

BEFORE THE HEARING PANEL

AT HAMILTON

IN THE MATTER of the Resource Management
Act 1991

AND

IN THE MATTER of the Proposed Waikato
Regional Plan Change 1
Waikato and Waipā River
Catchments

AND

IN THE MATTER of Variation 1 to the Proposed
Waikato Regional Plan
Change 1 Waikato and Waipā
River Catchments

**STATEMENT OF EVIDENCE IN CHIEF OF DEBORAH HELEN KISSICK FOR THE
DIRECTOR-GENERAL OF CONSERVATION**

TOPICS A & B

15 February 2019

Department of Conservation

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ABBREVIATIONS USED

The primary abbreviations I have used in my evidence are:

CSG	Collaborative Stakeholder Group
DOC	The Department of Conservation
FMU	Freshwater management unit
NPSFM	The National Policy Statement for Freshwater Management 2017
NZCPS	The New Zealand Coastal Policy Statement 2010
River Iwi	Trust boards for River Iwi being Maniapoto Māori Trust Board, Tūwharetoa Māori Trust Board, Raukawa Settlement Trust, Te Arawa River Iwi Trust, Waikato Raupatu River Trust
RPS	The Regional Policy Statement for the Waikato Region
The RMA	The Resource Management Act 1991
The CA	The Conservation Act 1987
The Council	The Waikato Regional Council
The Director-General	The Director-General of Conservation
The Plan Change/PC1	The Proposed Plan Change 1 to the Waikato Regional Plan (including Variation 1)
WRP	The operative Waikato Regional Plan
The Waikato River Acts	Collective term for The Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 & Ngā Wai o Maniapoto (Waipā River) Act 2012.
TLG	Technical Leaders Group

INTRODUCTION

1. My name is Deborah Helen Kissick.
2. I have been engaged by the Director-General of Conservation (The Director-General) to provide planning evidence for the hearing on proposed Plan Change 1 (PC1 or the Plan Change) for the Waikato and Waipā River catchments.
3. I am currently employed as a Planner with Perception Planning, a resource management consultancy based in Taupō, that I joined in 2015.

QUALIFICATIONS AND EXPERIENCE

4. I hold the degree of Bachelor of Science majoring in Geography from Auckland University with a specialisation in environmental science.
5. I have been practicing as a planner for approximately 9 years. This has included working as a Policy Planner for Auckland Council and Auckland City Council, and Senior Policy Planner for Manawatū District Council. I am certified under the Making Good Decisions course with the Ministry for the Environment.
6. I have experience in the development of planning documents under the Resource Management Act 1991 (RMA), particularly at a district level. This includes involvement in the development of provisions, as well as hearings and appeals on the Auckland Council's Hauraki Gulf Islands District Plan review and plan changes as part of the Manawatū District Council's sectional District Plan review. I prepared s32 reports for sections of the Manawatū District Plan and was the s42A reporting officer on a number of hearings in the Hauraki Gulf Islands and in the Manawatū.
7. I have been involved in a professional capacity in a range of planning matters including the preparation of submissions on regional and district planning processes, regional discharge permits for residential and papakāinga developments, land use consents for dwellings, earthworks, rural subdivision and commercial buildings within the Auckland, Manawatū, Wairarapa and Taupō areas. I have experience

in assessing proposals against both regional and district planning provisions and in both urban and rural environments.

8. I presented evidence on behalf of the Minister of Conservation to Hearing 1 (Overall policy framework for the proposed plan, Beneficial Use and Development, & Areas and sites with significant mana whenua values) of the Proposed Greater Wellington Natural Resources Plan.
9. I have previously worked in consent enforcement and monitoring roles in both New Zealand and England.

CODE OF CONDUCT FOR EXPERT WITNESSES

10. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. While this is not an Environment Court hearing, I have prepared this evidence in accordance with, and I agree to comply with, that code for this hearing. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have specified where my opinion is based on limited or partial information and identified any assumptions I have made in forming my opinions. I have also identified where I have relied on the expertise of others.
11. I provided expert planning advice and recommendations to the Director-General during the formulation of his submission on PC1 including those pertaining to Variation 1 to the Plan Change. This advice included providing recommendations on matters which the Director-General may wish to make a submission on, to support the role of the Department of Conservation (DOC), and suggestions for the relief that the Director-General may seek as alternatives to the notified Plan Change.

