map 3.11-1 but consider the map does not provide certainty that all lakes are included in an FMU and questions the accuracy of the lake types assigned to each lake FMU. DoC oppose Lake FMUs in PC1 and seek they are amended to include FMUs for each individual lake and associated lake catchment in the area where PC1 applies.

B5.2.2. Analysis

- 485 The introduction to Chapter 3.11 sets out the general catchment boundary and includes the boundaries of each FMU. FMUs are a requirement of the NPS-FM, their purpose being to monitor progress towards achieving water quality limits and targets. The NPS-FM defines an FMU and sets out a range of matters in relation to FMUs but does not prescribe a spatial scale which FMUs must be delineated to, rather allowing regional councils discretion to determine FMUs at an ‘appropriate scale’.
- 486 A number of FMU options were considered by the CSG with assistance from the TLG. The TLG proposed four FMU options which were considered to be relatively simple, having a degree of alignment with previous sub catchment decisions regarding policy or management purposes and

⁶³ Miraka Limited; Federated Farmers; Pouakani Trust; Wairakei Pastoral Ltd and Wairarapa Moana Inc.

⁶⁴ Map of the Waikato and Waipā River catchments, showing sub-catchments.

having similar current-state water quality issues.⁶⁵ The FMU options were discussed by the CSG and the FMU option in PC1 was determined by the CSG as the most appropriate in accordance with the definition of 'FMU' in the NPS-FM effective to achieve the objectives of PC1.⁶⁶ The CSG raised some concern with the location of the downstream boundary of the Upper Waikato FMU and proximity to the nearest downstream surface water quality monitoring site (located 23km downstream). The TLG responded to this concern, concluding that there is no particular technical issue with the non-coincidence of FMU boundaries and surface water quality monitoring sites.⁶⁷

- 487 Officers have provided a general analysis of submissions relating to a Sub-catchment vs Whole catchment view in Section B1 of this Section 42A Report. To summarise here, Officers are concerned that shifting the regulatory focus to sub-catchments is not well supported by the higher-level planning documents in terms of the Vision and Strategy and the NPS-FM. Accordingly Officers, at this stage, do not recommend the adoption of submission points that seek FMUs be replaced with sub-catchments in Map 3.11-2 or the adoption of submission points seeking the aggregation of sub-catchments.
- 488 With regards to submissions made by Fonterra, Fulton Hogan Ltd and GBC Winstone, Officers do not consider that specifying "freshwater objectives for the purposes of the NPS-FM and long term water quality states developed to give effect to the Vision and Strategy" as useful additions to the introduction to Chapter 3.11. The relationship between the NPS-FM and the Vision and Strategy are set out in greater detail in the Background and explanation section of PC1.⁶⁸ Similarly, Officers do not recommend the relief sought by the Oil Companies as useful additions to the introduction to Chapter 3.11, as all people, communities and industries need to contribute to the achievement of the targets and limits in PC1.
- 489 Delineating a separate Whangamarino Wetland FMU, as sought in submissions of Fish and Game and DoC, was considered by the CSG. Due to insufficient monitoring data available to determine the current state of Whangamarino Wetland, absence of guidance on wetland attributes in the NPS-FM and limited understanding of wetland systems, it was considered the determination of meaningful numerical limits would be impracticable at this time.⁶⁹ Officers agree with the conclusions made by the CSG and consider the current treatment of Whangamarino Wetland within the Lower Waikato River FMU will require contaminant inputs from the contributing catchment to be reduced considerably. As such, progress towards staged improvements of Whangamarino Wetland will be made in PC1.
- 490 Section B4 of this S42A Officers Report refers to the role of Whangamarino Wetland in the Lower Waikato/Waipā Flood Protection Scheme. A suite of resource consents held by WRC associated with the operation of the scheme was granted in 2002 for a duration of 35 years (expiring on 2 September 2037). A condition review, appeal and consent order process, relating to one discharge permit authorising the discharge of water from Lake Waikare through the Northern Outlet Control Gate into Whangamarino Wetland (via Pungarehu Canal) was recently completed.⁷⁰ The purpose of the review was to assess the adequacy of existing conditions to avoid or mitigate adverse effects on the Pungarehu Stream, the Whangamarino Wetland and the Whangamarino River. The decision issued by the Hearing Panel was subsequently appealed to the Environment Court. All appeals were resolved in August 2018 and the consent was granted with amended conditions and no changes to the consent duration. Officers consider the implementation of the consent will likely result in the reduction of sediment deposition and improvement of water quality in the Whangamarino Wetland, in addition to

⁶⁵ TLG Doc #3121490, Pg. 7

⁶⁶ CSG Workshop Notes 9 &10 February 2015, DM No 3277432 v3

⁶⁷ TLG Doc #3408420

⁶⁸ PC1 Pg. 13-19

⁶⁹ TLG Doc #3866522, Attachment 3, Pg.9-11

⁷⁰ Resource Consent 101727

the reduction of contaminant inputs from the contributing Lower Waikato River FMU. On this basis, Officers do not recommend the submission points seeking a separate FMU for the Whangamarino Wetland be adopted. With regards to other wetlands, the Section 32 Report anticipates that future plan changes will need to address wetlands and the need for FMUs relating to specific wetlands.

- 491 DoC and WRC seek that all lakes within the Waikato River and Waipā River catchments are identified by an FMU. Officers consider the definition of ‘lake’ in the RMA is particularly general⁷¹ and could include waterbodies such as small duck ponds, stormwater detention ponds etc. On this basis, Officers do not consider it practicable to include every lake (as defined by the RMA) in the area where PC1 applies and in the absence of submitters providing a list of the lakes that are important to identify as individual FMUs, Officers recommend this submission point be rejected.
- 492 Officers agree with the submission point raised by DoC and WRC and consider Map 3.11-1 at a smaller scale will assist with the usability and implementation of PC1. In terms of submission points made by WRC, Officers consider the slight amendment to the introduction to Chapter 3.11 will clarify for plan users that PC1 applies in addition to all other parts of the WRP and recommend this submission point be adopted.
- 493 Officers partially agree with WRC’s submission relating to the identification of some water bodies in light blue on Map 3.11-1 with no key included in the legend. It is the Officers’ view that light blue shading clearly identifies the mainstem of the Waipā and Waikato Rivers and does not require identification in the legend. In terms of light blue shading to identify Lake Waikare, Lake Waahi, Lake Rotongaro and Lake Whangape in Map 3.11-1, Officers consider the shading should be removed from Map 3.11-1 as it is not consistent with other Lake type FMUs and is confusing for plan users as to whether the lakes are included in the Riverine Lake FMU. Officers also recommend renaming ‘Volcanic Lake FMU’ to ‘Volcanic Zone Lake FMU’ as sought by WRC, as the lakes are in a volcanic zone, but generally do not have ‘volcanic’ characteristics. It is the Officers’ view that amending the FMU name will not result in any changes to how the FMU is managed in PC1, but may assist plan users and implementation.
- 494 There is no specific relief provided by WRC other than to amend the “Area covered by Chapter 3.11” to allow consideration of other alternatives to the current approach. As there is no specific relief sought, it is unclear to what extent WRC request changes to the area where Chapter 3.11 applies as depicted on Map 3.11-1. Officers do not consider redrawing the boundary on Map 3.11-1 to align with existing property boundaries would resolve the issue as property boundaries can change over time. Officers consider an option which may provide some relief is for guidance to be included in PC1 which sets out the approach that will be taken when considering properties that straddle boundaries. An option for this can be advanced as a part of the relevant rules, when that part of the s42A Report is published.

B5.2.3. Recommendation

- 495 Amend the introduction to Chapter 3.11 as follows:**

This Chapter is additional to all other parts of the Waikato Regional⁷² Plan.

- 496 Amend the Legend of Map 3.11-1 as follows:**

⁷¹ Means a body of fresh water which is entirely or nearly surrounded by land RMA

⁷² WRC

Volcanic Zone⁷³ lake FMU

497 Amend Map 3.11-1 to:

- **Be of a smaller scale.**
- **Remove light blue shading of Lake Waikare, Lake Waahi, Lake Rotongaro and Lake Whangape within the Riverine lake FMU.**

B5.3. Spatial extent of Sub-catchments

498 PC1 identifies 74 sub-catchments on Map 3.11-2, and sets targets or limits for 62 of these sub-catchments in Table 3.11-1. Sub-catchments are also used for prioritising actions required by PC1, which is shown on Table 3.11-2, and as the basis for encouraging community-led initiatives to identify opportunities for local collaboration and water quality restoration.

B5.3.1. Submissions

499 Some submitters consider that the sub-catchment areas in Map 3.11-2 are either too large or too small⁷⁴. For example, WRC consider there was arbitrary splitting of the Upper Waitomo Catchment from the Lower Waitomo Catchment based on the water quality results from the monitoring at Tumutumu Road, which is not consistent with catchment management principles to address water quality issues and request to combine sub-catchment 52 and 46 on the map and amend Table 3.11-2 to classify the catchment as Priority 1.

500 Others suggest that the sub-catchments should be comprised of land areas with similar physical attributes⁷⁵. Alternately, others have questioned how the maps relate to urban environments, where there are different kinds of discharges to those from rural environments⁷⁶.

501 Mercury NZ Ltd requests changes to Map 3.11-2 to re-define sub catchment areas, and differentiate tributaries from the main stem of the Waikato River. Mercury NZ Ltd suggests Map 3.11-2 should include additional sub-catchments corresponding to each hydro catchment at Arapuni, Maraetai, Atiamuri, and Aratiatia, and any large tributaries entering the Waikato River within the Upper Waikato River. They also seek that any additional sub catchments within an FMU are numbered consecutively for ease of referencing.

502 Wairakei Pastoral Ltd seek the division of sub catchment 66 into sub-catchments 66A (Tahorakuri) and 66B (Ohakuri), as one is more riverine and the other more lacustrine. Federated Farmers are concerned about how properties outside of the WRC boundary will be treated and that individual sub-catchments may not be an appropriate spatial unit for analysis.

B5.3.2. Analysis

⁷³ WRC

⁷⁴ D. Cheyne, WRC

⁷⁵ Waipārapara Moana Inc

⁷⁶ Such as TIM Nominees

- 503 The Section 32 Report (and supporting technical reports) outlines that the boundaries and scale of the sub-catchments, were largely delineated on the basis of water quality monitoring sites in the WRC's river monitoring network. This monitoring network is being updated to further improve alignment with the sub-catchments. Utilising the existing monitoring network provided baseline data for analysis and enabled the models to be tested against the data.
- 504 Sub-catchment boundaries were established using aerial photography and a Digital Terrain Model with 5 metre contours. Essentially, each sub-catchment represents the contributing area draining to its corresponding monitoring site.
The Officers note that the scenario modelling that has been undertaken is based on the routing of contaminants through the stream and river network, based on these sub-catchments. Any substantial changes or redefining of sub-catchments may mean that the outcomes of the modelling no longer apply and would need to be re-modelled. As the targets and limits have been developed using existing monitoring data, changing the sub-catchments may lead to changes to the limits and targets set in Table 3.11.1, which is not a simple exercise. On this basis, Officers are hesitant to recommend any changes in the absence of evidence to support revised Table 3.11-1 values.
- 505 The sub-catchments transect both urban and rural environments, however given the modelling undertaken in support of PC1 takes into account real data from each sub-catchment, the Officers do not consider there is any reason to further delineate sub-catchments based on whether the contributing land uses are urban and/or rural.
- 506 Officers acknowledge there are different physical attributes within many sub-catchments, and are aware that differences similar to those raised in the submission from Wairakei Pastoral Ltd exist within many of the sub-catchments. The Officers consider that with improvement in monitoring data and information into the future there may be an opportunity to divide catchments in future planning processes. However, at this stage Officers do not recommend such changes.
- 507 In regards to the submission from WRC requesting that sub-catchments 52 and 46 are combined, the Officers note that these sub-catchments both have monitoring sites with different data and targets (with the exception of E. coli). Combining these sub-catchments into one sub-catchment would require the setting of one suite of targets. It is unclear from WRC's submission which targets should apply to the proposed combined sub-catchment, however if the most downstream monitoring site and its targets are used (i.e. sub-catchment 46), water quality would allow degradation for 95th nitrate and NH4 and may set an unreasonable target for clarity in sub-catchment 52. The Officers therefore do not recommend the submission from WRC is adopted.

B5.3.3. Recommendation

- 508 That the spatial extent of the sub-catchments is retained as notified.**

B5.4. Targets and Limits (Table 3.11-1)

B5.4.1. Introduction

- 509 Table 3.11-1 sets short term and long-term water quality targets to be achieved for the Waikato and Waipā Rivers and their tributaries, and long term water quality targets for the lakes FMUs.
- 510 There are 150 submissions on Table 3.11-1, with the majority seeking amendments to the short term and long term numerical water quality targets specified for the Waikato and Waipā River catchments.
- 511 There are a number of submissions on Table 3.11-1 that are identical to submissions made on Objectives 1 and 3 of PC1. Any submissions requesting specific amendments to the short term and 80-year water quality targets and attributes listed in Table 3.11-1 are addressed below. General submissions on the appropriateness or achievability of the targets is discussed in Sections B1 and B4 of this report, particularly under Objectives 1 and 3. Examples of such submissions include reference to the contribution of all contaminants to water quality, including pest species (such as Koi Carp) and point source discharges (including stormwater) and submissions on the economic and social impacts of the proposed targets.
- 512 The analysis of the submissions on Table 3.11-1 is broken down into key topic areas, set out below.

B5.4.2. Submissions seeking alignment with statutory documents and standards

B5.4.2.1. Submissions

- 513 Several submitters request that Table 3.11-1 is amended to align with the NPS-FM, better achieve the Vision and Strategy or have regard to Ministry for the Environment Clean Water package. These submissions generally do not specify which attributes require amendment or what additional attributes are required to meet these outcomes. J Lawson seeks that the table is amended to ensure that the water quality is as a minimum, maintained as required by RMA Section 30(1)(c)(ii) and (iii). R Turner seeks that amendments are made to align the limits and targets with UN standards.

Aligning with the Vision and Strategy:

- 514 Fish and Game submits that Table 3.11-1 does not contain appropriate attributes, targets, or sites to give effect to the Vision and Strategy. WRA states that PC1 does not contain an explicit statement that no further degradation of water quality or increases in load for the four contaminants shall occur and state this should be added as a policy. They also state that the limits for the four contaminants are not clearly indicated in PC1 and seeks amendments to Table 3.11-1 so that as a minimum, limits are set at current contaminant levels for all sub-catchments along with a clear directive that these contaminant levels shall not increase.
- 515 J Reeves & A Taylor support the goal of having of having the Waikato and Waipā rivers swimmable and fishable along their entire length, however seek that PPC1 is amended to clearly define swimmable and fishable water quality targets for nitrogen, phosphorus and E.coli levels, and how these limits were derived, for each sub-catchment and FMU.

Aligning with the NPS-FM:

- 516 Several submitters request amendments to Table 3.11-1 to better align the language used with the NPS-FM⁷⁷. Beef and Lamb request that Table 3.11-1 is amended to make a clear distinction between Freshwater Objectives, Attributes, and 'limits' and 'targets'. Beef and Lamb also request that numerical outcomes (limits/targets) are set at levels that give effect to the NPS-FM (2014), as guided by Policies CA2 and CA3. The submitter notes that the Freshwater Objectives would include values of freshwater such as cultural, ecological, primary production, commercial, and recreational values, and may also include numerical parameters for periphyton, chlorophyll a, MCI, and sediment/clarity. The submitter has not proposed targets for the attributes identified in their submission.
- 517 Federated Farmers seeks that short-term targets are amended so they are based on National Objective Framework (NOF) bands, rather than specific numbers.
- 518 M Hamilton supports the CSG decision that that downwards movement of attribute data within NOF bands (trends as opposed to seasonal variation) should not be defined as 'maintenance' of water quality. He seeks that PC1 is amended to include a statement to this effect.

Other scenarios

- 519 Several submitters seek that Table 3.11-1 is amended to reflect different scenarios that were modelled during the development of PC1. Ata Rangi seeks that Table 3.11-1 is amended to align with Scenario 2 on the basis that they understand that it represented a viable alternative which would give effect to the NPS-FM and the Vision and Strategy. They note that the cost implications for Scenario 1 are significantly higher than those of Scenario 2 and state that there is no analysis or clear explanation in the section 32 why Scenario 1 was chosen.
- 520 Trinity Lands Ltd seeks that the Council considers Scenario 3 as a more acceptable solution for balancing people, economy and the environment, including achieving the requirements of the NPS-FM, and fulfilling the requirement of the RMA to *"equally weight the outcomes for Environmental, Economic and Social consequences of this proposal"*. M Wallace seeks that Table 3.11-1 is amended to include a 20% change within the 80-year time frame.
- 521 Several submitters request the inclusion of different timeframes for achieving the targets, or the inclusion of interim targets. In their submission, DoC raises concerns that many of the 10-year and 80 year limits/targets seem unambitious given the long-time frame set for achieving them, and seeks that they are more ambitious and a stronger emphasis on ecosystem health. DoC also considers that interim 20-year attribute targets should be set to ensure a future target beyond the initial 10-year period that continues to work toward the longer term 80-year targets. DoC suggests that a 20% improvement in water quality over 20 years is appropriate.
- 522 Beef and Lamb request that Table 3.11-1 interim targets should be amended so that they apply at a longer time frame such as 30 years, for those parameters which are significantly over allocated now. They also seek that interim targets should be amended so that they progressively reduce over allocation at a rate and scale which provides for people and community resilience including economic well-being. The submitter has not suggested which parameters require amendment or what the new targets should be.

⁷⁷ Including submission from GBC Winstone on the introductory text to Table 3.11-1.

523 Wairakei Pastoral Ltd seeks that sub-catchment 66 is split into two sub-catchments and accordingly seeks the addition of new limits and targets in Table 3.11-1 for the new sub-catchment. The division of sub-catchment 66 is discussed earlier in Section B5 of this report.

B5.4.2.2. Analysis and Recommendation

524 The overarching outcome sought by PC1 is to restore and protect water quality in the Waikato and Waipā River catchments, which aligns with and gives effect to the Vision and Strategy, to the extent this can be achieved by PC1. This outcome is consistent with the NPS-FM.

525 The scenarios considered during the plan development stage are outlined in section C.2.2.11 of the Section 32 Report (Scenario modelling outputs) and further detailed in a number of technical reports⁷⁸. Some submitters have sought that Table 3.11-1 is amended to reflect alternative scenarios considered, in particular, Scenario 2. As described in the supporting technical documents, Scenario 2 envisioned improving water quality in rivers and streams to a minimum acceptable state (above the national bottom line or minimum acceptable state if a NOF attribute) and preventing any degradation of water quality in all rivers and streams where their quality presently meets the minimum acceptable state. It is unclear from these submissions whether it is the short term or 80-year targets in Table 3.11-1 that should be amended to reflect Scenario 2.

526 The inclusion of limits or targets in Table 3.11-1 that reflect lower water quality standards for the 80-year targets (including those reflected by Scenarios 2 and 3, other standards recognised nationally or internationally, or a 20% reduction from current state) will not meet the objective for the long-term restoration and protection of water quality, and will not meet the Vision and Strategy. It is not recommended submissions are adopted where they seek the inclusion of lower water quality standards for the 80-year targets.

527 In the event submitters are seeking that the short-term targets are amended to reflect Scenario 2, then Table 3.11-1 is likely to have higher short-term targets than those notified in PC1. The social, and economic implications of adopting Scenario 2 as a short-term goal will likely be greater than that anticipated under PC1. It is not recommended that Scenario 2 is adopted as a short-term goal. The same rationale and recommendations apply to submissions requesting higher targets (such as the request from DoC for targets that are “more ambitious and a stronger emphasis on ecosystem health”).