SCOPE OF EVIDENCE

12. I have been asked by the Director-General to prepare evidence in relation to his submission on PC1. Any references to the Plan Change in my brief of evidence relate to Plan Change 1 as originally notified (22

October 2016) and include the changes recommended by the Waikato Regional Council (the Council) as a result of Variation 1 to Plan Change 1 (notified 10 April 2018). The focus of my evidence for this hearing is:

Part A – Introduction and context including topics relating to:

- Introduction, structure, assumptions and abbreviations
- Legal and statutory framework
- NPSFM and its 2017 update, other NPSs and NESs,
- Waikato River Vision and Strategy, Joint Management Agreements
- Collaborative development process
- Waikato Freshwater Strategy
- Water quality and ecosystem health

Part B Outcomes

- Overall direction and whole plan submissions
- Values and uses
- Science and Economics
- Objectives
- Water quality targets and limits
- FMUs, priority areas and sub-catchments

13. In preparing my evidence I have read:
- a. The s32 reports that relate to matters addressed in Hearing Block 1
 - b. The submissions and further submissions on PC1 including Variation 1 made by the Director-General of Conservation

- c. The s42A officer report for Hearing 1 of Matthew McCallum-Clark, Angela Fenemor, Adele Dawson, Naomi Crawford, and Alana Mako entitled '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'. I refer to this as the s42A officer's report or the officer's report in my evidence
 - d. The evidence of Kate MacArthur in relation to freshwater management, water quality and ecosystem health, particularly focussed on rivers, streams and tributaries.
 - e. The evidence of Dr Ngaire Phillips in relation to freshwater management, water quality and ecosystem health, particularly focussed on lakes.
 - f. The evidence of Dr Hugh Robertson in relation to fresh water wetlands and in particular, the Whangamarino Wetland.
 - g. The evidence of Helen Kettles in relation to the ecological values of estuaries and in particular, the Waikato River Estuary.
14. The following documents provided to the Collaborative Stakeholder Group:
- h. 'Scope, goals and drivers of the Healthy Rivers: Plan for Change/Wai Ora' May 2014. Document # 3037840
<https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/HR/S32/B/3037840.pdf>
 - i. 'Freshwater Management Unit options for consideration by the Collaborative Stakeholder Group' August 2014. Document # 3121490
<https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/HR/S32/C/3121490.pdf>
 - j. 'Water Quality Attributes for Healthy Rivers: Wai Ora Plan Change' May 2015. Document # 6154421

<https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/HR/S32/C/3414280.pdf>

- k. 'Community held values of rivers, lakes and streams in the Waikato and Waipā River catchments' December 2013. Document #2746337

<https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/HR/S32/B/2746337.pdf>

EXECUTIVE SUMMARY

15. The legislative direction provided by the RMA, the Vision and Strategy for the Waikato River, the NPSFM and NZCPS clearly outlines the process that should be followed for establishing freshwater objectives and limits for the management of fresh water. Figure 1 in my evidence provides a summary of this process.
16. The original scope of the plan change was defined to include all water bodies in the Waikato and Waipā River catchments as well as diffuse and point source discharges to land and water. However, this scope was refined to focusing on what are considered to be the biggest contributors to water quality decline in the Waikato and Waipā Rivers (nutrients, bacteria and sediment).
17. In my opinion, reducing the scope of the Plan Change to the management of the discharge of four contaminants; nitrogen, phosphorus, sediment and microbial pathogens (bacteria), and not addressing water quality and freshwater values more generally, limits the ability to consider the complex and interconnected nature of effects from discharges. It also limits the ability to consider the responses of different water body types to all the different contaminants that enter them (including heavy metals, pesticides, pathogens and chemicals) and their effects on water quality, ecosystem health and other freshwater values.
18. The first step towards setting freshwater objectives for values in the Plan is for the council to identify freshwater management units that include all freshwater bodies in its region. The Plan Change has identified eight FMUs; four 'river' FMUs relating to the Upper Middle and Lower Waikato River and the Waipā River and four 'lake' FMUs relating to dune, pear, riverine and volcanic lakes.
19. It appears that the approach to setting FMUs in PC1 has not focussed on the reasons that FMUs are required as outlined in the NPSFM. The approach taken makes it difficult to undertake values identification at specific locations. This means that setting freshwater objectives at an appropriate scale to recognise the unique characteristics of the different

sub-catchments and the varying water quality found within these catchments is not achievable.

20. The values that have been identified in the Plan Change were from community discussion only relation to rivers, streams and lakes. There has been no discussion or consideration by the CSG regarding the values of wetlands or the values of the coastal environment that are also influenced by water quality in the Waikato and Waipā River catchments. As a result, I consider that the NPSFM process for values identification has not been followed.
21. The approach in the Plan Change to apply all values to all FMUs means that the entire Plan Change area including all river and lake FMUs will be managed to the most sensitive value. This may be limiting for some parts of the catchments where there may be more resource available for use. I consider that the current approach to values setting does not achieve the objectives of the Vision and Strategy.
22. The Director-General's submission raised concern with the definition and application of a number of the values identified in the Plan Change. Of particular concern is the application of a broad ecosystem health value in the Plan Change. Ms McArthur explains that there is a 'significant risk that PC1 will not deliver water quality outcomes that will achieve "ecosystem health" across all sub-catchments, waterbodies and freshwater ecosystems of the Waikato-Waipā catchments" with the broad 'ecosystem health' value currently included in the Plan (paragraph 35).
23. Rather than understanding what attributes were needed to achieve the values and where they applied to accurately manage water quality in the catchments, the approach to setting attributes in PC1 was to refine a full list of attributes relevant to the identified values, to reflect only those that met a number of principles, applied by the TLG.
24. As a result, Ms McArthur and Dr Robertson recommend additional attributes and targets be added to the Plan Change to appropriately manage water quality in lakes and wetlands.
25. It is not clear from the plan change itself or from the officer's report about which aspect or aspects of the plan change are the freshwater

objectives. Also, without a good understanding of the values of wetlands and the coastal environment, it is difficult to establish meaningful freshwater objectives to achieve water quality outcomes for these waterbodies that aligns with the NPSFM. Clarification of the role of Table 3.11-1 is needed to determine whether this table represents freshwater objectives or limits/targets or both.

26. The Director-General has sought a number of new objectives including objectives to address the importance of safeguarding ecosystem health, recognising the significant values of wetlands and the integrated and holistic 'mountains to the sea' nature of the Waikato and Waipā River Catchments. I have provided wording for these new objectives and there have been no objectives recommended for inclusion by officers.
27. No short-term targets have been set for water quality improvement. Instead the Plan Change requires unspecified 'actions' are put in place to work toward reductions in the discharge of contaminants. The Plan Change then sets water quality targets for an 80-year timeframe which the officers have stated will rely on technologies or practices that are not yet available or economically feasible to be achieved.
28. This raises questions for me about what it is that the Plan Change will actually achieve and provides little if any certainty for plan users and decision makers in its current state, about what the next 10 years looks like. As a result, I recommend that short term targets be included in the plan change, as well as a medium-term target to ensure water quality improvements are a focus beyond the life of this plan, working toward the 80-year targets.
29. The plan change generally lacks any focus on the wetlands in the catchment, particularly the internationally recognised Whangamarino Wetland. As a result, a new FMU is recommended to recognise the importance of this site and specific attributes and targets for Whangamarino, as well as narrative attributes to recognise the values of wetlands generally.