528 There are opportunities to better align Table 3.11-1 with the requirements of the NPS-FM. In particular, the Officers’ consider that the amendments sought by GBC Winstone to the introductory text are a useful improvement to PC1. The Officers note that Table 3.11-1 sets specific numerical limits and targets and not a “band” as per the NPSFM NOF. Given that numerical limits and targets are used in PC1, the Officers do not recommend accepting the submission from M Hamilton that requests a statement is included to ensure that downward movement within a Band is not considered to be “maintenance” of water quality.

529 The development of the attributes table was undertaken in general accordance with Policy CA2 of the NPS-FM. Of particular note, the compulsory values set in the NPS-FM (being Ecosystem health and Human health for recreation) have been included for each FMU, where the CSG considered the attributes contained in the Attribute tables (Appendix 2 of the NPS-FM) when identifying attributes that are applicable for the freshwater body type.

⁷⁸ Draft Scenarios for CSG.docx (3394108). Updated scenarios #3405808. Update on scenario modelling: #3539405;

530 Policy CA2 of the NPS-FM states:
By every regional council, through discussion with communities, including tangata whenua, applying the following processes in developing freshwater objectives for all freshwater management units:

...

- c) *identifying:*
 - i. *for the compulsory values or any other national value for which relevant attributes are provided in Appendix 2:*
 - A. *the attributes listed in Appendix 2 that are applicable to each value identified under Policy CA2(b) for the freshwater body type; and* (emphasis added)
 - B. *any other attributes that the regional council considers appropriate for each value identified under Policy CA2(b) for the freshwater body type; and*
 - ii. *for any national value for which relevant attributes are not provided in Appendix 2 or any other value, the attributes that the regional council considers appropriate for each value identified under Policy CA2(b) for the freshwater body type;*

531 The NPS-FM is not particularly clear whether Policy CA2(c)(i)(A) requires that each of the “river” attributes in Appendix 2 are to be included for all rivers, and each of the “lake” attributes in Appendix 2 are to be included for all lakes, or if these attributes are to be included only if they are applicable for that freshwater body. Given the uncertainty and difference in interpretation of the NPS-FM, the Officers consider it useful to turn to MfE’s guidance note for the NPS-FM.

532 *A Guide to the National Policy Statement for Freshwater Management 2014 (as amended 2017)* (MfE) provides clarification that the attributes listed in Appendix 2 must be used for the compulsory values, where applicable (that is, where the identified value has attribute(s) for that type of water body in Appendix 2)⁷⁹. In this case, Table 3.11-1 does not include the NPS-FM compulsory attributes of Periphyton (for Rivers) or DO (for Rivers, below point sources).

533 The CSG considered including both attributes for the River FMUs. The TLG provided technical advice to the CSG where they recommended against including a target for DO in PC1⁸⁰. In the technical advice, they note *the indirect effects of the four contaminants on dissolved oxygen, the paucity of current state data and difficulty with modelling implications of changes in dissolved oxygen.*

534 The attributes contained in Table 3.11-1 are directly relevant to the four contaminants managed by PC1, the inclusion of DO would introduce an attribute target that sits outside the scope of the plan change and the activities managed in the methods and rules. However, there remains a level of uncertainty whether or not the NPS-FM requires DO to be included in Table 3.11-1. While submitters have requested this attribute be included in Table 3.11-1, they have not specified a limit or target for each of the sub-catchments. The submission from DoC duplicates the range of DO attribute states from the NPS-FM, however notes that little is known about the state of DO as there “is a paucity of continuous monitoring data”. DoC also states that non-regulatory methods are needed for strategic, continuous DO monitoring over the summer months. As there is insufficient information to determine an appropriate DO limit/target below each point source discharge, there is a risk that including a nominal target or limit would have additional unanticipated social and economic effects that have not been considered, which raises an issue of natural justice for potentially affected parties if these are added at this stage in the plan change process. Additionally, if the DO limits or targets are set in alignment with the environmental bottom line, there is a risk that this constitutes a deterioration in water quality. The Officers’ therefore do not recommend that DO is included as an attribute in Table 3.11-1.

⁷⁹ Page 71 of *A Guide to the National Policy Statement for Freshwater Management 2014 (as amended 2017)* (MfE)

⁸⁰ TLG 2015, *TLG recommendation on the use of Dissolved Oxygen as an attribute for the Waikato Waipā catchment under WRC Plan Change 1*; TLG 2016, *Water Quality Attributes for Healthy Rivers: Wai Ora Plan Change*

535 The TLG also recommended against including a target for periphyton as they considered that it is of limited relevance as a measure of ecosystem health in the Waikato and Waipā River catchments⁸¹. The TLG recognised periphyton biomass as an important attribute for ecosystem health in rivers, however noted that the development of this attribute for the NOF focused on wadeable, run-off fed, hard bottomed streams and rivers (i.e. where substrate is suitable for attached algae). They further note:

Many waterways in the Waikato-Waipā catchment have beds comprised of fine sediments (mud, silt and sand) that provide unsuitable habitat for attached algae. However, there are areas within the catchment where substrates in streams are suitable for periphyton (e.g. Upper Waipā and its tributaries). Periphyton biomass is not currently monitored quantitatively by WRC, although percentage cover of various types is monitored annually to 3 yearly in the Regional Environmental Monitoring (REMS) surveys. This monitoring indicates limited issues with periphyton at monitored sites – only 2 samples out of a total 146 samples showed periphyton cover greater than 55% (cut-off for nuisance growth levels). The vast majority of samples (90%) had periphyton cover less than 20% (indicative of high quality). In smaller streams in the Waipā catchment (e.g., <6m wide) stream shade is an effective mitigation method to reduce the incidence of summer blooms, where these occur.

536 Based on the information above, it is apparent that periphyton is an attribute that is relevant for some sub-catchments, and that available monitoring data indicates that the majority of monitored sites had periphyton cover that is indicative of high water quality. It is the Officers' view that periphyton is an attribute that should be included in Table 3.11-1 for sub-catchments where the substrate of the waterbody is suitable for periphyton (i.e. Upper Waipā and its tributaries). It is noted that the available data from WRC is based on periphyton cover, whereas the NPS-FM measures periphyton as milligrams of chlorophyll a per square metre.

537 The NPS-FM also includes guidance on achieving a freshwater objective for periphyton within a FMU, stating that regional councils must at least set appropriate instream concentrations and exceedance criteria for dissolved inorganic nitrogen (DIN) and dissolved reactive phosphorus (DRP). Despite Officers' view that periphyton should be included in Table 3.11-1, there is insufficient data available to set appropriate freshwater objectives for periphyton in the upper Waipā catchment, therefore Officers do not recommend that Table 3.11-1 is amended to include this attribute as part of the PC1 planning process. The Officers recognise that the methods set out in the plan to meet the water quality targets will unlikely change as a result of including additional attributes.

538 The modelling undertaken during the development of PC1 did not consider alternative interim targets. The Officers consider it more appropriate to defer the development of additional targets to future planning processes. The Officers recommend that submissions requesting amendments to Table 3.11-1 to include additional "interim targets" are not accepted.

539 For the reasons set out earlier in Section B5 of this report, the Officers do not recommend that sub-catchment 66 is divided into two sub-catchments, and therefore consequential amendments to Table 3.11-1 are not necessary.

⁸¹ TLG 2015, *Water Quality Attributes for Healthy Rivers: Wai Ora Plan Change – TLG Summary for CSG#12*, p4

B5.4.3. General submissions on Table 3.11-1

- 540 A number of submissions request amendments related to improving the structure and interpretation of Table 3.11-1, including amendments to make clear the dates by which targets must be achieved, and including water quality sites and targets for each catchment.
- 541 In their submission, WRC submits that Method 4.2.7 of the RPS requires the WRC to liaise with the Bay of Plenty Regional Council (BOPRC) with regard to the Lake Rotorua catchment. They request that Table 3.11-1 is amended to take into account the BOPRC water quality standards for those parts of the Waikato and Waipā River Catchment area that overlap with and drain into the Lake Rotorua Catchment.

Submissions on structure of Table 3.11-1

- 542 The submission from DoC requests amendments to the table headings to make clear the dates by which the targets must be achieved by. Taupō DC, Waitomo DC and Waipā DC seek that the table is amended to accurately label the table number reference on each page or in the title of the table and include a map illustrating the location of the monitoring sites. WRC also requests that the title of the table is included on the same page as the table.
- 543 Several submitters request for current state data to be included in Table 3.11-1 to enable an understanding of the level of change that is needed.
- 544 Federated Farmers request that any “spikes” in the current attribute state data is removed.

Water quality site for every catchment:

- 545 Table 3.11-1 identifies water quality targets for 62 sub-catchments in the Waipā and Waikato River catchments, however it does not include targets for every attribute in some of the sub-catchments. Several submitters have requested that Table 3.11-1 is amended to include water quality targets for each attribute for each site, if they are available.
- 546 Wairakei Pastoral Ltd requests that table 3.11-1 is amended to identify and links the sub-catchment name with the relevant sub-catchment number.
- 547 Three submitters note that the water quality sites identified in Table 3.11-1 do not align with the 74 priority catchments set out in Table 3.11-2 and that additional water quality sites should be included in Table 3.11-1 to address the discrepancies. In their submission, Mercury NZ Ltd states that a single water quality target site is being used to monitor and evaluate the actions in two or more sub-catchment areas and that this will make it difficult to reconcile and evaluate the actions in one sub-catchment against the desired future water quality targets in Table 3.11-1. Similarly, Fish and Game notes that Table 3.11-1 will be insufficient to support restoration and protection of water quality for each sub-catchment on the basis that the Table does not include sites for every sub-catchment. B, J, K & J Osborne submit that their sub-catchment (Moakurarua) has been identified as a Priority 1 catchment in Table 3.11-2, however there are no corresponding water quality targets in Table 3.11-1. They state that with no base measurement and no 80-year target, it is impossible to achieve Objective 3 of PC1. The submitters request that scientific data of current water quality for the Moakurarua sub-catchment is obtained over a suitable recording period, so that short term and 80-year attribute targets are set.

- 548 Genetic Technologies Ltd submits that Table 3.11-1 should be amended to state the priority attributes that need addressing in each sub-catchment.
- 549 M & C Ravenscroft seek that the table is amended to include data from testing sites close to all settlements in catchments of 200 or more people where the settlement has buildings less than 1km from a catchment waterway.
- 550 DoC also seeks that Pungarehu Canal/Stream be included in Table 3.11-1. They note that it is the flow path for very high loads of sediment and P from Lake Waikare into the Whangamarino Wetland. DoC states that they are aware that WRC have been monitoring this site from at least 2003 and achieving water quality improvements at this site are critical.
- 551 Tangata Whenua and P Maclean request that some attributes only apply to the mainstem of the Waikato and Waipā Rivers, at the bottom of each FMU.

B5.4.3.1. Analysis and Recommendation

- 552 The 62 water quality monitoring sites identified in Table 3.11-1 reflect actual sites that are monitored by WRC, where current state water quality data is available. The WRC have recently set aside funding to set up and monitor water quality at all 74 sub-catchments identified in Table 3.11-2. The Officers do not consider it appropriate to include water quality targets in Table 3.11-1 for sites that do not have current state data, as there is no starting point in order to determine the 10 % improvement for the short-term target. Rather, it is considered more appropriate to include water quality monitoring sites in Table 3.11-1 in future planning cycles, once current state has been established.
- 553 At this stage, the Officers do not recommend accepting the submission from WRC that Table 3.11-1 is amended to take into account the Bay of Plenty Regional Council water quality standards for those parts of the Waikato and Waipā River Catchment area that overlap with and drain into the Lake Rotorua Catchment. The submission from WRC does not specify what the water quality standards should be for those areas. It is the Officers view that adding additional standards for some sub-catchments could make Table 3.11-1 complicated, where implementation of the plan provisions could prove difficult. The Officers note that the Bay of Plenty Regional Council did not submit on PC1.
- 554 There are a number of gaps in Table 3.11-1 where targets have not been set for some sites for every attribute. The majority of these gaps are the result of an attribute not being applicable for all the waterbody types included in the table (i.e. annual median and annual maximum Chlorophyll a apply to the mainstem of the Waikato River, but not the tributaries). However, it is important to emphasise that not having a particular attribute listed for a sub-catchment does not mean that the related contaminant does not require management at a property level within that sub-catchment, rather, progress towards achieving the water quality target for that attribute is measured in the mainstem. To make it clear that the relevant attribute is not applicable in every sub-catchment, the Officers recommend that Table 3.11-1 is amended to include the text “NA” in the blank rows, along with a note in the Explanatory text specifying that “NA” means that the attribute is not applicable at a sub-catchment scale”.
- 555 In regards to gaps in water clarity limits and targets in Table 3.11-1, there are sites where water clarity is not routinely measured by WRC, and therefore short term targets or limits are unable to be calculated.
- 556 In regards to the submission from Federated Farmers requesting that “spikes” are removed from the data set, generally-speaking, removing outliers as proposed by the submitter would not be regarded

as good practice. WRC field and lab results are routinely checked for “obvious errors” before being entered into the WRC database. It is also understood by the Officers that the datasets were not edited before being summarised for the s32 report. Given that the method for determining whether or not attribute states in Table 3.11-1 are met reflects the same methods used to determine “current state”, there is no value in removing any spikes in the current attribute state data. Officers recommend this submission is rejected.

- 557 The Officers recommend adopting submissions requesting amendments to clearly label Table 3.11-1, as it would result in an improvement in PC1, including the addition of catchment numbers that align with Table and Map 3.11-2. The Officers also consider that including specific dates for achieving 80-year targets provides plan users with greater certainty. However, the relevant objective in PC1 (Objective 1) already includes a date by which the 80-year targets are to be achieved (2096). Given that PC1 already clearly states the timeframes by which the 80-year targets are to be met, the Officers do not consider that amendments to Table 3.11-1 to make this clear are necessary. The Officers do not recommend including a date for achieving the short-term targets in Table 3.11-1. As outlined in PC1⁸² the plan sets out actions that are to be put in place and implemented by 2026 to reduce contaminant discharges, where those actions are sufficient to achieve the short-term water quality targets. It is understood that the steps taken in the first 10 years may not be fully reflected in the water quality improvements as measured in the receiving waterbodies due to “variable response times of the system to implementation of mitigations⁸³”. As such, the Officers consider it inappropriate to include a date by which those targets are likely to be reached, as those times are likely to be variable.
- 558 The WRC has a map of the monitoring sites on their website. The inclusion of this map within PC1 may provide useful clarification to plan users. However, Officers are aware that monitoring sites are under review and there are likely to be additions and changes in the near future. Therefore, the Officers recommend that the submission from Taupō DC, Waitomo DC and Waipā DC regarding the inclusion of a map of the monitoring sites listed in Table 3.11-1 is not accepted.
- 559 The modelling undertaken to identify priority catchments is described in technical report “*Priority sub-catchments for staged development of property plans*”⁸⁴, where the four contaminants were ranked in relation to the difference between current state water quality and the 80-year targets. The difference between the 80-year targets and current state is greater for some catchments as they receive inputs from a larger portion of the catchment (rather than the immediate land area). Identifying priority attributes for each sub-catchment may have unintended consequences, where the emphasis may be placed on managing the losses of only one or some “priority” contaminants for the immediate sub-catchment, when it is important that farm management plans are put in place to manage the losses of all four contaminants, as applicable to each property, in order to achieve the water quality outcomes across the whole of the Waikato and Waipā catchments. It is not recommended that Table 3.11-1 is amended to identify priority attributes for each sub-catchment. The Officers consider that while it may be useful to include current state data for each sub-catchment (i.e. 2010-2014 data) the current state is unlikely to provide any other benefits and have limited value in terms of plan implementation. Current state data can be found in the s32 report.
- 560 PC1 seeks to drive changes at the property scale (e.g. improving practice on farms) with the expectation that these changes in practice will be reflected in reducing contaminant losses to waterbodies. Targets set at sub-catchment level, coupled with a robust monitoring regime to track changes and actions on the land was considered by the CSG critical to monitor the effectiveness of the

⁸² Objective 3, Reasons for adopting Objective 3, and the Explanatory note to Table 3.11-1

⁸³ Extract from the Explanatory note to Table 3.11-1

⁸⁴ TLG 2016: *Priority sub-catchments for staged development of property plans*.

plan. In addition, the CSG also noted that overall, the rivers are degraded and should not have to receive any more degradation i.e. no monitoring site should degrade. In addition, they noted that water quality is at different levels at different monitoring sites through the river catchments. Some parts of the rivers are currently of very high quality. These parts of the river must be protected and remain at a very high level of water quality, and therefore should not be allowed to decline.

- 561 Given the importance of protecting and improving water quality across all waterbodies, the Officers consider it important to retain water quality targets for the sub-catchments, and as such, do not recommend that the targets only apply to the mainstem of the Waikato and Waipā Rivers, at the bottom of each FMU, as requested by Tangata Whenua.

B5.4.4. Submissions on attributes

B5.4.4.1. Chlorophyll a

Submissions

Tangata Whenua request that the 80-year numerical targets for Chlorophyll a are retained for the Waikato River main stem only.

Analysis and Recommendation

- 562 The Chlorophyll a targets apply to the Waikato River main stem only. No amendments are required in response to this submission.

B5.4.4.2. Total Nitrogen

Submissions

- 563 P McLean and the Tangata Whenua support Table 3.11-1 and seek amendments to the TN numerical targets. In their submissions, the submitters explain that they understand that TN and TP numerical attribute targets were defined to achieve the Chlorophyll *a* target, but states there is a disconnect between the Chlorophyll *a* bands and the TN/TP bands. The submitters also note that the TN and TP concentrations required to achieve the Chlorophyll *a* target may be subject to refinement in the future. The submitters consider there is a risk that the setting of TN/TP targets at various points along the Waikato River within each FMU may constrain the development of a future framework by 'locking in' the degree of reduction required within each FMU.
- 564 The submitters request that the 10-year TN targets are retained for the Waikato River main stem and the 80-year TN targets apply to a single point at the bottom of each FMU.
- 565 Timberlands Ltd opposes the 80-year N numerical targets in Table 3.11-1 at the individual sub-catchment level as they consider it locks in the nature and scale of resource use within each sub-catchment. The submitter considers this would prevent those with historically low discharges from changing to a higher emission profile, resulting in grandparenting. Submissions on "grandparenting" are discussed in Section B1 of this report. They also seek that Table 3.11-1 is amended by expressing the 80-year numerical attribute targets for N as a single set of TN numerical attribute targets measured in the main stem of the Waikato River at the bottom of each FMU. The submitter also seeks that the 10-year numerical N attribute targets are amended to show greater consistency between sub-catchment loads, making sure that the degree of reduction required is proportionate to the amount of current discharge.

Analysis and Recommendations

- 566 The Officers do not agree that having TN targets at various points along the Waikato River will constrain the development of a future framework. Table 3.11-1 includes concentrations of TN that represent improved water quality, where the 80-year targets are set to achieve the Vision and Strategy. The Officers do not recommend removing these targets from various points along the River.
- 567 In regards to the request from Timberlands Ltd that the 10-year numerical targets are amended to show greater consistency between sub-catchment loads and the degree of reduction to be proportionate to the amount of current discharge, it is noted that the short term targets represent a 10% change from current state towards meeting the long term water quality targets, meaning that the level of improvement is relative to current discharges. The Officers do not recommend this submission is accepted.

B5.4.4.3. Total Phosphorus

Submissions

- 568 Several submitters seek amendments to the TP targets in Table 3.11-1. Trinity Lands Ltd seeks that the target is amended to less than 20mg/1000 litres. M & C Ravenscroft seek that P levels and targets are included in Table 3.11-1. Waitomo DC seek clarification how P is being measured in the Waipā FMU.
- 569 Tangata Whenua and P McLean request that the 10-year TP targets for the Waikato River main stem and the 80-year TP targets apply to a single point at the bottom of each FMU. The submitters consider there is a risk that the setting of TN/TP targets at various points along the Waikato River within each FMU may constrain the development of a future framework by 'locking in' the degree of reduction required within each FMU.

Analysis and Recommendations

- 570 A TP target of less than 20mg/m³ (as requested by Trinity Lands Ltd) has not been modelled as part of the development of PC1. The impact of this amendment on the social and economic costs of implementing the provisions can therefore not be assessed. Officers note that 20mg/m³ equates to the 80-year target in the lower Waikato River, and will require very substantial mitigations to achieve it. In the absence of this additional information, the Officers do not recommend that the TP target be amended to be less than 20mg/m³.
- 571 The Officers do not agree that having TP targets at various points along the Waikato River will constrain the development of a future framework. Table 3.11-1 includes concentrations of TP that represent improved water quality, where the 80-year targets are set to achieve the Vision and Strategy. The Officers do not recommend removing these targets from various points along the River.
- 572 Table 3.11-1 includes TP targets for sites where data is available, and that attribute is applicable to the waterbody. It is not recommended that additional targets are set for sub-catchments where this attribute does not have current state data or is not applicable.
- 573 There is no measure for P in the Waipā River. TP is an attribute that is applicable to lakes and has also been used as a measure for ecosystem health in the Waikato River mainstem due to impoundment of water along its length. As with other tributaries, this does not apply to the Waipā River.

B5.4.4.4. Nitrate

Submissions

- 574 Hill Country Farmers Group submit that the attribute targets are beyond what was anticipated by the NPS-FM and the Vision and Strategy, and believes that a more realistic target for nitrate would be the 95th percentile target set in the NIWA NOF. It is unclear from the submission whether the reference to “95th percentile target” is in relation to a target that provides 95% species protection level or the statistical measurement. T Simpson seeks that the table is amended to use a medium percentile figure for Nitrate targets. Trinity Lands Ltd requests that the nitrate annual median is less than 2mg/L.
- 575 Tangata Whenua request that the 80-year numerical targets for nitrate-nitrogen that are expressed in each sub-catchment are deleted and suggest undertaking a review of the 10-year numerical attribute targets for nitrate-nitrogen to fix errors and achieve greater consistency between sub-catchments so that the degree of reduction required is proportionate to the amount of current discharge. The submissions do not specifically identify any errors in Table 3.11-1.
- 576 Fish and Game supports Table 3.11.1 however submits that the attributes and targets are insufficient to ensure that freshwater resources are sustainably managed and provide for the habitat of trout and indigenous fish and the significant values of wetlands. The submission from Fish and Game includes a revised attributes table that amends the long-term nitrate concentrations which they consider reflects the desire to achieve ecosystem health (which is measured through MCI in rivers and trophic level indicator in lakes).

Analysis and Recommendations

- 577 The amendments to the nitrate concentrations proposed by Fish and Game have not been modelled to determine the likely benefits and costs of the environmental, economic, social, and cultural effects that would result from imposing lower nitrate targets. However, any reduction in the targets will likely incur greater social and economic costs than the provisions as notified. Given that the benefits and costs cannot be quantified without additional modelling, it is not recommended the reduced nitrate concentrations proposed by Fish and Game be accepted.
- 578 As described earlier in this section of the Section 42A Report, given the importance of protecting and improving water quality across all waterbodies, the Officers consider it important to retain water quality targets for the sub-catchments, and as such, do not recommend that nitrate targets apply only to the mainstem of the Waikato and Waipā Rivers.
- 579 An annual median target for Nitrate of 2mg would constitute a degradation in water quality in the majority of sub-catchments listed in Table 3.11-1. It is not recommended that the targets are amended to a value that would allow for degradation. The Officers recommend that the submission from Trinity Lands Ltd be rejected. In regards to the submission from T Simpson, the Officers note that Table 3.11-1 already provides an annual median figure, and does not require a median percentile.

B5.4.4.5. Ammonia

Submissions

- 580 Hamilton CC seeks that the table is amended to ensure that the targets for Annual Median Ammonia and Annual Maximum Ammonia are meaningful and within the detection limits for current standard analytical methods.

- 581 Waikato Regional Council supports Table 3.11-1 with amendments. In their submission they note that reports from the TLG to the CSG suggest that it was the intention to include ammonia attribute for the lakes, in line with the NPS-FM requirements. WRC submit that it is therefore likely an oversight that annual Median Ammonia and Annual Maximum Ammonia was missed out of Table 3.11-1 for lakes and request that for the Dune, Riverine, Volcanic and Peat Lakes FMUs on page 67, two new columns are added to provide targets for Annual Median and Annual Maximum Ammonia as per the NPS-FM - Band C for 80 year target. They further state that "Table 3.11-1 ammonia (annual median and annual maximum) in NOF is adjusted for pH and temperature" and that it is not clear that the state data have been adjusted and are therefore (likely to be) lower than current state. They therefore request that Table 3.11-1 is amended by adding a footnote to read: "*that the annual median and annual maximum ammonia have been adjusted for pH.*"
- 582 Watercare seeks that Table 3.11-1 is amended to recognise the seasonality effects of point source discharges as is current practice with many existing discharge consents in the Waikato River. They seek clarification on how historical water quality data has been handled to derive water quality targets for ammonia and the implications for addressing effects of point source discharges. They also seek that the long term water quality targets are amended to recognise the gradual deterioration of water quality along the length of the Waikato River and the artificial boundaries between the upper and lower catchment are removed.
- 583 Tangata Whenua request that the 80-year numerical targets for ammoniacal nitrogen that are expressed in each sub-catchment are deleted and suggest undertaking a review of the 10-year numerical attribute targets for ammoniacal nitrogen to fix errors and achieve greater consistency between sub-catchments so that the degree of reduction required is proportionate to the amount of current discharge. The submission does not specifically identify any errors in Table 3.11-1.

Analysis and Recommendation

- 584 The ammonia targets set in Table 3.11-1 for some sub-catchments are lower than the detection limits for the chemical test used by WRC's current contracting laboratory (Hill Labs). For example, both the short term and 80-year limits for median ammonia at the Waikato River at Ohaaki Bridge site are 0.002 g/m³, while the detection limit for the method used by Hill Labs is 0.01 g/m³. However, more sensitive testing procedures are in use elsewhere; for example, NIWA's lab uses a method for ammonia that has a detection limit of 0.001 g/m³.
- 585 In the event that WRC continue to use the current Hill Labs test for ammonia, there would be a difficulty in the future in determining whether the targets set out in Table 3.11-1 for some locations had been met. However, as there are options available for WRC to have samples from certain sites analysed using a different method (e.g. the more sensitive method available at NIWA), then the difficulty would not arise. It is not recommended the ammonia target is amended to better align with the current test procedures.
- 586 The modelling undertaken in the development of the attributes Table 3.11-1 took into account point source discharges, which is described in technical report prepared by NIWA 2016 - *Method of prioritising sub-catchments: Addendum to the memo to the Technical Leaders Group*⁸⁵. The ammonia target includes both a maximum and an annual median measurement, where the Explanatory note to the table describes that the achievement of the targets will be determined through analysis of 5-yearly monitoring data. The use of a 5-year averaging period to summarise the monthly monitoring results in Table 3.11-1 means that any short term variability in water quality, including seasonal variability, will be accounted-for by the substantially-longer averaging period (i.e five years). As such, seasonal

⁸⁵ Document number 4065913

variation in point source loads are unlikely to compromise meeting the PC1 targets and the Officers therefore do not consider that amendments are necessary to provide for seasonality of point source discharges, as requested by Watercare.

- 587 It is unclear from Watercare's submission what the "artificial boundaries" between upper and lower catchments are, as the water quality targets for each FMU are based on improvement from current state data.
- 588 Given the importance of protecting and improving water quality across all waterbodies, the Officers consider it important to retain water quality targets for the sub-catchments, and as such, do not recommend that the submission from Tangata Whenua is accepted.
- 589 The Officers recommend the submission from WRC is accepted, as the suggested amendments seek to fix errors in Table 3.11-1 and assist in interpretation of the ammonia targets.

B5.4.4.6. E. coli

Submissions

- 590 Several submitters seek amendments to the targets specified for 95th percentile for *E. coli*, ranging from a target of 260/100ml to 1000/100ml.
- 591 G Gleeson submits that the issues around swimmability are contentious and fraught and does not believe a position can be justified that is to provide swimmability across the whole catchment year-round. G Gleeson considers a more pragmatic solution is to ensure swimmability can occur when the waterways are safe to do so, i.e. not in flood, and a time more conducive to being in the water and in locations where swimming could reasonably be undertaken. He seeks that that two *E.coli* targets are included as follows:
- *E Coli* 260/100ml < 50th percentile: Applies 1 November to 30 April when the waterway is below medium flow
 - *E Coli* 550/100ml < 20th percentile: the concentration of *E. Coli* must not exceed 550/100ml year-round when flow is at or below the 20th flow exceedance percentile (i.e. not in the top 20% of flows)
- 592 Several other submitters also request that *E. coli* targets do not apply during higher flow events. The submission from Beef and Lamb defines "higher flow events" as above two times the medium flow, or during the flow recession curve. Beef and Lamb also request similar amendments to G Gleeson, which they state is the approach adopted in the Horizons region.
- 593 R Bain and D, L, D & C Stobie request that Table 3.11-1 is amended to provide a realistic target "around the 80th percentile", as they state the 95th percentile is not achievable under flood conditions.
- 594 Several submitters are concerned that the *E. coli* target of 540/1000ml is too high and does not represent the appropriate level for safe swimming or food gathering, with submitters referring to the Ministry of Health guidelines or MfE 2003 guidelines "Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas". The MfE guidelines specify that a single sample greater than 260 *E. coli*/100ml is classified as "Alert Mode". The submitters seek that the maximum 95th percentile *E. coli* level should be set at 260/100 ml, where Population Health submits this level relates to an average probability of one case of Campylobacter infection in every 100 exposures, "five times lower than that proposed".

- 595 Federated Farmers submits that the *E. coli* limit of 540/100ml is unrealistic and states that it is impossible to be reached on many of the defined sites, and out of the control of land owners as they believe it is driven by natural events. They seek that the *E. coli* target in Table 3.11-1 is deleted.
- 596 D Deans agrees that *E. coli* targets are important but states that more specific testing needs be undertaken to differentiate between avian and ruminant *E. coli* and seeks that the targets are adjusted.
- 597 Two submitters seek that the statistical measurement used for the *E. coli* target is amended from 95th percentile of 540/100ml to a medium percentile figure, with D P Coles requesting that an annual median *E. coli* of 1000/100ml is included in Table 3.11-1. J Kingsley and J Maunder supports Table 3.11-1 but note that the US EPA recommendations for *E. coli* include an average value as well as a 90th percentile value (compared to the use of just a 95th percentile target in PC1).

Analysis and Recommendation

- 598 Several submitters request that the *E. coli* targets do not apply during high flow events, however it is noted that the achievement of the attribute targets will be determined through analysis of 5-yearly monitoring data. This is consistent with the guidance contained in Appendix 2 of the NPS-FM for *E. coli*, which states:
Attribute state should be determined by using a minimum of 60 samples over a maximum of 5 years, collected on a regular basis regardless of weather and flow conditions. However, where a sample has been missed due to adverse weather or error, attribute state may be determined using samples over a longer timeframe.
- 599 The overall achievement of the *E. coli* target in Table 3.11-1 will be based on the 95th percentile of sample results from the previous 5 years and therefore accommodates infrequent or rare high flow events. As the proposed attribute monitoring programme (to determine achievement of the targets) is consistent with the guidance contained in the NPS-FM, and the proposed target and monitoring regime already provides for the exclusion of extreme events, the Officers do not recommend Table 3.11-1 is amended so the targets for *E. coli* do not apply during high flow events.
- 600 The *E. coli* targets included in Table 3.11-1 represent either an improvement in water quality (where it is currently degraded), or “protection” of existing good water quality. The 80-year targets for *E. coli* are set to achieve the Vision and Strategy’s objective of:
The restoration of water quality within the Waikato River so that it is safe for people to swim in and take food from over its entire length.
- 601 While this target may be ambitious for some sites, it is critical that the targets set in PC1 reflect the requirements and objectives of the Vision and Strategy. The Officers do not recommend either deleting or amending the targets so that they are more ‘realistic’ or achievable. In regards to submissions requesting a lower *E. coli* target, Officers note that there is debate as to the level of risk that equates to different levels of *E. coli*, and understand that this was considered by the TLG, and the then NOF levels were utilised. Further information from submitters as to acceptable levels of risk would be helpful.
- 602 The statistical measure of *E. coli* used in Table 3.11-1 is the 95th percentile. The NOF set out in Appendix 2 of the NPS-FM also includes other metrics, including the median and percentage of exceedances

over 260 and 540 cfu/100mL. MfE has prepared a guidance paper on the *E. coli* swimming categories used in their Clean Water package⁸⁶, where it notes that:

The use of a 95th percentile provides an indication of the top of the range that could generally be expected, while excluding the most extreme outliers; however, it doesn't provide a good indication of what the E. coli concentration would usually be.

- 603 A target that is represented by a median value means that 50 percent of the samples taken are at or below the target.
- 604 The NPS-FM⁸⁷ requires all regional councils to set regional targets to improve water quality for primary contact by the end of 2018. An agenda item was presented to the Council on 12th December 2018, that recommended (in addition to receiving the report):
2. *That Council sets the final target for the Waikato region of 40.4% of rivers and 79% of lakes swimmable by 2030, and that this final target will be formally advised to the Ministry for the Environment and will be made publicly available on Council's website by 31 December 2018.*
 3. *And that in regard to the recommendation above Council notes that:*
 - a. *the Government has indicated it may further amend the National Policy Statement for Freshwater Management in respect of "swimmability" and that these amendments may impact on developing our final regional targets*
 - b. *staff will continue to undertake further work in order to gauge whether a revision of the final regional target needs to be reviewed next year*
 - c. *as part of the ongoing work programme a regional sector approach, working collaboratively with Government, is strongly supported*

B5.4.4.7. Clarity

Submissions

- 605 WRC submits that there is a disjoint between the methods and attributes in Table 3.11-1 in regard to sediment and clarity. They state that the methods focus on monitoring and reporting sediment against the attribute targets, but no targets are given for sediment. Targets are given for clarity, but clarity is not in the methods in the plan. WRC seeks that either the Methods or Explanatory note to Table 3.11-1 are amended so there is alignment between the Clarity attribute used in Table 3.11-1 and references to sediment in the Methods.
- 606 Tangata Whenua seek that the 80-year numerical targets for water clarity are retained for the Waikato River main stem and sub-catchments.
- 607 Three submitters seek that the threshold for water clarity (as measure of swimmability) is a minimum of 1.6m.
- 608 Beef and Lamb request that the visual clarity of the water measured as the horizontal sighting range of a black disc must equal or exceed the Table 3.11-1 numerical parameter (in metres) when the river is at or below medium flow (the 50th flow exceedance percentile). Trinity Lands Ltd seeks that the target for water clarity is amended to 1 metre at times of annual return low flow.
- 609 J Reeves & A Taylor submit that the use of clarity as a measure of water quality is flawed and should not be included in PC1. They submit that the key issue is that sediment level may become worse before

⁸⁶ Ministry for the Environment. 2017. *Swimming categories for E. coli in the Clean Water package: A summary of the categories and their relationship to human health risk from swimming*. Wellington: Ministry for the Environment.

⁸⁷ Policy A6 of the NPS-FM

they get better and that this may “go on for decades” as the mitigations required of landowners (such as riparian planting) will increase the amount of sediment in the rivers. The submitter refers to the report “*Waikato River suspended sediment: loads, sources & sinks*” where it notes that stored sediment in pastoral streams could be released (over a number of decades) if these channels are to be revegetated in tress species due to the shading effect of a riparian tree canopy inhibit the growth of groundcover vegetation.

Analysis and Recommendation

- 610 In the development of PC1, the TLG modelled the effects of implementing mitigations, land use change and consequent reduced contaminant loads (being nutrients and sediment) on chlorophyll *a* and clarity. The modelling undertaken considered that the key contributors to visual clarity are “yellow substance” (a type of dissolved organic material), phytoplankton (floating algae) and ‘other’ (assumed to be dominated by fine sediment). Changes to nutrient concentrations bring about changes to visual clarity through increased or decreased phytoplankton growth (as measured by chlorophyll *a* concentrations). Changes to sediment loads affect changes to visual clarity through the ‘other’ contributor.⁸⁸
- 611 While there is a relationship between sediment load and water clarity, as described above, water clarity is also dependant on other contributing factors. As there are multiple contributing factors to the clarity attribute, the Officers do not consider that further amendments are necessary in Table 3.11-1 in response to the submission from WRC, rather it is considered more appropriate to amend the methods set out in the plan to provide clarification between sediment and the clarity attribute included in Table 3.11-1.
- 612 It is acknowledged in PC1⁸⁹ that the actions implemented by 2026 may not be fully reflected in water quality improvements that are measurable in the water in 10 years. The clarity attribute is an important measure of “swimmability” and, as described above, river clarity is reliant on a number of contributors, including sediment. It is not recommended that Table 3.11-1 is amended in response to the submission from J Reeves & A Taylor.
- 613 The technical reports prepared by the TLG and CSG as part of the development of PC1 indicate that clarity will be assessed in terms of the “median black disc horizontal sighting range under baseflow conditions”.⁹⁰ As there is no guidance in Table 3.11-1 as to the statistical measure or assessment of water clarity, it is recommended that the table is amended to include the assessment criteria as used by the TLG in the development of PC1. The Officers therefore recommended that the submission from Beef and Lamb, in relation to the clarity attribute, be accepted in part.
- 614 A standard 1.6m clarity target across all sub-catchments has not been modelled to determine the likely impacts it will have on the cultural, social and economic effects of the proposed provisions. As 1.6m is more restrictive than the proposed target for many sub-catchments, it will likely require additional land use mitigations to be employed, resulting in additional costs. Without any certainty about the level of mitigations required to meet the proposed target of 1.6m (and the associated costs), the Officers do not recommended submissions requesting this amendment are accepted.

⁸⁸ TLG, 2016. A methodology for chlorophyll and visual clarity modelling of the Waikato and Waipā Rivers.

⁸⁹ Reasons for adopting Objective 1 and Explanatory note to Table 3.11-1

⁹⁰ TLG, 2016. A methodology for chlorophyll and visual clarity modelling of the Waikato and Waipā Rivers.