LEGISLATIVE AND POLICY SETTING

Resource Management Act 1991

30. The purpose of the RMA provides clear direction on the sustainable management of natural and physical resources. It requires that, at the same time as managing the use, development and protection of natural and physical resources in a way which provides for the social, economic and cultural wellbeing of people and communities and their health and safety, resources must be managed to:

- Meet the reasonably foreseeable needs of future generations; and
- Safeguard the life-supporting capacity of air, water, soil and ecosystems; and
- Avoid, remedy or mitigate adverse effects of activities on the environment¹

31. Matters of national importance, set out in s6, of relevance to PC1 include the requirements to:

- Preserve the natural character of the coastal environment, wetlands and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development;²
- The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development;³
- The protection of significant areas of indigenous vegetation and significant habitats of indigenous fauna⁴ and
- The relationship of Māori and their culture and traditions with their lands, water, sites, waahi tapu, and other taonga⁵.

¹ Section 5(2)(a) – (c)

² Section 6(a)

³ Section 6(b)

⁴ Section 6(c)

⁵ Section 6(e)

32. Other matters⁶ that particular regard should have been given, in the development of PC1, include:
- a. kaitiakitanga:
 - aa. the ethic of stewardship:
 - b. the efficient use and development of natural and physical resources:
 - c. the maintenance and enhancement of amenity values:
 - d. intrinsic values of ecosystems:
 - f. maintenance and enhancement of the quality of the environment:
 - g. any finite characteristics of natural and physical resources:
 - i. the protection of the habitat of trout and salmon:
 - j. the effects of climate change

Vision and Strategy for the Waikato River

33. The Vision and Strategy for the Waikato River (the Vision and Strategy) was developed and published in 2008 as part of the Waikato River Settlement between the Crown and River Iwi. This settlement includes the following Acts, collectively referred to in my evidence as the Waikato River Acts:
- The Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010
 - Ngāti Tūwharetoa, Raukawa and Te Arawa River Iwi Waikato River Act 2010
 - Ngā Wai o Maniapoto (Waipā River) Act 2012
34. The Vision and Strategy outlines the vision to be;

⁶ Section 7

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.

The river of life, each curve more beautiful than the last.

35. The Vision and Strategy recognises the national importance of the Waikato and Upper Waipā Rivers and their contribution to New Zealand’s cultural, social, environmental and economic wellbeing. It applies to these rivers, and to activities within the catchments affecting the rivers.
36. The Vision and Strategy identifies 13 Objectives to realise the Vision. I consider that all the objectives are relevant and applicable to the Plan Change 1 but in particular, the following Objectives have water quality implications:
- Objective a – The restoration and protection of the health and wellbeing of the Waikato River
 - Objective e – The integrated, holistic, co-ordinated approach to management of the natural, physical, cultural and historic resources of the Waikato River
 - Objective f – The adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, and in particular those effects that threaten serious or irreversible damage to the Waikato River
 - Objective 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
 - Objective h – The recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities.

- Objective i – The protection and enhancement of significant sites, fisheries, flora and fauna.
- Objective j – The recognition that the strategic importance of the Waikato River to New Zealand’s social, cultural, environmental and economic wellbeing is subject to the restoration and protection of the health and wellbeing of the Waikato River.
- Objective 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.

37. To achieve the Objectives, the Vision and Strategy identifies 12 strategies for implementation including strategies that seek to ‘develop **targets** for improving the health and wellbeing of the Waikato river...’ (my emphasis added). I note that targets are specifically identified as being important strategy to achieving the Vision and Strategy and consider that PC1 needs to ensure that targets are included to meet this requirement. Other strategies to achieve the Objectives include implementing a ‘programme of action to achieve the targets for improving the health and wellbeing of the Waikato River’ and to ‘ensure that cumulative adverse effects on the Waikato River of activities are appropriately managed in statutory planning documents at the time of their review’.
38. Sections 11-15 of the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010 and section 12-16 of the Ngāti Tūwharetoa, Raukawa and Te Arawa River Iwi Waikato River Act 2010 prevail over sections 59-77 of the RMA to the extent to which the content of the Vision and Strategy relates to matters covered in the RMA, including sections 63-70 RMA, which relate directly to regional plans. The Vision and Strategy also prevails over any inconsistent provision in an NPS or the NZCPS and is deemed to be part of the Waikato Regional Policy Statement⁷.

⁷ The entire Vision and Strategy is included in Section 2.5 of the RPS.