B5.4.4.8. Other attributes and load limits

Submissions

- 615 Several submitters request that Table 3.11-1 is amended to include additional water quality attributes, including:
- suspended sediment, deposited fine sediment/benthic sediment
 - Te Hauora o te Taiao;
 - natural character;
 - DO;
 - MCI;
 - periphyton;
 - cyanobacteria and benthic cyanobacteria;
 - DIN;
 - temperature;
 - pH;
 - toxic heavy metals;
 - barriers to fish migrations; and
 - water flows and levels.
- 616 DoC request that WRC further investigates the effects (such as nitrate toxicity) on ecosystem health, particularly with respect to native fish and macroinvertebrates, and make changes to targets as appropriate.
- 617 The submission from P Volker notes that DO was not included in Table 3.11-1 as the TLG deemed there was not enough point source discharges to warrant its inclusion. The submission also notes that deposited and suspended sediment was not included as the TLG considered water clarity is an appropriate “*de facto*”, while the submitter agrees with the TLG that clarity is an appropriate *de facto* for suspended sediment, they do not consider it is appropriate substitute for deposited sediment, which they state clogs native fish habitat.
- 618 Fish and Game supports Table 3.11-1 however submits that the attributes and targets are insufficient to ensure that freshwater resources are sustainably managed and provide for the habitat of trout and indigenous fish and the significant values of wetlands. They also note that attributes and targets do not provide for primary contact recreation and cultural values, or recognise and protect the natural character of rivers, lakes and wetlands. In their submission, they seek that the long-term nitrate-nitrogen and P concentrations are amended to reflect the desire to achieve ecosystem health as measured through the MCI (rivers) and trophic level indicator (lakes) at the end of the 80-year period. The submission from Fish and Game includes MCI targets for the four river FMUs.

Analysis and Recommendation

- 619 The inclusion of DO and periphyton is addressed earlier in this Report. For the reasons set out earlier, the Officers do not recommend these attributes are included in Table 3.11-1. In regard to the submission from Beef and Lamb requesting the inclusion of instream load, and maximum allowable zone load (MAZL) for N for all sub catchments and FMUs, it is noted that there is insufficient information available to determine what appropriate load limit may be. There are no impediments for future planning cycles to include load limits in the plan, should that be deemed the most appropriate way to manage nutrients in each sub-catchment or FMU, provided sufficient information is available to determine appropriate limits. It is not recommended that Table 3.11-1 is amended to include load limits.

- 620 It is noted that MCI was considered by the CSG when determining appropriate attributes to include in Table 3.11-1. Stream macroinvertebrates are monitored at representative sites (including reference sites) throughout the Waikato-Waipā catchment and used as an indicator of ecosystem health. The TLG recommended to the CSG that MCI (and other metrics based on river invertebrate community characteristics, such as EPT richness and density) is a valuable overall indicator of ecosystem health, but it is not appropriate as an attribute because of the lack of robust cause-effect relationships that preclude modelling of the wider implications of limits on contaminants to achieve different MCI levels. It was recommended by the TLG to the CSG and WRC to continue macroinvertebrate monitoring and give further thought to how the monitoring results may be used to show co-benefits arising from implementation of property plans targeted at the four contaminants⁹¹. No additional information has been provided by the submitters that would cause a change to this recommendation. It is therefore recommended that Table 3.11-1 is not amended to include MCI as an attribute. In the development of PC1, the CSG considered the deposited (or benthic) sediment as an attribute. In a report on water quality attributes for PC1⁹², the TLG notes, in relation to deposited sediment:
- In stony-bottomed streams the deposition of fine sediment can have significant adverse effects on Ecosystem Health and other values (e.g. trout fishery). While some thresholds have been proposed nationally there is currently insufficient monitoring data to describe current state and this Attribute remains in the development stage. We recommend that deposited sediment not be included as an Attribute.* Based on this information, the Officers do not recommend that deposited sediment is included as an attribute in Table 3.11-1.
- 621 The Officers note that “natural character” and “Te Hauora o te Taiao” are values associated with waterbodies, where the attributes are measures associated with those values. Barriers to fish migration and water flows and levels are not managed by the provisions contained in PC1, and it is not clear what their relevance is to PC1. For these reasons, the Officers do not recommend amending Table 3.11-1 to include natural character, Te Hauora o te Taiao, barriers to fish migration or water flows and levels.
- 622 Temperature, pH and toxic heavy metals are also outside the scope of PC1 as the provisions only seek to manage the discharge of nutrients (N and P), *E. coli* and sediment. As such, the Officers recommend Table 3.11-1 is not amended to include these attributes.
- 623 Cyanobacteria (planktonic) is already included as an attribute for the lakes and lake-fed rivers. No further amendments are necessary to provide for this. DIN consists of Nitrate, Nitrite and ammoniacal nitrogen. The Officers note that nitrate nitrogen and ammoniacal nitrogen have been included in Table 3.11-1, which is consistent with the NOF in the NPS-FM.

B5.4.4.9. Lakes

Submissions

- 624 DoC is supportive of a long term staged approach to improving water quality, however they state that the water quality attribute targets for lakes set in Table 3.11-1 do not equate to the “long term restoration and protection of water quality” that is the intent of Objective 1. DoC notes that the targets for lakes are all set at the National Bottom Line (NPS-FM NOF), which does not achieve ecosystem health, nor does it safeguard the life-supporting capacity of water, as required by the purpose of the RMA. DoC seeks amendments to Table 3.11-1 that ensure lake water quality is enhanced and ecosystem health and life-supporting capacity of the waterbodies is achieved.

⁹¹ TLG, 2016: *Healthy Rivers: Wai Ora – Monitoring of attributes and actions*. Document Number 8751223

⁹² TLG, 2015: *Water quality attributes for Healthy Rivers Wai Ora Plan Change – TLG Summary for CSG#12*.

625 Waikato Regional Council requests that the names of the lakes and their catchments is included with the Lakes FMUs, as is the case for all other entries in the table. In the event that table is amended to include lake names, they request that Lake Opouri (as referred to in supporting technical reports) is named as Lake Ngapouri, which is consistent with the LINZ name for the lake. They also submit that it is not clear why the lakes that are mapped as “Volcanic Lakes” are described as such, as there is no volcanic influence on these lakes. They state that if the term “Volcanic Lakes” is applied because the lakes are found in the Taupō Volcanic Zone, then a more appropriate name would be “Volcanic Zone Lakes”.

Analysis and Recommendation

626 The Officers recommended that the submission from WRC in regard to Table 3.11-1 and the Lakes FMUs are adopted, as they will result in an improvement to the provisions, by reducing uncertainty and enabling more efficient plan implementation. Amending the FMU name will not result in any changes to how the FMU is managed in PC1.

627 Table 3.11-1 only sets long term targets for the Lake FMUs, where the targets align with the NPS-FM National Bottom Lines. The Section 32 Report (pp 68 and 69) provides a description on why a longer restoration proposition is required for the Lakes FMU, where it notes that restoring a degrading lake to a more natural state is complex and difficult. The Section 32 Report also notes that the current state of the lakes, compared with the National Bottom Line, indicates the large “size of the task” to achieve those bottom lines. Given the difficulties in managing lake water quality, the Officers do not recommend that the attribute targets for the Lakes FMUs are amended in response to the submission from DoC.

B5.4.4.10. Whangamarino Wetland

Submissions

628 The submission from DoC requests the addition of a new FMU for Whangamarino Wetland. As part of the wider submission requesting this addition, DoC have sought the addition of new attributes and 80-year targets as set out in Appendix E and F of their submission.

Analysis and Recommendation

629 As set out earlier in this Section, the Officers do not recommend that a new FMU for Whangamarino Wetland is included in PC1, therefore it is also recommended that DoC’s submission requesting new attributes associated with Whangamarino Wetland is not accepted.

B5.4.4.11. Overall recommendation

630 That Table 3.11-1 be amended as follows:

Table 3.11-1: Short term water quality limits and targets and long term numerical desired water quality states⁹³ ~~targets~~ for the Waikato and Waipā River catchments/Ngā whāinga ā-tau taupoto, tauroa hoki mō te kounga wai i te riu o ngā awa o Waikato me Waipā

⁹³ GBC Winstone

Within the Waikato and Waipā River catchments, these targets and desired water quality states are used in decision-making processes guided by the objectives in Chapter 3.11 and for future monitoring of changes in the state of water quality within the catchments. With regard to consent applications for diffuse discharges or point source discharges of nitrogen, phosphorus, sediment and microbial pathogens, it is not intended, nor is it in the nature of water quality targets and the desired water quality states⁹⁴, that they be used directly as receiving water compliance limits/standards. Reference should also be made to Method 3.2.4.1.

Explanatory note to Table 3.11-1

The tables set out the concentrations (all attributes except clarity) or visibility distance (clarity attribute) to be maintained or achieved by actions taken in the short term and ~~at~~ over 80 years for rivers and tributaries, and at 80 years for lakes FMUs. Where water quality is currently high (based on 2010-2014 monitoring data), the short term targets and 80-year desired water quality states ~~targets~~ will be the same as the current state and there is to be no decline in quality (that is, no increase in attribute concentration or decrease in clarity). Where water quality needs to improve, the water quality states ~~values~~ to be achieved at a site indicate a short term and long term reduction in concentration or increase in clarity compared to the current state.

For example, at Otamakokore Stream, Upper Waikato River FMU:

- *the current state value for median nitrate is 0.740 mgNO₃-N/L. The short term targets and 80-year desired water quality states ~~targets~~ are set at 0.740 mgNO₃-N/L to reflect that there is to be no decline in water quality*
- *the current state value for E.coli is 696 E.coli/100ml. The 80-year desired water quality state ~~target~~ is set at 540 E.coli/100ml and the short term target is set at 10% of the difference between the current state value and the 80 year desired water quality state ~~target~~⁹⁵.*

The achievement of the attribute targets in Table 3.11-1 will be determined through analysis of 5-yearly monitoring data. The variability in water quality (such as due to seasonal and climatic events) and the variable response times of the system to implementation of mitigations may mean that the targets are not observed for every attribute at all sites in the short term.

The effect of some contaminants (particularly nitrogen) discharged from land has not yet been seen in the water. This means that in addition to reducing discharges from current use and activities, further reductions will be required to address the load to come that will contribute to nitrogen loads in the water. There are time lags between contaminants discharged from land uses and the effect in the water. For nitrogen in the Upper Waikato River particularly, this is because of the time taken for nitrogen to travel through the soil profile into groundwater and then eventually into the rivers. This means that there is some nitrogen leached from land use change that occurred decades ago that has entered groundwater, but has not yet entered the Waikato River. In some places, water quality (in terms of nitrogen) will deteriorate before it gets better. Phosphorus, sediment and microbial pathogens and diffuse discharges from land have shorter lag times, as they reach water from overland flow. However, there will be some time lags for actions taken to address these contaminants to be effective (for example tree planting for erosion control).

⁹⁴ GBC Winstone

⁹⁵ All recommended amendments to the Explanatory Note: GBC Winstone

Table 3.11-1⁹⁶: Upper Waikato River Freshwater Management Unit

Catchment number ⁹⁷	Site	Attributes																			
		Annual Median Chlorophyll a (mg/m ³)		Annual Maximum Chlorophyll a (mg/m ³)		Annual Median Total Nitrogen (mg/m ³)		Annual Median Total Phosphorus (mg/m ³)		Annual Median Nitrate (mg NO ₃ -N/L)		Annual 95 th percentile Nitrate (mg NO ₃ -N/L)		Annual Median Ammonia ¹ (mg NH ₄ -N/L)		Annual Maximum Ammonia ¹ (mg NH ₄ -N/L)		95 th percentile <i>E. coli</i> (<i>E. coli</i> /100mL)		Clarity (m) ²	
		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
<u>73</u>	Waikato River Ohaaki Br	1.5	1.5	13	13	134	134	10	10	0.039	0.039	0.062	0.062	0.002	0.002	0.013	0.013	70	70	3.8	3.8
<u>66</u>	Waikato River Ohakuri Tailrace Br	3.2	3.2	11	11	206	160	17	17	0.084	0.084	0.172	0.172	0.003	0.003	0.017	0.017	15	15	3.4	3.4
<u>67</u>	Waikato River Whakamaru Tailrace		5		25	260	160	20	20	0.101	0.101	0.230	0.230	0.003	0.003	0.010	0.010	60	60	2.0	3.0
<u>64</u>	Waikato River Waipāpa Tailrace	4.1	4.1	25	25	318	160	25	20	0.164	0.164	0.320	0.320	0.007	0.007	0.017	0.017	162	162	2.0	3.0
<u>74</u>	Pueto Stm Broadlands Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.450	0.450	0.530	0.530	0.003	0.003	0.009	0.009	92	92	1.8	3.0
<u>72</u>	Torepatutahi Stm Vaile Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.500	0.500	0.800	0.800	0.002	0.002	0.011	0.011	216	216		
<u>65</u>	Waiotapu Stm Homestead Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.257	1.0	1.563	1.5	0.112	0.03	0.176	0.05	281	281		

⁹⁶ Waikato Regional Council PC1-3635

⁹⁷ Wairakei Pastoral Ltd PC1-11391

69	Mangakara Stm (Reporoa) SH5	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.270	1.0	1.590	1.5	0.008	0.008	0.062	0.05	1584	540	0.9	1.0
62	Kawaunui Stm SH5 Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	2.580	2.4	2.850	1.5	0.006	0.006	0.079	0.05	2335	540	1.4	1.6
58	Waiotapu Stm Campbell Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.915	0.915	1.100	1.100	0.291	0.24	0.315	0.05	18	18	1.2	1.6
59	Otamakokore Stm Hossack Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.740	0.740	1.190	1.190	0.006	0.006	0.024	0.024	680	540	1.2	1.6
56	Whirinaki Stm Corbett Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.770	0.770	0.870	0.870	0.002	0.002	0.012	0.012	98	98	2.7	3.0
54	Tahunatara Stm Ohakuri Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.555	0.555	0.830	0.830	0.003	0.003	0.015	0.015	783	540	1.3	1.6
57	Mangaharakeke Stm SH30 (Off Jct SH1)	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.525	0.525	0.750	0.750	0.003	0.003	0.015	0.015	684	540	1.1	1.6
70	Waipāpa Stm (Mokai) Tirohanga Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.189	1.0	1.500	1.5	0.003	0.003	0.005	0.005	1147	540	1.2	1.6
71	Mangakino Stm Sandel Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.650	0.650	0.860	0.860	0.003	0.003	0.012	0.012	251	251	1.8	3.0
49	Whakauru Stm SH1 Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.260	0.260	0.450	0.450	0.003	0.003	0.033	0.033	2106	540	0.8	1.0
48	Mangamingi Stm Paraonui Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	2.760	2.4	3.12	1.5	0.091	0.03	0.296	0.05	2151	540	0.8	1.0
45	Pokaiwhenua Stm Arapuni - Putaruru Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.680	1.0	2.040	1.5	0.002	0.002	0.020	0.020	1363	540	1.3	1.6
44	Little Waipā Stm Arapuni - Putaruru Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.522	1.0	2.040	1.5	0.002	0.002	0.085	0.05	1377	540	1.5	1.6

¹ The annual median and annual maximum ammonia have been adjusted for pH

² Median black disc horizontal sighting range under baseflow conditions

³ Attribute is not applicable to the sub-catchment

**Table 3.11-1: Middle Waikato River
Freshwater Management Unit**

Catchment number	Site	Attributes																			
		Annual Median Chlorophyll a (mg/m ³)		Annual Maximum Chlorophyll a (mg/m ³)		Annual Median Total Nitrogen (mg/m ³)		Annual Median Total Phosphorus (mg/m ³)		Annual Median Nitrate (mg NO ₃ -N/L)		Annual 95 th percentile Nitrate (mg NO ₃ -N/L)		Annual Median Ammonia ¹ (mg NH ₄ -N/L)		Annual Maximum Ammonia ¹ (mg NH ₄ -N/L)		95 th percentile <i>E. coli</i> (<i>E. coli</i> /100mL)		Clarity (m) ²	
		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
<u>33</u>	Waikato River Narrows Boat Ramp	5.5	5	23	23	404	350	28	20	0.235	0.235	0.500	0.500	0.009	0.009	0.018	0.018	340	260	1.7	1.7
<u>25</u>	Waikato River Horotiu Br	6.1	5	23	23	432	350	34	20	0.260	0.260	0.530	0.530	0.007	0.007	0.029	0.029	774	540	1.4	1.6
<u>32</u>	Karapiro Stm Hickey Rd Bridge	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.520	0.520	1.689	1.5	0.008	0.008	0.031	0.031	4518	540	0.9	1.0
<u>35</u>	Mangawhero Stm Cambridge-Ohaupo Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.990	1.0	2.490	1.5	0.041	0.03	0.072	0.05	2920	540	0.3	1.0
<u>29</u>	Mangaonua Stm Hoeka Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.455	1.0	1.878	1.5	0.036	0.03	0.051	0.05	6372	540	1.0	1.0
<u>31</u>	Mangaone Stm Annebrooke Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	2.580	2.4	2.940	1.5	0.009	0.009	0.02	0.02	2052	540	0.9	1.0
<u>30</u>	Mangakotukutuku Stm Peacockes Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.800	0.800	1.788	1.5	0.077	0.03	0.132	0.05	11394	540	0.5	1.0

Catchment number	Site	Attributes																					
		Annual Median Chlorophyll a (mg/m ³)		Annual Maximum Chlorophyll a (mg/m ³)		Annual Median Total Nitrogen (mg/m ³)		Annual Median Total Phosphorus (mg/m ³)		Annual Median Nitrate (mg NO ₃ -N/L)		Annual 95 th percentile Nitrate (mg NO ₃ -N/L)		Annual Median Ammonia ¹ (mg NH ₄ -N/L)		Annual Maximum Ammonia ¹ (mg NH ₄ -N/L)		95 th percentile <i>E. coli</i> (<i>E.coli</i> /100mL)		Clarity (m) ²			
		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
28	Waitawhiriwhiri Stm Edgcumbe Street	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.880	0.880	1.240	1.24	0.256	0.24	0.318	0.05	5922	540	0.4	1.0
23	Kirikiroa Stm Tauhara Dr	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.815	0.815	1.572	1.5	0.096	0.03	0.183	0.05	2124	540	0.5	1.0

¹ The annual median and annual maximum ammonia have been adjusted for pH.

² Median black disc horizontal sighting range under baseflow conditions

³ Attribute is not applicable to the sub-catchment

Table 3.11-1: Lower Waikato River Freshwater Management Unit

Catchment number	Site	Attributes																			
		Annual Median Chlorophyll a (mg/m ³)		Annual Maximum Chlorophyll a (mg/m ³)		Annual Median Total Nitrogen (mg/m ³)		Annual Median Total Phosphorus (mg/m ³)		Annual Median Nitrate (mg NO ₃ -N/L)		Annual 95 th percentile Nitrate (mg NO ₃ -N/L)		Annual Median Ammonia ¹ (mg NH ₄ -N/L)		Annual Maximum Ammonia ¹ (mg NH ₄ -N/L)		95 th percentile <i>E. coli</i> (<i>E.coli</i> /100mL)		Clarity (m) ²	
		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
<u>20</u>	Waikato River Huntly-Tainui Br	5.9	5	19	19	562	350	43	20	0.365	0.365	0.900	0.900	0.005	0.005	0.015	0.015	1944	540	0.9	1.0
<u>9</u>	Waikato River Mercer Br	10.0	5	30	25	631	350	49	20	0.365	0.365	0.870	0.870	0.003	0.003	0.010	0.010	1494	540		
<u>4</u>	Waikato River Tuakau Br	11.3	5	37	25	571	350	50	20	0.325	0.325	0.880	0.880	0.003	0.003	0.008	0.008	1584	540	0.7	1.0
<u>22</u>	Komakorau Stm Henry Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.279	1.0	4.400	3.5	0.250	0.24	0.419	0.40	3474	540	0.3	1.0
<u>17</u>	Mangawara Stm Rutherford Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.765	0.765	2.760	1.5	0.103	0.03	0.172	0.05	4955	540	0.3	1.0

Catchment number	Site	Attributes																			
		Annual Median Chlorophyll a (mg/m ³)		Annual Maximum Chlorophyll a (mg/m ³)		Annual Median Total Nitrogen (mg/m ³)		Annual Median Total Phosphorus (mg/m ³)		Annual Median Nitrate (mg NO ₃ -N/L)		Annual 95 th percentile Nitrate (mg NO ₃ -N/L)		Annual Median Ammonia ¹ (mg NH ₄ -N/L)		Annual Maximum Ammonia ¹ (mg NH ₄ -N/L)		95 th percentile <i>E. coli</i> (<i>E.coli</i> /100mL)		Clarity (m) ²	
		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
19	Awaroa Stm (Rotowaro) Sansons Br @ Rotowaro-Huntly Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.70	0.70	1.19	1.19	0.02	0.02	0.08	0.05	1800	540	0.8	1.0
14	Matahuru Stm Waiterimu Road Below Confluence	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.71	0.71	1.68	1.5	0.01	0.01	0.05	0.05	6147	540	0.4	1.0
16	Whangape Stm Rangiriri-Glen Murray Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.00	0.00	0.69	0.69	0.00	0.00	0.13	0.05	584	540	0.3	1.0
12	Waerenga Stm SH2 Maramarua Taniwha Rd ⁹⁸	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.82	0.82	1.41	1.41	0.00	0.00	0.02	0.02	5098	540	0.9	1.0
8	Whangamarino River Jefferies Rd Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.62	0.62	1.84	1.5	0.01	0.01	0.14	0.05	4712	540	0.6	1.0
2	Mangatangi River SH2 Maramarua	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.11	0.11	1.12	1.12	0.00	0.00	0.03	0.03	5567	540	0.5	1.0
1	Mangatawhiri River Lyons Rd Buckingham Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.01	0.01	0.37	0.37	0.00	0.00	0.01	0.01	5108	540	1.6	1.6

⁹⁸ Waikato Regional Council PC1-3635

<u>10</u>	Whangamarin o River Island Block Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.075	0.075	0.700	0.700	0.011	0.011	0.054	0.05	655	540	0.3	1.0
<u>3</u>	Whakapipi Stm SH22 Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	3.390	2.4	5.120	3.5	0.006	0.006	0.081	0.05	1773	540	1.1	1.1
<u>7</u>	Ohaeroa Stm SH22 Br	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.473	1.0	1.806	1.5	0.003	0.003	0.015	0.015	4667	540	0.8	1.0
<u>11</u>	Opuatia Stm Ponganui Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	0.740	0.740	1.060	1.060	0.005	0.005	0.016	0.016	2898	540	0.6	1.0
<u>5</u>	Awaroa River (Waiuku) Otatau Rd Br Moseley Rd	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	NA ³	1.369	1.0	2.310	1.5	0.021	0.021	0.135	0.05	1017	540	0.4	1.0

¹ The annual median and annual maximum ammonia have been adjusted for pH.

² Median black disc horizontal sighting range under baseflow conditions

³ Attribute is not applicable to the sub-catchment

Table 3.11-1: Waipā River Freshwater Management Unit

<u>Catchment number</u>	Site	Attributes											
		Annual Median Nitrate (mg NO ₃ -N/L)		Annual 95 th percentile Nitrate (mg NO ₃ -N/L)		Annual Median Ammonia ¹ (mg NH ₄ -N/L)		Annual Maximum Ammonia ¹ (mg NH ₄ -N/L)		95 th percentile <i>E. coli</i> (<i>E.coli</i> /100mL)		Clarity (m) ²	
		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
<u>68</u>	Waipā River Mangaokewa Rd	0.380	0.380	0.600	0.600	0.003	0.003	0.017	0.017	2417	540	1.5	1.6
<u>60</u>	Waipā River Otewa	0.228	0.228	0.502	0.502	0.003	0.003	0.008	0.008	2036	540	2.1	2.1
<u>51</u>	Waipā River SH3 Otorohanga	0.370	0.370	1.050	1.050	0.004	0.004	0.020	0.020	3289	540	1.2	1.6
<u>43</u>	Waipā River Pirongia-Ngutunui Rd Br	0.565	0.565	1.270	1.270	0.008	0.008	0.023	0.023	4441	540	0.7	1.0

<u>34</u>	Waipā River Whatawhata Bridge	0.673	0.673	1.319	1.319	0.009	0.009	0.026	0.026	3657	540	0.6	1.0
<u>26</u>	Ohote Stm Whatawhata/Horotiu Rd	0.495	0.495	1.370	1.370	0.023	0.023	0.052	0.05	2142	540	0.6	1.0
<u>36</u>	Kaniwhaniwha Stm Wright Rd	0.350	0.350	0.890	0.890	0.007	0.007	0.022	0.022	1917	540	0.9	1.0
<u>38</u>	Mangapiko Bowman Rd Stm	1.369	1.0	2.490	1.5	0.022	0.022	0.076	0.03	7074	540	0.6	1.0
<u>39</u>	Mangaohoi Stm South Branch Maru Rd	0.230	0.230	0.390	0.390	0.003	0.003	0.008	0.008	943	540	1.6	1.6
37	Mangauika Stm Te Awamutu Borough W/S Intake	0.210	0.210	0.280	0.280	0.002	0.002	0.003	0.003	1008	540	3.3	3.3
40	Puniu River Bartons Corner Rd Br	0.650	0.650	1.280	1.280	0.007	0.007	0.029	0.029	2790	540	0.9	1.0
47	Mangatutu Stm Walker Rd Br	0.380	0.380	0.880	0.880	0.003	0.003	0.012	0.012	738	540	1.5	1.6
46	Waitomo Stm SH31 Otorohanga	0.520	0.520	0.830	0.830	0.008	0.008	0.025	0.025	1453	540	0.6	1.0
53	Mangapu River Otorohanga	0.860	0.860	1.360	1.360	0.015	0.015	0.057	0.05	4284	540	0.7	1.0
52	Waitomo Stm Tumutumu Rd	0.630	0.630	0.800	0.800	0.004	0.004	0.013	0.013	2241	540	1.1	1.6
63	Mangaokewa Stm Lawrence Street Br	0.530	0.530	0.980	0.980	0.004	0.004	0.013	0.013	6224	540	1.4	1.6

¹ The annual median and annual maximum ammonia have been adjusted for pH.

² Median black disc horizontal sighting range under baseflow conditions

³ Attribute is not applicable to the sub-catchment

Table 3.11-1: Dune, Riverine, Volcanic Zone and Peat Lakes Freshwater Management Units

Lake FMU	Attributes								
	Annual Median Chlorophyll a (mg/m ³)	Annual Maximum Chlorophyll a (mg/m ³)	Annual Median Ammonia ¹ (mg NH ₄ -N/L)	Annual Maximum Ammonia ¹ (mg NH ₄ -N/L)	Annual Median Total Nitrogen (mg/m ³)	Annual Median total Phosphorus (mg/m ³)	95 th percentile <i>E. coli</i> (<i>E. coli</i> /100mL)	80 th percentile cyanobacteria (biovolume mm ³ /L)	Clarity (m) ¹
	80 year*	80 year*	80 year*	80 year*	80 year*	80 year*	80 year*	80 year*	80 year*
Dune	12	60	0.24	0.40	750	50	540	1.8 ⁺	1
Riverine	12	60	0.24	0.40	800	50	540	1.8 ⁺	1
Volcanic Zone	12	60	0.24	0.40	750	50	540	1.8 ⁺	1
Peat	12	60	0.24	0.40 ⁹⁹	750	50	540	1.8 ⁺	1

¹ The annual median and annual maximum ammonia have been adjusted for pH.

² Median black disc horizontal sighting range under baseflow conditions

*unless a lake is already of better water quality, in which case the water quality is to not decline

+1.8mm³/L biovolume equivalent of potentially toxic cyanobacteria or 10mm³/L total biovolume of all cyanobacteria

B5.4.5. Staging and sub-catchment priority

- 631 Regulatory implementation of PC1, primarily through resource consents and FEPs is proposed across the 74 sub-catchments, and staged in three tranches to ease implementation. Based on a risk ranking of sub-catchments, the TLG proposed three alternatives for grouping sub-catchments into three tranches – top priority, second priority and third priority. In PC1 these tranches are referred to as Priority 1, 2 and 3.
- 632 The TLG considered alternative ranking methods and determined that “Alternative 2” best met the CSG’s guidance criteria, including for example, exhibiting proportionality where those contributing to the problem contribute to the solution; prioritise efforts to achieve catchment solutions; implementable and technically feasible; and allows for flexibility. Overall, the TLG and CSG considered it most effective to prioritise action based on those sub-catchments with the largest gap between the current water quality and the desired water quality.
- 633 The prioritisation and staging framework is set out in Policy 8, the prioritisation of each sub-catchment is set out in Table 3.11-2 and the dates by which compliance is required is set out in a number of rules. The dates primarily relate to the provision of information and implementation of stock exclusion and FEPs.
- 634 The implementation dates for Priority 1 and 2 sub-catchments were recognised as being unrealistic and were modified as a part of Var1. The final implementation date, for Priority 3 sub-catchments was maintained as 2026.
- 635 Given the staged nature of the development of FEPs across the sub-catchments over the 10-year period, a pragmatic assumption for the modelling was that the implementation of the required farm plan actions would also be staged, with 100 per cent implementation of actions in Priority 1 sub-catchments, 50 per cent in Priority 2 sub-catchments, and 25 per cent in Priority 3 sub-catchments by the end of the 10-year period.

B5.4.5.1. Table 3-11.2

Submissions

- 636 A number of submitters seek a different prioritisation in Table 3.11.2. A common reason is that it triggers FEP and stock exclusion provisions which are, in the view of some submitters, cost prohibitive and labour intensive¹⁰⁰. Other submitters are concerned about the inequity of earlier compliance for higher priority areas¹⁰¹. The Central Waikato Zone Committee seek the priority allocation for sub-catchment 32 changed from Priority 3 to 1 because of the on-going sedimentation issue into the Waikato River.
- 637 Waikato Regional Council, Mercury NZ Ltd, Wairakei Pastoral Ltd seek consequential amendments to Table 3.11-2 as stated above about Map 3.11-2. Mercury NZ Ltd seek clarification if Table 3.11-2 includes Lakes FMUs.
- 638 DoC want a more holistic approach to lake management, by either amending all wetland and lake sub-catchments as a Priority 1 or re-prioritisation of seven high quality ranked lake sub-catchments to Priority 1 status. DoC have also requested that Map 3.11-2 and Table 3.11-2 be re-instated as originally notified. Other submitters state it is unclear if Lakes FMUs are included in sub catchment areas or prioritised separately¹⁰².
- 639 Fish and Game have sought two additional columns for Table 3.11-2, setting out consent review dates. It is unclear from the submission if they request specific review dates for applicable rules/or 5-year consent

¹⁰⁰ G & A Dixon, G. Findlay, G., Jefferies, J. Bailey, J & GJ. Briggs, Rotor Work Ltd, M&R Coleman

¹⁰¹ H.S., Macdonald, B. James

¹⁰² Mercury NZ Ltd. Tūwharetoa Māori Trust Board, Raukawa Charitable Trust,

durations. Fish and Game also request that all sub-catchments within the Whangamarino FMU be set as Priority 1.

- 640 Fonterra seeks all references to the prioritisation of sub-catchments be deleted, with all FEPs being required by 1st of July 2020. Others have asked that the scientific data for sub catchments listed in Table 3.11-2 should be included in PC1 prior to implementation¹⁰³. Federated Farmers request that either Table 3.11-2 be retained, or amended to re-prioritise the sub-catchments based on distances from the 10 year targets.
- 641 Tangata Whenua seek that Policy 14 be amended to include wording which requires improving the management of land use activities within the Lakes FMU, as it is unclear how co-ordinated catchment planning in Policy 9 relates to the development of Lake Catchment Plans¹⁰⁴.

Analysis

- 642 As stated above, the three priority tranches proposed are based on the relative scale of the water quality issues in the particular sub-catchment. The sub-catchment priority is a best estimate approach between the current and desired water quality state across the four contaminants. Officers consider that this is a logical approach and that extending the timeframes in which improvements are required would only postpone the water quality response times. As discussed in Section B1 of this Report, that is likely to contradict the Vision and Strategy and the objectives of PC1. Therefore, the Officers do not agree that there are sufficient reasons to generally extend sub-catchment timeframes.
- 643 While sedimentation is accepted as a particular issue, Officers do not support the request of the Central Waikato Zone Committee to elevate the priority of sub-catchment 32, based on sediment alone. The Officers note that sub-catchment 32 is Priority 3 because it does not rank highly for any of the contaminants. The Officers recommend rejecting this submission.
- 644 A limitation of the approach taken in PC1 is that it does not take specific account of existing quality and vulnerability for sub-catchments which include highly ranked lakes. Under representation of lakes within the river sub-catchment prioritisation has been outlined in the submission received from DoC. Officers also clarify that it is the sub-catchments that are prioritised, whether or not they include Lake FMUs.
- 645 Waikato Regional Council has developed a ranking system for lake ecosystems, based on ecological significance, ecological condition, vulnerability and potential outcomes¹⁰⁵. Many of the peat lakes have been the focus of significant restoration efforts over the last decade or more, which are poorly represented in the 'high' priority sub catchments as notified in PC1. For these reasons the Officers agree in part with the submission of DoC that sub catchments with highly ranked or vulnerable lakes should be re-prioritised in line with both Section 8B of the RPS, which outlines freshwater bodies and wetlands that have high water quality and the technical ranking system developed by Wildlands. The Officers are concerned that lakes are particularly vulnerable, and particularly difficult and expensive to restore, if they become degraded. The Officers recommend a series of amendments to Table 3.11-2 to alter seven sub catchments to Priority 1.
- 646 Fish and Game request clarification around consent reviews/durations. Along with the review clauses in each consent, s128(1)(b) of the RMA provides the ability for a council to review conditions in light of new standards or limits in a plan. Officers are aware this often results in a costly and resource intensive process.

¹⁰³ Henson, E.

¹⁰⁴ Te Kauri Marae, Maungatautari Marae, Ngāti Haua Iwi Trust, Mclean Parekawhia, Waikato and Waipā River Iwi, Te Whakakitenga o Waikato Incorporated (Waikato-Tainui), Maniapoto Māori Trust Board, Ngaati Tamaoho Trust Te Taiao Roopuu, Potini Whaanau, Te Arawa River Iwi Trust, Waahi Whaanui Trust, Poohara Marae, Te Taniwha Waikato, Te Awamaarahi Marae Trustees, Waahi Pa Marae Committee, Turangawaewa Marae, Te Runanga o Ngāti Kea Ngāti Tuara Trust

¹⁰⁵ Wildlands Consultants Ltd (2011). Significant natural areas of the Waikato region: Lake ecosystems. Waikato Regional Council Technical Report 2011/5. Hamilton, Waikato Regional Council.

Officers also understand that there are likely to be changes in the near future to the RMA to ease this review process. As the RMA includes a discretion to review resource consents following a plan process, Officers do not support the inclusion of fixed timeframes compelling the Council to undertake reviews or expectations that this will occur.

- 647 Fish and Game have also requested that all sites within the Whangamarino FMU be prioritised as Priority 1. As set out in the Section 32 Report, sub catchments 10, 13 and 14 have been set at Priority 1, so no further changes are considered necessary.
- 648 Both Fonterra and Federated Farmers have requested modifications to the prioritisation of sub-catchments for completion of FEPs. While Fonterra’s reduced timeframe and removal of prioritisation is potentially realistic for the dairy industry, the analysis undertaken would suggest that if it were applied to all farms, it would cause significant immediate resourcing issues for farm consultants, farmers, fencing contractors and the WRC itself, and is therefore not supported by Officers.
- 649 The scientific data which was used for the modelling information in relation to sub-catchments is already discussed in the notified version of PC1 and in Section B3 of this Report. Therefore, Officers do not agree that there is additional scientific information required prior to implementation.
- 650 Tangata Whenua have sought Policy 14 be amended to include wording which improves the management of land use activities within the Lakes FMUs. The Officers agree there could be more explicit wording in Policy 14 in line with Policies 6 to 9 around land use change within the Lakes FMUs, and recommended changes are set out below.

B5.4.5.2. Recommendation

- 651 Amend Policy 14 as follows:

Policy 14: Lakes Freshwater Management Units/Te Kaupapa Here 14: Ngā Wae Whakahaere Wai Māori i ngā Roto

Restore and protect lakes by 2096 through the implementation of a tailored lake-by-lake approach, guided by Lake Catchment Plans prepared over the next 10 years, which will include collecting and using data and information to support improving the management of land use¹⁰⁶ activities in the lakes Freshwater Management Units[^].

- 652 Amend Table 3.11-2 as follows:

Table 3.11-2: List of sub-catchments showing Priority 1, Priority 2, and Priority 3 sub-catchments/Te rārangi o ngā riu kōawaawa e whakaatu ana i te riu kōawaawa i te Taumata 1, i te Taumata 2, me te Taumata 3

If more than fifty percent of a farm enterprise is in a particular sub-catchment, then the dates for compliance for that sub-catchment apply.

<i>Sub-catchment identifier</i>	<i>Sub-catchment number</i>	<i>Priority</i>
<i>Mangatangi</i>	2	1
<i>Whakapipi</i>	3	1
<i>Whangamarino at Jefferies Rd Br</i>	8	1
<i>Whangamarino at Island Block Rd</i>	10	1
<i>Opuatia</i>	11	1

¹⁰⁶ Tangata Whenua

Waerenga	12	1
Waikare	13	1
Matahuru	14	1
Whangape	16	1
Mangawara	17	1
Awaroa (Rotowaro) at Harris/Te Ohaki Br	18	1
Waikato at Huntly-Tainui Br	20	1
Kirikiroa	23	1
Waikato at Horotiu Br	25	1
Waikato at Bridge St Br	27	1
Waitawhiriwhiri	28	1
Mangakotukutuku	30	1
Mangawhero	35	1
Moakuraru	42	1
Little Waipā	44	1
Pokaiwhenua	45	1
Mangamingi	48	1
Waipā at Otorohanga	51	1
Waitomo at Tumutumu Rd	52	1
Mangapu	53	1
Mangarapa	55	1
Mangaharakeke	57	1
Mangarama	61	1
Mangaokewa	63	1
Waikato at Waipāpa	64	1
Waiotapu at Homestead	65	1
Waipā at Mangaokewa Rd	68	1
Waipāpa	70	1
Torepatutahi	72	1
Waikato at Tuakau Br	4	2
Waikato at Port Waikato	6	2 <u>1</u>
Waikato at Rangiriri	15	2 <u>1</u>
Awaroa (Rotowaro) at Sansons Br	19	2 <u>1</u>
Firewood	21	2
Komakorau	22	2
Waipā at Waingaro Rd Br	24	2
Mangaone	31	2
Waipā at SH23 Br Whatawhata	34	2 <u>1</u>
Kaniwhaniwha	36	2
Mangapiko	38	2
Puniu at Bartons Corner Rd Br	40	2
Waipā at Pirongia-Ngutunui Rd Br	43	2
Waitomo at SH31 Otorohanga	46	2
Whakauru	49	2
Tahunaatara	54	2
Otamakokore	59	2
Waipā at Otewa	60	2
Kawaunui	62	2
Waikato at Whakamaru	67	2
Mangakara	69	2
Mangakino	71	2
Mangatawhiri	1	3

<i>Awaroa (Waiuku)</i>	5	3
<i>Ohaeroa</i>	7	3
<i>Waikato at Mercer Br</i>	9	3
<i>Ohote</i>	26	3
<i>Mangaonua</i>	29	3
<i>Karapiro</i>	32	3
<i>Waikato at Narrows</i>	33	31
<i>Manguaika</i>	37	3
<i>Mangaohoi</i>	39	3
<i>Waikato at Karapiro</i>	41	3
<i>Mangatutu</i>	47	3
<i>Puniu at Wharepapa</i>	50	3
<i>Whirinaki</i>	56	3
<i>Waiotapu at Campbell</i>	58	31
<i>Waikato at Ohakuri</i>	66	3
<i>Waikato at Ohaaki</i>	73	31 ¹⁰⁷
<i>Pueto</i>	74	3

B5.4.5.3. Recommendation on Submissions:

1. Accept all those submissions that supported the plan provisions which are recommended to remain unchanged or largely unchanged
2. Reject those submissions who sought the deletion of the Plan Provisions which are recommended to remain unchanged or largely unchanged
3. Accept, or accept to the extent, those submissions that sought the changes recommended as set out in the revised plan provisions
4. Reject, or reject to the extent, those submissions that do not support the changes recommended as set out in the revised plan provisions

Appendix A – Reporting Officers

The Section 42A Reporting Officers for this section of the report are:

Matthew McCallum-Clark

Matthew is a resource management consultant and a director of the firm Incite. Matthew holds a Bachelor of Laws from Canterbury University, a Bachelor of Commerce (Economics) from Otago University and has undertaken a postgraduate diploma in environmental auditing through Brunel University in the UK. Matthew is a qualified and experienced independent hearing commissioner, with chair endorsement. Matthew has been a resource management consultant for over 20 years.