39. I have approached the application of these provisions of the Waikato River Acts and the Vision and Strategy in the following way. I consider that sections 63–70 of the RMA, provide useful context and framework for the development of a regional plan. However, when following the structure in the RMA, each step needs to be checked for consistency against the Vision and Strategy and where there is inconsistency, the content of the Vision and Strategy prevails.

Regional Plan making under the RMA

40. Section 67(3) of the RMA specifies that a regional plan must give effect to:

- any national policy statement;
- any New Zealand coastal policy statement; and
- any regional policy statement.

41. However, as stated above, the Vision and Strategy for the Waikato River prevails over this section of the RMA. As a result, the list at paragraph 44 of my evidence must also include the Vision and Strategy. I note that the 2016 Waikato Regional Policy Statement includes the entirety of the Vision and Strategy within the RPS.

42. Regional councils are required to amend regional policy statements and plans to give effect to the NZCPS and to the NPSFM provisions as soon as practicable⁸.

43. I evaluate below how the Plan Change gives effect to the Vision and Strategy, the NZCPS and the NPSFM as directed by Section 67 (Contents of Regional Plans) and the RPS to achieve the purpose of the RMA.

National Policy Statement for Freshwater Management 2017

44. The National Policy Statement for Freshwater Management (NPSFM) recognises the national significance of freshwater for all New Zealanders and Te Mana o te Wai. It sets out objectives and policies

⁸ Resource Management Act 1991, section 55(2D).

that direct local government to manage water in an integrated and sustainable way. The NPSFM provides a national objectives framework to assist regional councils and communities to more consistently and transparently plan for freshwater objectives and support freshwater values.

45. The NPSFM states that freshwater planning will require an 'iterative approach that tests a range of possible objectives and methods for their achievement, including different timeframes for achieving objectives'⁹.
46. The NPSFM has 7 key objectives relevant to the consideration of water quality. The topics of these are briefly summarised below:
 - Objective AA1 – consider and recognise Te Mana o te Wai
 - Objective A1 – Management of water quality to safeguard the environment and sustainably manage land use and discharge of contaminants
 - Objective A2 – Overall water quality is maintained or improved
 - Objective A3 – Water quality is improved so it is suitable for primary contact more often
 - Objective A4 – Sustainably manage freshwater quality to provide for community wellbeing, including economic opportunities
 - Objective C1 – Integrated management of freshwater and whole catchments, including the coastal environment.
 - Objective CA1 – Establish freshwater objectives for values
47. The direction in the NPSFM at Objective A1, around freshwater quality, is to safeguard the life-supporting capacity, ecosystem processes, indigenous species and the health of people and communities as affected by contact with freshwater by sustainably managing the use and development of land, and the discharge of contaminants. Objective A2 seeks to ensure that overall quality of freshwater is maintained or

⁹ National Policy Statement for Freshwater Management, Preamble on Page 4, Para 1.

improved within an FMU, with Objective A3 requiring that fresh water within an FMU be improved so it is suitable for primary contact 'more often'. Objective A4 requires that communities are enabled to provide for their economic well-being, including productive economic opportunities, in sustainably managing freshwater quality, *within limits* (emphasis added).

48. Objective C1 and associated policies outline the importance of recognising the integrated nature of freshwater, the use and development of land in catchments and the interactions between fresh water, land, ecosystems and the coastal environment. This section of the NPSFM requires that regional council's need to 'recognise the interactions, ki uta ki tai (from the mountains to the sea) between freshwater, land, associated ecosystems and the coastal environment'¹⁰ and to manage fresh water and land use and development in catchments in an integrated and sustainable way'¹¹. This requirement is to ensure that adverse effects, including cumulative effects are avoided, remedied or mitigated.

49. Section CA of the NPSFM outlines a process under the National Objectives Framework for establishing freshwater objectives. I have prepared the following figure as a summary of the process required for setting freshwater objectives.

¹⁰ Policy C1(a)

¹¹ Policy C1(b)

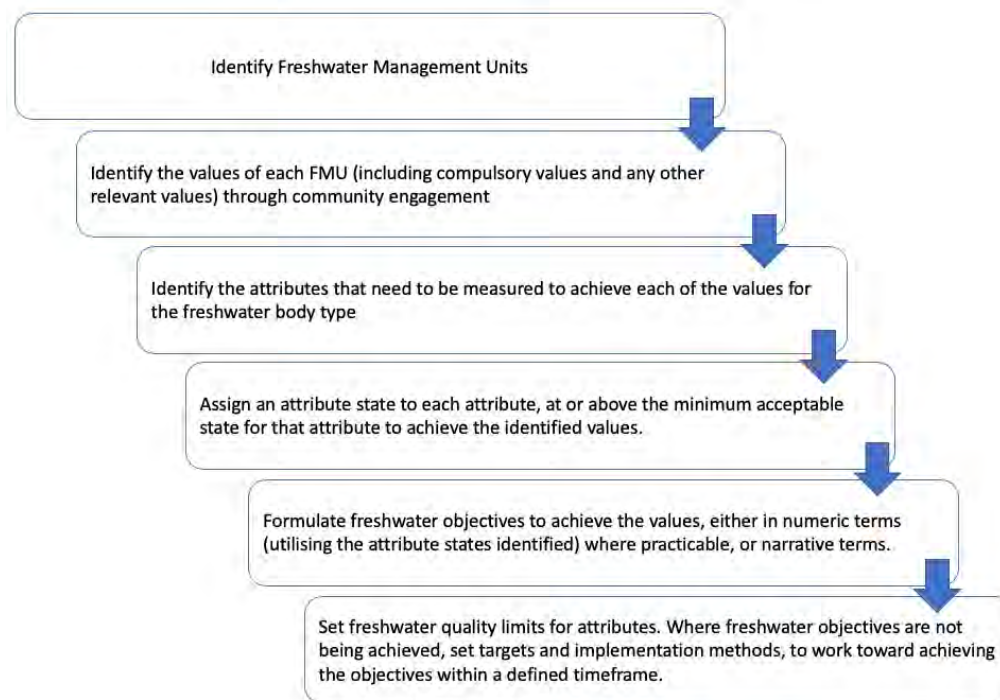


Figure 1 Summary of the freshwater objective setting process in the NPSFM

Staged implementation

50. Under Policy E1 of the NPSFM, the Council has chosen to undertake staged implementation¹². This policy allows councils to work towards implementation of the NPSFM by no later than 31 December 2025. Waikato Regional Council proposes to have fully implemented the NPSFM by 31 December 2030 with PC1 being part of this implementation process.
51. The Council's implementation plan is relatively broad, and, in my view, it is not clear exactly when particular parts of the NPSFM will be given effect to by when. I note the Council propose a review of the WRP which will address any matters 'outstanding' and which do not form part of the specified plan changes.
52. Current guidance on the implementation of the NPSFM states '(w)here a change to the regional policy statement or regional plans is required, section 55(2C) requires the Schedule 1 process to be used (except for Policies A4 and B7). This may involve a series of plan changes. The NPS-FM does not need to be fully given effect to with one plan change,

¹² <https://www.waikatoregion.govt.nz/council/policy-and-plans/plans-under-development/npsfm-implementation-programme/>

nor in the first available plan change, **but the provisions in any plan change that is made** (including project-specific plan changes, or plan changes for which the NPS-FM is not the principal reason) **must be consistent with the NPS-FM**¹³ (my emphasis added).

53. I also note that Policy E1 applies to the implementation of any policy of the national policy statement. It does not apply to the objectives of the NPSFM. As there is no implementation delay provided for objectives of the NPSFM, I consider that all objectives must be given effect to now. Giving effect to the NPSFM objectives now ensures that any future plan process is appropriately guided by those objectives and is not contrary to them. I consider that in order to progressively implement the NPSFM in accordance with policy E1, the Council must, at this time, effectively and efficiently manage the region's freshwater resources in a manner that is consistent with the NPSFM, achieves the objectives of the NPSFM and subsequently, the purpose of the RMA.