Angela Fenemor

Angela is a Senior Resource Management Planner employed by Incite. Angela holds a Bachelor of Science (Biology and Geography) from Canterbury University and has completed the Sustainable Nutrient Management in New Zealand Agriculture (Intermediate OVERSEER® Course) at Massey University in 2013 and the “Making Good Decisions” course from University of Auckland and the Ministry for the Environment. Angela has over 12 years of experience in resource management and planning and is an associate member of the New Zealand Planning Institute.

Adele Dawson

Adele is a Senior Resource Management Planner employed by Incite. Adele holds a Bachelor of Arts (Geography and Sociology) from Canterbury University and a Masters of Resource and Environmental Planning from Massey University. Adele has over 7 years of experience in resource management and planning and is a full member of the New Zealand Planning Institute.

Naomi Crawford

Naomi is a Policy Advisor employed at WRC in the Water Policy Team. Naomi holds a Bachelor of Science and Technology and a Master’s Degree with Honours in Biological Sciences from the University of Waikato, and has completed post graduate studies in Legal Principles and processes for planners and natural resource planning at Massey University and the University of Waikato. Naomi has over 11 years’ experience in local government in resource management and planning.

Hannah Goslin

Hannah is a Resource Management Consultant at Incite. Hannah holds a Bachelor of Science (Geography) from Canterbury University and has five years’ planning experience working in both local government and the private sector. Hannah is also a member of the Resource Management Law Association.

Alana Mako

Alana is a Policy Advisor employed at WRC in the Water Policy Team. Alana holds a Bachelor of Resource and Environmental Planning with Honours from Massey University and has two years’ planning experience working in local government.

Appendix B2.1 – Section B2 Submitters

Submitter No	Submitter Name
73142	A S Wilcox & Sons Ltd
82002	Agriterra Limited
73374	Alcock and Easton, Jo and John
73376	Alcock, Carl and Jo
73788	Aldridge, Roderick Francis David
73438	Allan, Eric
73020	Aston, Lucy
73811	Aston, Penelope
74045	Ata Rangi 2015 Limited Partnership
74085	Auckland/Waikato Fish and Game and Eastern Region Fish and Game
73627	Awaroa Lands Ltd
73689	B Das and Sons Ltd
71761	Babington, Kelvin and Katherine
73926	Bailey, James
73936	Bain, Richard Alexander
67834	Balle Bros Group
72557	Balle, Patricia Katherine
73943	Barron, Daniel and Sarah
73369	Beef + Lamb New Zealand Limited
73938	Briggs, Graham John
67406	Brodie, Philip Donald
71174	Brooks, Hayden Gregory and Susan Jennifer
71423	Buckley, Peter Ross
74187	Bulmer, Alice
74028	Central Waikato Zone Committee
71344	Charion Investment Trust
71443	Cheyne, David
73762	Chhagn Bros Co Ltd
73032	Clarke, Campbell
74026	CNI Iwi Land Management Limited
71424	Coleman, Mark and Ruth
71337	Coles, Donald Percy
73808	Cowan, Evan John
73023	Cox, Ian Graeme and Beverley Mae
74056	Croft, Shane Lowell Mark
74050	DairyNZ
72666	Darke, Anthony and Adana
73782	Dean, David
72701	Denize, Mathew John
71759	Department of Conservation
82004	Devine, Clare
73980	Dixon, Grant
71903	Downie, Janna
73062	Eel Enhancement Company Limited

Submitter No	Submitter Name
71210	Ewen, Andrew Hamish and Nicole Lisa
73798	Farm Environment Trust (Waikato)
73355	Farmers 4 Positive Change (F4PC)
74191	Federated Farmers of New Zealand
72021	Findlay, Andrew
73848	Fletcher Trust
74057	Fonterra Co-operative Group Ltd
74048	Fulton Hogan Limited
72820	Gaudin, Philip and Pauline
73846	Gavins Limited
74052	Genesis Energy Limited
73953	Genetic Technologies Ltd
73800	Gleeson, Graeme B
73893	Greenplan Holdings Limited
73945	Guy, Denise and John
74051	Hamilton City Council
74083	Hamilton, Malibu
73724	Hancock Forest Management (NZ) Ltd
71445	Hannon, Richard Garland
73868	Hathaway, Bruce
71390	Hathaway, John
73536	Hauraki District Council
73890	Hawkes, Irwin Lawrence and Yvonne Jean
73321	Hill Country Farmers Group
71757	Hira Bhana and Co Ltd
73718	Homestead Oaks Ltd
73412	Horsley, Cam, Bridget, Rob and Tennille
73801	Horticulture New Zealand (HortNZ)
71391	Hurley, Peter James
71214	Jeffries, Gary and Joy
71429	Jivan Produce Ltd
71349	Jolly, Andrew
72891	Kent and Gilbert, Elliot and Heather
72950	Kilgour, Gareth
73216	Klos, Robyn Annette
72589	Lacewood Holdings Ltd
53342	Lakes and Waterways Action Group Trust (LWAG)
83313	Landcorp Farming Limited
52942	Lawson, John
73363	Lea, Helen
72932	Lee, Malcolm and Sally
71298	Lees, Brian
73758	Living Foods Ltd
74041	Livingston, Adrienne
73464	Logan, Andrea Jane
73454	Lumsden, Malcolm John
71433	Macdonald, Hamish Stuart

Submitter No	Submitter Name
72603	Macky, William Lindsay
73533	Macklow, Genaya
73729	Makan Daya & Co Ltd
72412	Mangakotukutuku Stream Care Group Incorporated
73730	Maniapoto Māori Trust Board
73776	Maraekowhai Ltd
73419	Matamata-Piako District Council
71036	Maunder, James Kinglsey
73990	Maungatautari Marae
72881	Mayne, Anna
72969	McGovern, Annette
73534	McGregor, Colin Grant
72498	McLaughlin, Kate
73359	McLean, Parekawhia
73799	MD & CA Camp
73182	Mercury NZ Limited
71212	Miller, Alexander Dane
73492	Miraka Limited
71419	Munro, David Malcolm and Lisa Ann
72105	Murphy, William S
74088	Ngaati Tamaoho Trust Te Taiao Roopuu
73515	Ngāti Haua Iwi Trust
73716	Oil Companies
73725	Oji Fibre Solutions (NZ) Limited
73249	Osborne, Bob, Judy, Kim and Janette
74190	Osborne, John and Margaret
74055	Otorohanga District Council
74000	Pamu Farms of New Zealand
73929	Parrott, Dorothy Fay, Peter Jack, Katherine and Conor Reeves
73750	Parrott, Steven, Sandra, Alexander & Ulrika
70416	Peers-Adams, Ross
72488	Perfect Produce Co Ltd
74197	Peters, Michael Joseph
73545	Poohara Marae
73996	Population Health
74089	Potini Whaanau
73785	Pouakani Trust
74220	Pukekohe Vegetable Growers Association Inc (PVGA)
73789	Pukeroa Farms
71651	R.P O'Connor and Sons Ltd
74073	Raukawa Charitable Trust
71223	Ravenscroft, Michael and Clare
74058	Ravensdown Limited
72961	Reese, Kate and Aaron
73109	Reeve, Jocelyn Margaret
71614	Reeves and Taylor, James Gordon Livingston and Amy Louise
74141	Roberts, Jessica

Submitter No	Submitter Name
73415	Rotor Work Limited
72588	Rowe, Susan Helen
71348	Russell, Jill Adrienne
73425	Ryan Farms Ltd
73709	Sattrup, Grahame Paul
73858	Shaw and Hall, Leigh Michael and Bradley John
73847	Sherlock, Jon and Fiona
60407	Sherlock, Richard
67472	Simpson, Trevor Andrew
82018	Smith, Winton
72892	South Waikato District Council
74062	Southern Pastures Limited Partnership
73721	Stark, Steven and Theresa
73998	Stobie, Duncan, Loraine, Donald and Craig
73976	Stokman, Mark and Sharon
74155	Sutherland Produce Ltd
71446	T.A. Reynolds Ltd
72146	Taniwha Estate Ltd
73013	Tapp, Warren
74207	Taupō District Council
71441	Taylor and Mellow, Mary Jane and Carwyn David
73697	Te Arawa River Iwi Trust
74168	Te Awamaarahi Marae Trustees
74124	Te Kauri Marae
72893	Te Miro Farms Partnership
73543	Te Runanga o Ngāti Kea Ngāti Tuara Trust
73361	Te Taniwha o Waikato
74105	Te Whakakitenga o Waikato Incorporated (Waikato-Tainui)
74031	Thames-Coromandel District Council
74122	The Royal Forest and Bird Protection Society of New Zealand Incorporated
73997	The Worsp Family Trust
82022	Theland Tahī Farm Group Limited
71208	Thomson, Peter
74043	Thorburn, Matthew Charles and Susan Raewyn
73964	TIM Nominees
73036	Timberlands Limited
71751	Tirohanga Settlers and Sports Association
72608	Trinity Lands Ltd
73932	Trustees of Highfield Deer Park
73769	Tuaropaki Trust
73928	Tucker, Geoff and Kara
74173	Turangawaewae Marae
71029	Turner, Ross John
73356	Tūwharetoa Māori Trust Board
74109	van der Voorden, Vera and Nora
72887	Verry, Reon and Wendy

Submitter No	Submitter Name
73690	Volker, Peter
73751	Waahi Pa Marae Committee
73537	Waahi Whaanui Trust
82023	Waeranga Partnership
73069	Wai Shing Ltd
74008	Waikato and Waipā Branches of the New Zealand Deer Farmers Association
74035	Waikato and Waipā River Iwi
73418	Waikato District Council (WDC)
73436	Waikato Environment Centre
73934	Waikato Federated Farmers Meat & Fibre Industry Group
83295	Waikato Region Territorial Authorities Group
72890	Waikato Regional Council
74033	Waikato River Authority
67704	Waipā District Council
73863	Waipāpa Farms Ltd and Carlyle Holdings Ltd
74095	Wairakei Pastoral Ltd
72480	Wairarapa Moana Incorporation
73688	Waitomo District Council
72975	Wallace, Martin Lindsay
74077	Watercare Services Ltd
71355	Wellington Farms Ltd
73994	Welch, Graham Ronald
74184	Welsh, Mikayla
73948	Williams, Michael Aitken Harper
71228	Williamson, Terry
73992	Winstone Aggregates
67313	Woodacre Partnership
71269	Worsp, Simon Wynn & Rosemary Elizabeth
73096	Yule, Don, Lauris and Yvette

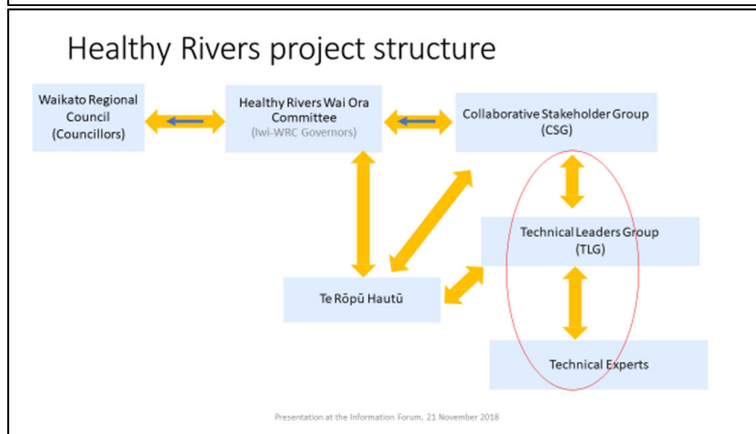
Appendix B3.1 – Science and Economics Presentation

Healthy Rivers/Wai Ora Modelling



Bryce Cooper – Scene Setting
Sandy Elliott – Water Quality Modelling
Graeme Doole – Scenario Modelling


Presentation at the Information Forum, 21 November 2018



Technical Input to HRWO Process

- Expert workshops, commissioned reports, and peer review
- 45 reports, 22 organisations, 75 experts (excluding workshops and peer reviewers)

SEE:
<https://www.waikatoregion.govt.nz/council/policy-and-plans/plans-under-development/healthy-rivers-plan-for-change/technical-alliance/technical-alliance-documents/>



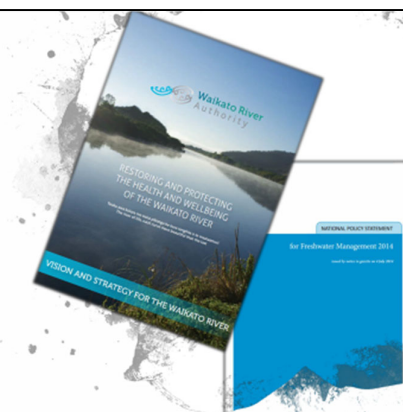
Presentation at the Information Forum, 21 November 2018

Technical Input to CSG deliberations

- Technical response to *Te Ture Whaimana/Vision & Strategy* and *NPS Freshwater*
- Current and possible future states of the rivers (N, P, E.coli, sediment)
- Social, cultural, environmental and economic effects of achieving future states

Our brief for this Forum is restricted to presenting the modelling work

Presentation at the Information Forum, 21 November 2018



To Meet Vision & Strategy

(e.g., Waikato River @ Tuakau)

- Clarity from **0.6** to **1.0** metres
- N from **0.6** to **0.35** mg/litre
- P from **0.05** to **0.02** mg/litre
- Algae from **14** to **5** ug/litre
- E.coli from **1700** to **540** per 100ml

Presentation at the Information Forum, 21 November 2018



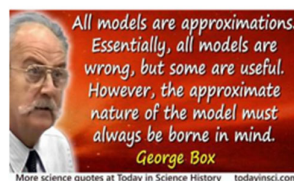
Modelling context

- *Vision & Strategy* requirements
- NPS Freshwater attributes and their statistics
- Four contaminants and the effects of mitigations
- >1 million hectares
- Spatially diverse landscape (land use, soils, slopes, climate, groundwater age)
- Models and inputs required need to be available or readily obtained

Presentation at the Information Forum, 21 November 2018

Choosing the models

- Expert workshops held at the start of the HRWO technical work
- Possible models, their data needs, and outputs discussed relative to HRWO needs
- Models chosen by consensus recognising that no model is 'perfect'
- Data assembled (or obtained where missing)
- Models constructed, tested and reviewed



Presentation at the Information Forum, 21 November 2018

Using the models

- Used in response to CSG questions – *what will happen if...?*
- ‘Optimisation’ -
– *what actions are required to achieve a desired water quality and at what cost?*
- ‘Simulation’
– *if these actions are undertaken what will the water quality and cost be?*
- Provided CSG with an indication of scale and comparison between options

Modelling was only one of the many inputs to CSG deliberations

Presentation at the Information Forum, 21 November 2018

Catchment models for *E. coli*, nutrients, and clarity

Sandy Elliott

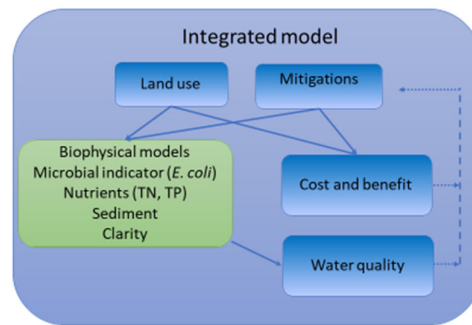
Annette Semadeni-Davies

Sharleen Yalden, Neale Hudson, Andrew Hughes, Sanjay Wadhwa

- How do the models work?
- What is the uncertainty?

Presentation at the Information Forum, 21 November 2018

Role of the biophysical model



Presentation at the Information Forum, 21 November 2018

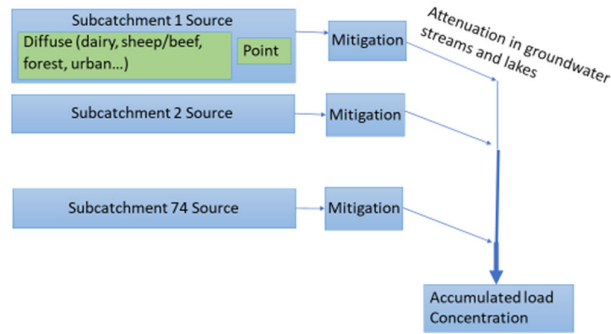
Simplified models built around monitoring stations and subcatchments



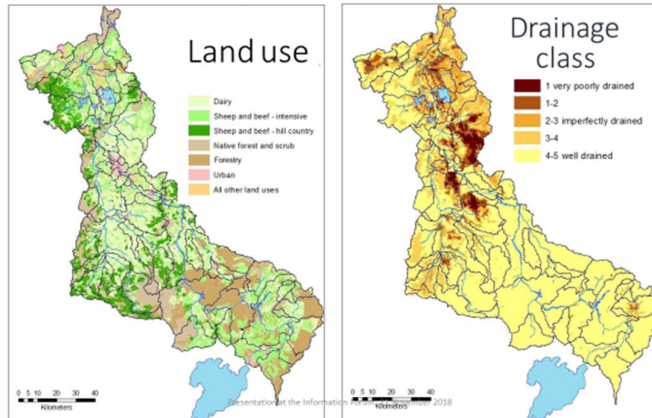
- 74 nodes and sub-catchments
- Simple models for annual average N, P, and *E. coli* and sediment loads
- Median concentrations derived from loads (same % increase applies to both)
- N, P and sediment feed algae and an optical clarity models
- Utilise expert knowledge and extensive monitoring data
- Models constructed so they can be incorporated into economic model

Presentation at the Information Forum, 21 November 2018

Overview of catchment calculations



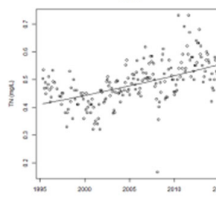
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Presentation at the Information Forum, 21 November 2018

Example of attenuation assessment: Pueto

- Groundwater age about ~25 yr (but there is a range).
- Baseflow dominated, stable, no quickflow.
- Land use tending to S&B, forestry removal ongoing, potential for dairying.
- Catchment has responded to land use to date (30% of the catchment converted to pasture since 1996) with nitrate concentration increasing since 2000, indicating a quick component of catchment response.
- Increase in TN concentration is likely to continue, considering that concentrations have not yet reached levels expected of the intensive land use. Shallow groundwater has mixed oxic and anoxic groundwater, denitrification occurring.
- 1982 estimated N source 89 t/year, 2012 147 t/year
 - Overall moderate attenuation expected, with considerable load to come.
- Apparent attenuation 60%, ultimate 40%