New Zealand Coastal Policy Statement 2010

54. The NZCPS came into force on 3 December 2010 to replace the NZCPS 1994. The NZCPS is the only mandatory national policy statement under the RMA with the purpose of stating objectives and policies in the order to achieve the purpose of the RMA in relation to the coastal environment of NZ.¹⁴
55. Objective 1 of the NZCPS directs the safeguarding of the 'integrity, form, functioning and resilience of the coastal environment and sustain[ing] its ecosystems' including by 'maintaining coastal water quality and enhancing [it] where it has deteriorated from what would otherwise be its natural condition...'
56. Policy 4 relates to the integrated management of natural and physical resources in the coastal environment. The policy recognises a range of matters that need to be provided for to achieve integrated management including at (c)(iv) that 'land use activities affect, or are likely to affect,

¹³ A Guide to the National Policy Statement for Freshwater Management 2014, Page 89, at <http://www.mfe.govt.nz/publications/fresh-water/guide-national-policy-statement-freshwater-management-2014>

¹⁴ Resource Management Act 1991, section 56.

water quality in the coastal environment and marine ecosystems through increasing sedimentation’.

57. Policies 21, 22 and 23 of the NZCPS provide policy guidance on the management of water quality in the coastal environment including requirements to enhance water quality where it is degraded¹⁵, manage sedimentation¹⁶ and manage the discharges to water in the coastal environment¹⁷.
58. This direction from the NZCPS acknowledges the interaction between land use activities and freshwater and the water quality of the coastal environment. As a result, the provisions of PC1 need to give effect to this direction.
59. As outlined in paragraph 28 of Ms Kettles evidence, the “Waikato River Estuary ecosystem is already showing signs of degradation from freshwater inputs”.

Waikato Regional Policy Statement 2016

60. The RPS provides clear direction for the management of freshwater resources through objectives and policies that require:
 - Integrated management of natural and physical resources (Objective 3.1).
 - Recognising and providing for the role of sustainable resource use and development for people and communities wellbeing including by maintaining and appropriate enhancing of:
 - i. access to natural and physical resources to provide for regionally significant industry and primary production activities that support that industry
 - ii. life supporting capacity of soils, water and ecosystems to support primary production activities (Objective 3.2).

¹⁵ To a point where it is having significant adverse effects on aquatic ecosystems, natural habitats, water based recreational activities or is restricting existing uses - NZPS Policy 21

¹⁶ To ensure that a activities do not result in a significant increase in sedimentation in coastal water – NZCPS Policy 22

¹⁷ NZCPS Policy 23

- The need to restore and protect the health and wellbeing of the Waikato River to achieve Te Ture Whaimana o Te Awa o Waikato (Objective 3.4).
- Managing land use to avoid potential adverse effects of climate change on amenity, indigenous biodiversity and natural character (Objective 3.6).
- Integrated management of the coastal environment to preserve natural character and protect natural features and landscape values and recognise the interconnections between marine-based and land-based activities (Objective 3.7).
- Recognising and maintaining or enhancing the range of ecosystem services associated with natural resources to enable their ongoing contribution to regional wellbeing (Objective 3.8).
- Recognition and provision for the relationships of tangata whenua with the environment (Objective 3.9).
- Natural and physical resources are used in a way that is efficient and minimises the generation of waste (Objective 3.10).
- Recognising and providing for the mauri and health of marine waters including by managing the adverse cumulative effects of land use activities on water in the coastal marine area (Objective 3.13).
- Maintaining or enhancing the mauri and identified values of fresh water bodies including through:
 - maintaining or enhancing overall water quality
 - safeguarding ecosystem processes and indigenous species habitats
 - safeguarding outstanding values of identified outstanding water bodies
 - safeguarding and improving the life supporting capacity of freshwater bodies that are degraded as a result of

human activities (with demonstrable progress made by 2030)

- establishing objectives, targets and limits for freshwater bodies to determine how they will be managed
 - enabling people to provide for their social, economic and cultural wellbeing and for their health and safety
 - recognising that management responses in different catchments to recognise the interrelationship between land use, water quality and water quantity will be variable (Objective 3.14).
- Riparian areas (including coastal dunes) and wetlands are managed to maintain or **enhance** water quality, indigenous biodiversity; riparian habitat quality and extent and wetland quality and extent (Objective 3.16) (my emphasis added).
 - Indigenous biodiversity and their ecosystems are supported to existing and healthy and functional state (Objective 3.19).
 - The values of outstanding natural features and landscapes are identified and protected from inappropriate subdivision, use and development (Objective 3.20).
 - Natural character of the coastal environment, wetlands and lakes and rivers are protected (Objective 3.22).