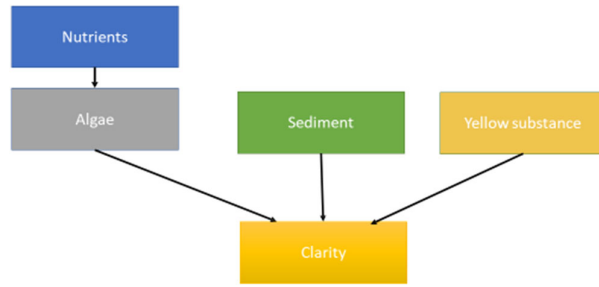
Presentation at the Information Forum, 21 November 2018

Example of attenuation assessment: Pueto

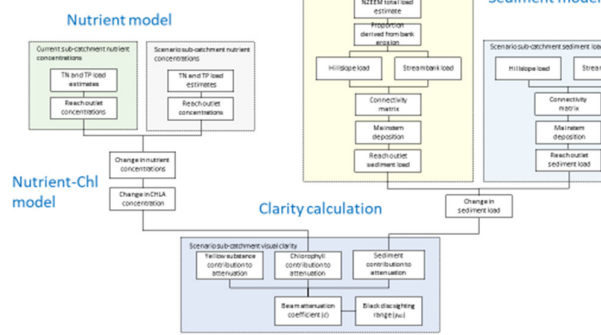
- **Overall moderate attenuation expected, with considerable load to come.**
- Apparent attenuation (for pasture component): 60% lost
- Ultimate attenuation 40% lost
- Pasture sources 103 t/y. Load to come 103 (0.6-0.4) = 26 t/y.
- Current attenuated total load 97 t/y, increasing to 117
- Current TN 0.55 g/m³, increasing to 0.67 g/m³

Presentation at the Information Forum, 21 November 2018

Clarity component



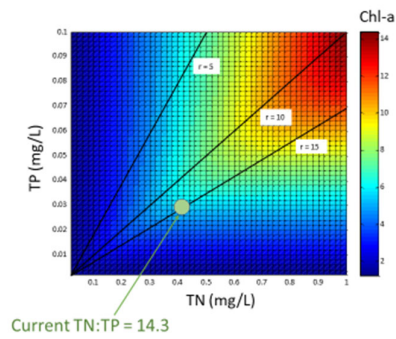
Presentation at the Information Forum, 21 November 2018



Presentation at the Information Forum, 21 November 2018

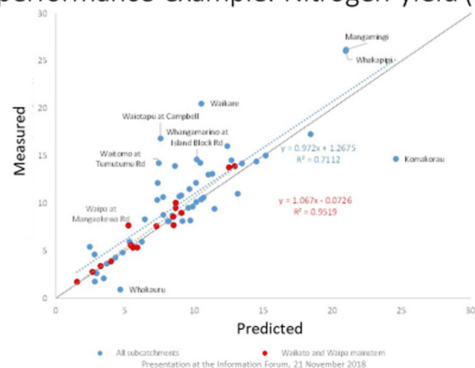
Nutrient-chlorophyll relationships for the main-stem Waikato

- e.g., Waikato at Narrows:
- 10% increase in TN results in 1% increase in chlorophyll
 - 10% increase in TP results in 6.5% increase in chlorophyll



Presentation at the Information Forum, 21 November 2018

Model performance example: Nitrogen yield (kg/ha)



Presentation at the Information Forum, 21 November 2018

Uncertainties:

- Nutrient-chlorophyll relationship
- N load-to-come
- Linearity between loads and concentration
- Source coefficients could be refined

Strengths:

- Suited for the intended purpose (informing policy development)
- Transparent, easy to understand
- Suited for linking to economic modelling
- Incorporates expert knowledge
- Makes use of extensive existing datasets

Presentation at the Information Forum, 21 November 2018

Healthy Rivers/Wai Ora Modelling

Bryce Cooper – Scene Setting

Sandy Elliott – Water Quality Modelling

Graeme Doole – Scenario Modelling

Presentation at the Information Forum, 21 November 2018

Scenario model

- Agreed at experts' workshop to build on an earlier model (the EJV model)
- Extended to whole catchment, 4 contaminants, and wider range of mitigations
- Integrates water quality and economic models
- Uses existing data, data made available by sectors, and new data gathered
- Produces estimates of costs and water quality for 74 sub-catchments
- Costs passed to Regional Model to determine flow-on effects to rest of economy
- Structure and application peer reviewed

Presentation at the Information Forum, 21 November 2018

Modelling in limit-setting processes

- Continuum of complexity
- Consensus is difficult
 - Data/methods/application
- Every model is imperfect
- Application is complex
- When do you stop development?

Presentation at the Information Forum, 21 November 2018

Scenarios modelled for CSG

- **Exploratory modelling of 4 scenarios:**
CSG chose “Scenario 1”: Protect and restore – substantial improvement to meet Vision & Strategy water-quality aspirations
- **Modelling of steps towards “Scenario 1” over an 80 year timeframe**
“At least a 10% improvement in 10 years” as a goal for their policy work
- **CSG then deliberated to arrive at a proposed policy**
Costs and water quality improvements of that policy were modelled to see if policy intent is likely to be achieved

Presentation at the Information Forum, 21 November 2018

Simulation of the proposed policy mix

- Land use change and intensification restrictions
- Nitrogen ‘hold and reduce’ policies
- Stream fencing
- Tailored Farm Environment Plans (FEPs)
- Staged roll-out of FEPs
- Point sources assumptions
- Provision for iwi land development

Presentation at the Information Forum, 21 November 2018

Key Questions from the CSG re Proposed Policy

- What are the estimated costs of implementing the proposed policy?
- What are the estimated water quality benefits of implementing the proposed policy?

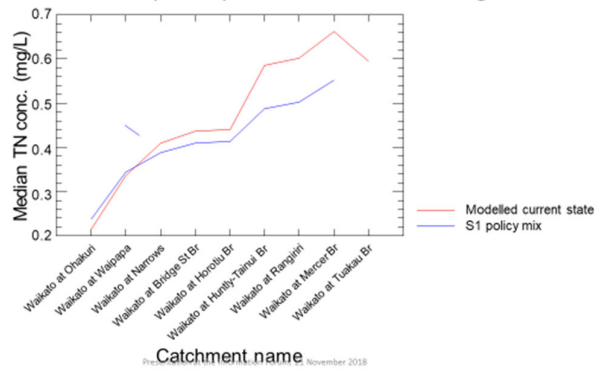
Presentation at the Information Forum, 21 November 2018

Proposed policy: effects on annual catchment profit

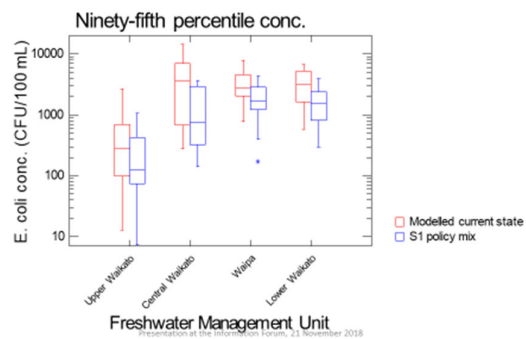
		Current	Policy Mix
Sector profit			
Dairy	\$m	617.53	604.13
Dry stock	\$m	210.15	210.99
Horticulture	\$m	28.21	25.91
Forestry	\$m	58.86	58.86
Costs			
Transition	\$m	0	0
Stream fencing	\$m	0	2.84
Effluent upgrade	\$m	0	3.46
Erosion control	\$m	0	8.32
Edge-of-field	\$m	0	8.35
Total profit	\$m	914.76	876.91
Loss in profit	\$m	-	37.85
Loss in profit	%	-	4%

Presentation at the Information Forum, 21 November 2018

Effects of the policy mix on total nitrogen



Effects of the policy mix on *E. coli*.



Conclusions from policy mix simulation

- Policy will impact economic outcomes
- Costs varies across sectors (and will vary within sectors)
- Policy will improve water quality by >10%
- N 'load to come' means N will increase at some Upper Waikato sites
- Actions can take time to be fully effective but water quality improvements can be expected over the 10 year plan period (especially for clarity and *E.coli*)

Presentation at the Information Forum, 21 November 2018

Appendix B3.2 – Information Forum Outcomes

IN THE MATTER OF the Resource Management Act 1991

• AND

IN THE MATTER OF a Proposed Regional Plan Change
(PC1 – Waikato and Waipā River
Catchments) to the operative Waikato
Regional Plan 2007.

• **MEMORANDUM FROM FACILITATORS TO WAIKATO
REGIONAL COUNCIL'S PC1 HEARING PANEL:EXPERT
CONFERENCING**

1. As directed, on 21 and 22 November 2018 an independently facilitated Information Forum was held in Hamilton at which, among other things, parties considered the question as to what issues in the water quality science and economic modelling-related area would benefit from expert caucusing.
2. A series of topics and sub-topics were identified and a schedule of agreed topics is attached to this Memorandum.
3. Due to the unavailability of a significant number of experts on the 10th and 11th December 2018 (the originally scheduled days) those conferencing dates are vacated. Instead two further, though not contiguous, days have been identified for the next expert conferencing round- being Wednesday 19 December and Friday 21 December 2018. That conferencing, if required, would again take place at the Distinction Hamilton Conference Centre, Garnett Road, Te Rapa.
4. A further two days have been set aside to complete the round as required on Wednesday 30 and Thursday 31 January 2019.
5. Having reflected on the 2-day Forum, the topics identified by the parties, the time available prior to the scheduled commencement of the hearing in March 2019, the expected release date for the s42A report, and the dates for evidence exchange, we bring the following to the Hearing Panel's attention for consideration.
6. It seems to us that the underlying issues discussed at the Forum are of such fundamental significance that it is unlikely in the available time (and at this time of year) that useful progress would be made. We are also mindful that the cost of experts' time for conferencing is not inconsiderable.
7. As the issues (in this area) are now more clearly identified we have formed the view that it would be more efficient for the Hearing Panel to convene the hearing on the preliminary matters before determining whether and to what extent further detailed conferencing is warranted.
8. We recommend accordingly.
9. We seek the Panel's urgent direction on this matter since parties have not yet been advised about the cancellation of the 10/11 December conferencing dates and also anticipate a requirement for expert "will say" statements on or about 7 December 2018. It is in all parties' interest that this matter be determined and conveyed as soon as practicable.

David Hill & Stuart Shepherd
Facilitators - PC1 – Economic Modelling and Water Quality Science

26 November 2018

Facilitators David Hill
Stuart Shepherd

Presenter Panel Bryce Cooper
Sandy Elliott
Graeme Doole

Submitters representatives: 42 People
WRC Observer: 2
S42A observer: 1

Summary tabulation of Issues raised during Forum 1, Day 2.

Mainly Economic	
E1	Product pricing over time
E2	Cost and benefits <ul style="list-style-type: none"> • Sensitivity of results to variations in Marginal Abatement Costs (MAC) • Validity & currency of MAC estimates. • Possible inclusion of transaction and indirect costs and their effect on results. • Possible inclusion of Marginal Abatement Benefit (MAB) estimates in model • Derivation of annualised costs in model
E3	Appropriate role of property values (if any) in model
E4	Distinction between existing and proposed environmental regulatory obligations, that is ensuring the modelling focuses on the proposed change in obligations under PC1 <ul style="list-style-type: none"> • And include the regulatory obligations embedded in modelling tools, e.g. Overseer.
E5	Definition of Terms e.g.: Marginal Cost, Average Costs, Total Costs, . Economic surplus or other measures of economic benefit, .etc
E6	Identify likely direction & magnitude of difference in results that would arise from using general equilibrium modelling versus the input / output modelling method used (noting that no submitter has, or has indicated they will be providing a general equilibrium model).
E7	Identify likely errors, variances or degrees of confidence of inputs, outputs and assumptions of modelling; <ul style="list-style-type: none"> • Initial step is to identify the data or assumptions that experts wish to assess. • This assessment should also be applied to alternative modelling frameworks.
E8	Assessment of alternative modelling frameworks to WRC. <ol style="list-style-type: none"> 1. For a specified area (e.g. from Wairakei Pastoral) 2. For the whole catchment (e.g. from Beef & Lamb)
E9	Clarify the version of OVERSEER, and the assumptions, coefficients & protocols relied on in the model: <ul style="list-style-type: none"> • Undertake sensitivity analysis from changing specified assumptions,

	protocols or coefficients to those used in OVERSEER.
E10	Investigate choice of mitigation measures applied across sub-catchments; <ul style="list-style-type: none"> Including related use of standards across sub-catchments, e.g. std. freq. distributions
E11	Identify impact on results from varying up-take rates of mitigation measures
E12	Assess alternative modelling frameworks to that of the WRC
E13	Estimate impact of changes on different parties.
Mainly Science	
S1	Investigate water quality variables & their measurement & location choices used for current state & future states as used in Table 3.11-1 (need to clarify the forum for discussion of these water quality variables)
S2	Load to come (nitrogen) <ul style="list-style-type: none"> Definitions To what extent does old groundwater have elevated nitrogen concentrations? What conceptual model has been used for groundwater / nitrate movement, shallow & deep? How much weight has been placed on the Close report and how has it been used to inform modelling?
S3	Assess model sensitivity of chlorophyll (and ecosystem health, macro invertebrates and fish health) to nitrogen, phosphorous, sediment & other factors. <ul style="list-style-type: none"> Include assumptions related to above Include seasonality & annual averaging.
S4	What metrics have been used or assumed in the modelling to support human health and how have these metrics been measured?
S5	Clarify attenuation functions used in the model & how they were verified? <ul style="list-style-type: none"> How they influence the choice of various land uses? How they influence land use flexibility? Identify un-attenuated & attenuated loads used at sub-catchment & stream level Undertake sensitivity analysis of specified shifts in attenuation functions.
S6	Assess efficacy of mitigation measures: <ul style="list-style-type: none"> Include specified alternatives Include seasonal & event based assessments.
S7	Nitrogen Reference Point (NRP) <ul style="list-style-type: none"> How would compliance be conducted under PC1 (given proposed way to set base)? Assess effectiveness of using NRP to achieve desired changes in water quality, e.g. incl. sensitivity analysis. Assess nitrogen vulnerability mapping. Identify impact of “75th percentile intervention” versus other possible mitigation measures.

S8	<p>Boundaries of sub-catchments</p> <ul style="list-style-type: none"> • Assess consistency with digital elevation models
S9	<p>Climate change issues</p> <ul style="list-style-type: none"> • Consider if these issues should be included in the model and if so how.
S10	<p>Assess the appropriateness of using 2012 land use data</p>
S11	<p>OVERSEER point (see also E9)</p> <ul style="list-style-type: none"> • Examine impact on model results of using std version and data entry protocols in OVERSEER across land uses.
S12	<p>Explore developing criteria for choosing alternative sub-catchment models</p> <ul style="list-style-type: none"> • Include application to shallow lake catchments

Appendix B4.1 – Section B4 Submitters

Submitter No	Submitter Name
73142	A S Wilcox & Sons Ltd
72441	Advisory Committee on Regional Environment (ACRE)
71238	Aitken, David John
73374	Alcock and Easton, Jo and John
73376	Alcock, Carl and Jo
73788	Aldridge, Roderick Francis David
73438	Allan, Eric
73734	Allen, John
73085	Anderson, Jack L and Ann A
71230	Andree-Wiltens, Albert John
82025	Angus Holdings (1991) Ltd
72614	Anselmi, Denzil Peter
72885	Anselmi, Nicholas John
73020	Aston, Lucy
73811	Aston, Penelope
74045	Ata Rangi 2015 Limited Partnership
74085	Auckland/Waikato Fish and Game and Eastern Region Fish and Game
73627	Awaroa Lands Ltd
72821	Babington, Cliff and Leonie
71761	Babington, Kelvin and Katherine
73926	Bailey, James
74036	Ballance Agri-Nutrients Limited
67834	Balle Bros Group
72557	Balle, Patricia Katherine
73075	Barker, Christopher Ferguson
73943	Barron, Daniel and Sarah
71425	Barton, Rachel and Jonathan
73369	Beef + Lamb New Zealand Limited
72987	Bell, Daphne Lois
73911	Beverland, Robert William
71080	Birkett, Bev and Bill
72028	Black Jack Farms
73429	Bodley, Jefferis William
67406	Brodie, Philip Donald
73906	Bromham, Alexander David Clive & Judith Leigh
71174	Brooks, Hayden Gregory and Susan Jennifer
72628	Brown, Peter
71421	Buckley, Carol
71423	Buckley, Peter Ross
73892	Buist Family Trust
73961	C.J. & J.F. Luxford
60603	Cameron, Bruce
74006	Carey, Rita Anne
73692	Carter, Christopher
73372	Carter, Michael and Jackie, Matthew and Amy
72776	Chapman, Brenhan J

Submitter No	Submitter Name
73086	Chapman, John K
73084	Chapman, Sharon M
72779	Chapman, Victor J
71344	Charion Investment Trust
73762	Chhagn Bros Co Ltd
73985	Chick, Adam Ross
73032	Clarke, Campbell
71621	Clarke, Hamish
73097	Clements, Robyn Ethel
74026	CNI Iwi Land Management Limited
72959	Coster, Paul
73856	Coup, Martin Ross Amesbury
73072	Craig, Jeffery
73767	Crawford, Fraser and Liz
73870	Cuttance, William
74050	DairyNZ
72666	Darke, Anthony and Adana
71226	de Thierry and Gawne, John William and Wendy Doreen
73782	Dean, David
60477	Dean, Matthew D'Ornan Keith
73850	Denize, Brendan
72701	Denize, Mathew John
71759	Department of Conservation
73980	Dixon, Grant
71903	Downie, Janna
71249	Dunlop, Tania
72722	Dysart, James David
71085	Edmonds, Suzanne Louise
73062	Eel Enhancement Company Limited
71395	Eight Mile Farms Ltd
71210	Ewen, Andrew Hamish and Nicole Lisa
71405	Eyre, Stuart Murray
73798	Farm Environment Trust (Waikato)
73355	Farmers 4 Positive Change (F4PC)
73720	FarmRight
74191	Federated Farmers of New Zealand
73305	Fertiliser Association of New Zealand
72021	Findlay, Andrew
73713	Findlay, Thomas David
74075	Fleming, Gordon Gerald Shane
73848	Fletcher Trust
74057	Fonterra Co-operative Group Ltd
72610	Fonterra Shareholders Council
73728	Forlong, Maurice and Karen
74048	Fulton Hogan Limited
74066	Garland, Suzanne Merle and William Graham
74113	Gardon Limited
71267	Gaston, Jo and Andrew
72820	Gaudin, Philip and Pauline

Submitter No	Submitter Name
73846	Gavins Limited
71407	Gemmell, Richard
72908	Gemmell, Timothy Clayton
74052	Genesis Energy Limited
73953	Genetic Technologies Ltd
73925	Gilbert, Ben and Leanne
73800	Gleeson, Graeme B
73061	Goddard, Allan and Mary-Anne
72983	Goodwright, Sydney Alfred
74153	Grainger, Chris and Andrea
73954	Graymont (NZ) Limited
73893	Greenplan Holdings Limited
73945	Guy, Denise and John
53103	Hahn, Jacqueline Marie
72688	Hale, Timothy John
73493	Hamilton & Waikato Tourism
74051	Hamilton City Council
74083	Hamilton, Malibu
73724	Hancock Forest Management (NZ) Ltd
73275	Hansen, Robin Arthur and Gillian Joy
71246	Hart, John Henry and Susan Graham
73868	Hathaway, Bruce
71390	Hathaway, John
73536	Hauraki District Council
73890	Hawkes, Irwin Lawrence and Yvonne Jean
73631	Henson, Edgar
73321	Hill Country Farmers Group
71757	Hira Bhana and Co Ltd
73971	Holmes, Gavin
73412	Horsley, Cam, Bridget, Rob and Tennille
73801	Horticulture New Zealand (HortNZ)
72897	Howie and Frael, Jennie and Kelvin
72582	Huirimu Farms Ltd
71347	Hurley, Carl
71391	Hurley, Peter James
82006	Iwi of Hauraki
71618	J Swap Ltd
72989	Jefferis, Daniel
71214	Jeffries, Gary and Joy
73318	Jellie, Hugh
71429	Jivan Produce Ltd
73439	Jodean Farms
72597	Johnston, Moss and Relda
73245	Johnston, Phillip
71349	Jolly, Andrew
73749	Jolly, Richard Kellie Alexander
60650	Jolly, Robert Campbell
73034	Jones, Donna
73354	June, Selwyn

Submitter No	Submitter Name
73288	Keane, Elizabeth
73765	Keeling, Peter
73042	Kelton, Simon Douglas and Adrienne Judith
72891	Kent and Gilbert, Elliot and Heather
73056	Kerr, Ian D
72710	Kidd, Peter Arthur and Marilyn May
72950	Kilgour, Gareth
60693	King Country Energy Limited
72589	Lacewood Holdings Ltd
53342	Lakes and Waterways Action Group Trust (LWAG)
83313	Landcorp Farming Limited
52942	Lawson, John
73363	Lea, Helen
72932	Lee, Malcolm and Sally
71298	Lees, Brian
73067	Linton, Sally
73758	Living Foods Ltd
74084	Loader, A J
73495	Loft, Patricia
73464	Logan, Andrea Jane
73133	Lowry, Karen and Peter
71753	Lumbercorp NZ Ltd
73454	Lumsden, Malcolm John
71433	Macdonald, Hamish Stuart
71293	MacDonald, Janis
71695	Mackenzie, David Stuart
73959	MacLachlan, Daniel and Amanda
73074	MacLachlan, Lin and Adrienne
74150	Macnab, Rob and Tina
72604	Maihihi Farmers Group (Submitter 1)
72598	Maihihi Farmers Group (Submitter 2)
72602	Maihihi Farmers Group (Submitter 3)
72600	Maihihi Farmers Group (Submitter 4)
72606	Maihihi Farmers Group (Submitter 5)
72590	Maihihi Farmers Group (Submitter 6)
73927	Main, Richard and Margaret
73729	Makan Daya & Co Ltd
72412	Mangakotukutuku Stream Care Group Incorporated
73730	Maniapoto Māori Trust Board
73776	Maraekowhai Ltd
72928	Martyn, Anna Katrina
72445	Masters, Stuart Bruce, Melvah Joy and Brendon James
73768	Matahuru Farms Ltd
73419	Matamata-Piako District Council
74148	Matira Sub Catchment Group
73990	Maungatautari Marae
72881	Mayne, Anna
72921	McAlister, James and Maeve
71175	McClunie, Joseph and Margaret

Submitter No	Submitter Name
72145	McDonald, Kevin and Jane
73122	McFadden, Gifford Patrick and Robin
72969	McGovern, Annette
73534	McGregor, Colin Grant
72498	McLaughlin, Kate
72984	McLaughlin, Robyn and Peter
73359	McLean, Parekawhia
73799	MD & CA Camp
72622	Meier, Peter
73182	Mercury NZ Limited
81969	Millington, Ashleigh Chanelle Pardoe
73492	Miraka Limited
73111	Moerangi Trust
70530	Moore, Josh
71422	Muir, Mark
71419	Munro, David Malcolm and Lisa Ann
72105	Murphy, William S
73803	Neal, Edward Murray and Patricia Charlotte
73802	Neal, Phillip John and Kristin Marie
73054	Nelson Farms Partnership
73780	New Zealand Pork Industry Board
73790	New Zealand Steel Ltd
82030	New Zealand Thoroughbred Breeders' Association
74088	Ngaati Tamaoho Trust Te Taiao Roopuu
73515	Ngāti Haua Iwi Trust
71207	Nichol, Peter
73891	Nicholas, Michael George, Raewyn Joan and Jonathon George
72447	Nicholson, Chris and Vikki
73705	North Waikato Federated Farmers
71905	Nukuhakari Station Ltd
73725	Oji Fibre Solutions (NZ) Limited
71079	Okell, Robert Steven
73021	Oliver, William and Karen
74003	Olsen, David Edward
73249	Osborne, Bob, Judy, Kim and Janette
74190	Osborne, John and Margaret
74055	Otorohanga District Council
73538	Paine, Lachlan Preston
73929	Parrott, Dorothy Fay, Peter Jack, Katherine and Conor Reeves
73750	Parrott, Steven, Sandra, Alexander & Ulrika
73368	Paterson, Chris and Amy
71352	Peacocke, Anthony James
73284	Pepper, Matt
72488	Perfect Produce Co Ltd
74197	Peters, Michael Joseph
73899	Peterson and Carswell, Lance Colin and Sarah
74138	Pickens and Tanneau, Craig and Julie
74007	Pinnell, Graham
71216	Pitts-Brown, Brian

Submitter No	Submitter Name
71393	Pizimolas, Luke
73545	Poohara Marae
73996	Population Health
74054	Porter, Roger Winton & Catharina Cornelia
74089	Potini Whaanau
73785	Pouakani Trust
71427	Primary Land Users Group
74220	Pukekohe Vegetable Growers Association Inc (PVGA)
71291	Purdie, Les and Helen
71651	R.P O'Connor and Sons Ltd
73608	Ramsay Baker, Mark and Cathy
73763	Ransley, Adrienne Anne
73761	Ransley, Kelvin John
74073	Raukawa Charitable Trust
71223	Ravenscroft, Michael and Clare
74058	Ravensdown Limited
72961	Reese, Kate and Aaron
73109	Reeve, Jocelyn Margaret
71614	Reeves and Taylor, James Gordon Livingston and Amy Louise
71201	Reeves, John
73935	Ritchie, Hamish
72599	Riverheads Ltd
74141	Roberts, Jessica
73809	Roberts, Kelly
72479	Robson, Angus
73373	Rotorua Lakes Council
72588	Rowe, Susan Helen
71348	Russell, Jill Adrienne
73425	Ryan Farms Ltd
72459	Save Lake Karapiro Inc
73946	Saxton, David Christopher
71350	Scott, Fiona and John
73024	Scott, Neil, Ann, Brent and Louise
71400	Shabor Ltd
73858	Shaw and Hall, Leigh Michael and Bradley John
73847	Sherlock, Jon and Fiona
60407	Sherlock, Richard
72508	Sherriff and Tatham, Mathew and Kim
73514	Sieling Farms
73225	Simpson, Greg John
74145	Simpson, Jennifer
67472	Simpson, Trevor Andrew
72020	Smith, Allan John
71420	Smith, Barrie Allan and Gwyneth Monica
82018	Smith, Winton
73323	Smuts-Kennedy, Robin
71410	Smyth, Mark Stewart Jonas
72892	South Waikato District Council
74062	Southern Pastures Limited Partnership

Submitter No	Submitter Name
73958	Spectrum Dairies Limited Partnership
73343	Stachurski, Wayne Michael
73721	Stark, Steven and Theresa
74093	Steffert, MP
73732	Stevenson Resources Limited
73998	Stobie, Duncan, Loraine, Donald and Craig
73804	Stokes Shorthorn Farm Ltd
73748	Stokes, Kelvin Arnold
73976	Stokman, Mark and Sharon
74155	Sutherland Produce Ltd
71446	T.A. Reynolds Ltd
72146	Taniwha Estate Ltd
73013	Tapp, Warren
74207	Taupō District Council
61093	Taupō Lake Care Incorporated
71441	Taylor and Mellow, Mary Jane and Carwyn David
73406	Taylor, Ian McNicol
73697	Te Arawa River Iwi Trust
74168	Te Awamaarahi Marae Trustees
74124	Te Kauri Marae
72893	Te Miro Farms Partnership
73543	Te Runanga o Ngāti Kea Ngāti Tuara Trust
73361	Te Taniwha o Waikato
74105	Te Whakakitenga o Waikato Incorporated (Waikato-Tainui)
74031	Thames-Coromandel District Council
74122	The Royal Forest and Bird Protection Society of New Zealand Incorporated
73408	The Surveying Company Ltd
73997	The Worsp Family Trust
82022	The Land Tahī Farm Group Limited
71208	Thomson, Peter
74043	Thorburn, Matthew Charles and Susan Raewyn
73036	Timberlands Limited
71751	Tirohanga Settlers and Sports Association
72747	Treweek, Glen
72608	Trinity Lands Ltd
73932	Trustees of Highfield Deer Park
73769	Tuaropaki Trust
73928	Tucker, Geoff and Kara
74173	Turangawaewae Marae
73356	Tūwharetoa Māori Trust Board
72587	Twining, Murray Ian and Robyn Joy
74109	van der Voorden, Vera and Nora
60476	Verkerk, Gwyneth
73810	Verry, Adrian
72887	Verry, Reon and Wendy
73690	Volker, Peter
73751	Waahi Pa Marae Committee
73537	Waahi Whaanui Trust

Submitter No	Submitter Name
82023	Waeranga Partnership
73069	Wai Shing Ltd
	Waikato and Waipā Branches of the New Zealand Deer Farmers Association
74008	
74035	Waikato and Waipā River Iwi
74049	Waikato Dairy Leaders Group
73418	Waikato District Council (WDC)
73436	Waikato Environment Centre
83295	Waikato Region Territorial Authorities Group
72890	Waikato Regional Council
74033	Waikato River Authority
67704	Waipā District Council
73863	Waipāpa Farms Ltd and Carlyle Holdings Ltd
74095	Wairakei Pastoral Ltd
72480	Wairarapa Moana Incorporation
73124	Waitomo Catchment Trust Board
73688	Waitomo District Council
74199	Walker, Brett
73919	Walker, Richard
72975	Wallace, Martin Lindsay
73078	Walter and Doran, Peter Alan Susan and Casey
74077	Watercare Services Ltd
71442	Waterworth, Bruce Kenrick
71438	Waterworth, Jenefer Fay
71444	Waterworth, Lewis Bruce
71437	Waterworth, Serena
73450	Weake, Jeffrey Laurence James
71841	Welch, Andrew
71355	Wellington Farms Ltd
74184	Welsh, Mikayla
73026	Wilcox, Alexander Greer and Glen Andrew
72505	Wildman, Anna Mary
73948	Williams, Michael Aitken Harper
73957	Williamson, Don and Robyn
72769	Williamson, Jack
73040	Williamson, Stephen David
71228	Williamson, Terry
73992	Winstone Aggregates
67313	Woodacre Partnership
71269	Worsp, Simon Wynn & Rosemary Elizabeth
72624	Wright, Nathan John
73096	Yule, Don, Lauris and Yvette

Appendix B5.1 – Section B5 Submitters

Submitter No	Submitter Name
73142	A S Wilcox & Sons Ltd
82002	Agriterra Limited
73374	Alcock and Easton, Jo and John
73376	Alcock, Carl and Jo
73788	Aldridge, Roderick Francis David
73438	Allan, Eric
73020	Aston, Lucy
73811	Aston, Penelope
74045	Ata Rangi 2015 Limited Partnership
74085	Auckland/Waikato Fish and Game and Eastern Region Fish and Game
73627	Awaroa Lands Ltd
73689	B Das and Sons Ltd
71761	Babington, Kelvin and Katherine
73926	Bailey, James
73936	Bain, Richard Alexander
67834	Balle Bros Group
72557	Balle, Patricia Katherine
73943	Barron, Daniel and Sarah
73369	Beef + Lamb New Zealand Limited
73938	Briggs, Graham John
67406	Brodie, Philip Donald
71174	Brooks, Hayden Gregory and Susan Jennifer
71423	Buckley, Peter Ross
74187	Bulmer, Alice
74082	Carter, Graham Bruce
74028	Central Waikato Zone Committee
71344	Charion Investment Trust
71443	Cheyne, David
73762	Chhagn Bros Co Ltd
73032	Clarke, Campbell
74026	CNI Iwi Land Management Limited
71424	Coleman, Mark and Ruth
71337	Coles, Donald Percy
73808	Cowan, Evan John
73023	Cox, Ian Graeme and Beverley Mae
74056	Croft, Shane Lowell Mark
74050	DairyNZ
72666	Darke, Anthony and Adana
73782	Dean, David
72701	Denize, Mathew John
71759	Department of Conservation
82004	Devine, Clare
73980	Dixon, Grant
71903	Downie, Janna
73062	Eel Enhancement Company Limited
71210	Ewen, Andrew Hamish and Nicole Lisa

Submitter No	Submitter Name
73798	Farm Environment Trust (Waikato)
73355	Farmers 4 Positive Change (F4PC)
74191	Federated Farmers of New Zealand
72021	Findlay, Andrew
73848	Fletcher Trust
74057	Fonterra Co-operative Group Ltd
74048	Fulton Hogan Limited
71267	Gaston, Jo and Andrew
72820	Gaudin, Philip and Pauline
73846	Gavins Limited
74052	Genesis Energy Limited
73953	Genetic Technologies Ltd
73800	Gleeson, Graeme B
73893	Greenplan Holdings Limited
73945	Guy, Denise and John
74051	Hamilton City Council
74083	Hamilton, Malibu
73724	Hancock Forest Management (NZ) Ltd
71445	Hannon, Richard Garland
73868	Hathaway, Bruce
71390	Hathaway, John
73536	Hauraki District Council
73890	Hawkes, Irwin Lawrence and Yvonne Jean
73321	Hill Country Farmers Group
71757	Hira Bhana and Co Ltd
73718	Homestead Oaks Ltd
73412	Horsley, Cam, Bridget, Rob and Tennille
73801	Horticulture New Zealand (HortNZ)
71391	Hurley, Peter James
71214	Jeffries, Gary and Joy
71429	Jivan Produce Ltd
71349	Jolly, Andrew
72891	Kent and Gilbert, Elliot and Heather
72950	Kilgour, Gareth
72589	Lacewood Holdings Ltd
53342	Lakes and Waterways Action Group Trust (LWAG)
83313	Landcorp Farming Limited
52942	Lawson, John
73363	Lea, Helen
72932	Lee, Malcolm and Sally
71298	Lees, Brian
73758	Living Foods Ltd
74041	Livingston, Adrienne
73464	Logan, Andrea Jane
73454	Lumsden, Malcolm John
71433	Macdonald, Hamish Stuart
72603	Macky, William Lindsay
73533	Macklow, Geneya
73729	Makan Daya & Co Ltd

Submitter No	Submitter Name
72412	Mangakotukutuku Stream Care Group Incorporated
73730	Maniapoto Māori Trust Board
73776	Maraekowhai Ltd
73419	Matamata-Piako District Council
71036	Maunder, James Kinglsey
73990	Maungatautari Marae
72881	Mayne, Anna
72969	McGovern, Annette
73534	McGregor, Colin Grant
72498	McLaughlin, Kate
73359	McLean, Parekawhia
73799	MD & CA Camp
73182	Mercury NZ Limited
71212	Miller, Alexander Dane
73492	Miraka Limited
74078	Moss, George Wilder
71419	Munro, David Malcolm and Lisa Ann
72105	Murphy, William S
73461	Narsha Farms Ltd
74088	Ngaati Tamaoho Trust Te Taiao Roopuu
73515	Ngāti Haua Iwi Trust
73716	Oil Companies
73725	Oji Fibre Solutions (NZ) Limited
73249	Osborne, Bob, Judy, Kim and Janette
74190	Osborne, John and Margaret
74055	Otorohanga District Council
74000	Pamu Farms of New Zealand
73929	Parrott, Dorothy Fay, Peter Jack, Katherine and Conor Reeves
73750	Parrott, Steven, Sandra, Alexander & Ulrika
70416	Peers-Adams, Ross
72488	Perfect Produce Co Ltd
74197	Peters, Michael Joseph
73777	PG & KF West Ltd
73545	Poohara Marae
73996	Population Health
74089	Potini Whaanau
73785	Pouakani Trust
73789	Pukeroa Farms
71651	R.P O'Connor and Sons Ltd
74073	Raukawa Charitable Trust
71223	Ravenscroft, Michael and Clare
74058	Ravensdown Limited
72961	Reese, Kate and Aaron
73109	Reeve, Jocelyn Margaret
71614	Reeves and Taylor, James Gordon Livingston and Amy Louise
74141	Roberts, Jessica
73415	Rotor Work Limited
72588	Rowe, Susan Helen
71348	Russell, Jill Adrienne

Submitter No	Submitter Name
73425	Ryan Farms Ltd
73709	Sattrup, Grahame Paul
73858	Shaw and Hall, Leigh Michael and Bradley John
73847	Sherlock, Jon and Fiona
60407	Sherlock, Richard
67472	Simpson, Trevor Andrew
82018	Smith, Winton
72892	South Waikato District Council
74062	Southern Pastures Limited Partnership
73721	Stark, Steven and Theresa
73998	Stobie, Duncan, Loraine, Donald and Craig
73976	Stokman, Mark and Sharon
74155	Sutherland Produce Ltd
71446	T.A. Reynolds Ltd
72146	Taniwha Estate Ltd
73013	Tapp, Warren
74207	Taupō District Council
71441	Taylor and Mellow, Mary Jane and Carwyn David
73697	Te Arawa River Iwi Trust
74168	Te Awamaarahi Marae Trustees
74124	Te Kauri Marae
72893	Te Miro Farms Partnership
73543	Te Runanga o Ngāti Kea Ngāti Tuara Trust
73361	Te Taniwha o Waikato
74105	Te Whakakitenga o Waikato Incorporated (Waikato-Tainui)
74031	Thames-Coromandel District Council
74122	The Royal Forest and Bird Protection Society of New Zealand Incorporated
73997	The Worsp Family Trust
82022	The Land Tahī Farm Group Limited
71208	Thomson, Peter
74043	Thorburn, Matthew Charles and Susan Raewyn
73964	TIM Nominees
73036	Timberlands Limited
71751	Tirohanga Settlers and Sports Association
72608	Trinity Lands Ltd
73932	Trustees of Highfield Deer Park
73769	Tuaropaki Trust
73928	Tucker, Geoff and Kara
74173	Turangawaewae Marae
71029	Turner, Ross John
73356	Tūwharetoa Māori Trust Board
73530	Tylee, Brian William
74109	van der Voorden, Vera and Nora
72887	Verry, Reon and Wendy
73690	Volker, Peter
73751	Waahi Pa Marae Committee
73537	Waahi Whaanui Trust
82023	Waeranga Partnership

Submitter No	Submitter Name
73069	Wai Shing Ltd Waikato and Waipā Branches of the New Zealand Deer Farmers Association
74008	Waikato and Waipā River Iwi
74035	Waikato District Council (WDC)
73418	Waikato Environment Centre
73436	Waikato Federated Farmers Meat & Fibre Industry Group
73934	Waikato Region Territorial Authorities Group
83295	Waikato Regional Council
72890	Waikato River Authority
74033	Waipā District Council
67704	Waipāpa Farms Ltd and Carlyle Holdings Ltd
73863	Wairakei Pastoral Ltd
74095	Wairarapa Moana Incorporation
72480	Waitomo District Council
73688	Wallace, Martin Lindsay
72975	Watercare Services Ltd
74077	Welch, Graham Ronald
73994	Wellington Farms Ltd
71355	Welsh, Mikayla
74184	Williams, Michael Aitken Harper
73948	Williamson, Terry
71228	Wilson, David Lesley
67510	Winstone Aggregates
73992	Woodacre Partnership
67313	Worsp, Simon Wynn & Rosemary Elizabeth
71269	Yule, Don, Lauris and Yvette
73096	