Waikato Freshwater Strategy - Te Rautaki Waimāori Mō Waikato 2017

61. The Waikato Freshwater Strategy 2017 (the Strategy) is a non-statutory strategic document developed by the Waikato Regional Council seeking to action the goal to ‘achieve the best use of fresh water through time via better allocation systems using new methods based on better information’¹⁸.

¹⁸ Overarching Goal – Executive Summary

62. The Strategy recognises the complexity of freshwater management and that the;

current state of the region's freshwater is the result of ad hoc management in response to disparate directions from central government and a preference for economic development that competes with an incomplete understanding of site-specific environmental limits¹⁹.

63. The Strategy acknowledges that current allocation options are old and no longer fit-for-purpose and identifies that the choices of future generations will be limited if current use and practises are not changed²⁰.

64. The Strategy also outlines misalignment between environmental and economic outcomes, at section 1.7.3 where it states:

The declining state of freshwater resources and wider environmental degradation are a direct result of pursuing economic objectives supported by effective nationally driven financial policies and instruments that have outweighed the effects of local environmental regulations...

This strategy recognises that policy alignment is critical to achieve both regional and central government freshwater quality objectives as stated in the Clean Water: 90% of rivers and lakes swimmable by 2040 document...

65. The Strategy also recognises the integrating function of the region's freshwater, 'linking activities occurring on the land with those directly relating to and occurring in freshwater and then transferring the effect into the Coastal Marine Area'.

66. The Strategy acknowledges that 'grand parenting of freshwater allocation (either of abstractions or discharges) does not assist transformation but tends to cement the status quo...'²¹.

¹⁹ Section 1.2.3 Context

²⁰ Synopsis of Strategy

²¹ Section 1.4 Strategy Directions

67. Overall, I consider that the Strategy provides necessary and useful guidance on the need for change in the management of freshwater in the Waikato Region. I comment the role of the strategy to 'ensure that future decision makers have access to the wider range of policy options in recognition of the wider scope of the job [to improve the management of fresh water]²².

INTEGRATED MANAGEMENT

68. Integrated management of natural and physical resources of the region is a key function of the regional council in giving effect to the purpose of the RMA, as outlined in s30:

Every regional council shall have the following functions for the purpose of giving effect to this Act in its region:

(c) the control of the use of land for the purpose of – ...

(ii) the maintenance and enhancement of the quality of water in water bodies and coastal water...

(iiia) the maintenance and enhancement of ecosystems in water bodies and coastal water...

69. The theme of integrated management is carried on through the NZCPS and the NPSFM. In particular, Policy 4 of the NZCPS outlines what is required to provide for the integrated management of natural and physical resources in the coastal environment and activities that affect the coastal environment. Policy 23 outlines the requirement for integrated catchment management when it comes to managing discharges of stormwater in the coastal environment.
70. Objective C1 of the NPSFM continues the integrated management theme by requiring that management of freshwater and the use and development of land in whole catchments is improved, including the interactions between fresh water, land, associated ecosystems and the coastal environment.

²² Section 3 Conclusion

71. Integrated catchment management is also required by the RPS through implementation method 8.1.1 which requires that 'regional plans shall adopt a catchment-based approach to ensure the integrated management of water resources, including the management of: ... quality of groundwater,... quality of surface water, quality of marine waters and land and water interactions, including the impacts of land use activities'.
72. The technical evidence provided by expert witnesses on behalf of DOC has been prepared within the experts realm of expertise on rivers, lakes, wetlands and estuaries, but has been done so with the recognition of the relationships and connectivity between these different types of waterbodies and the integrated nature of whole catchments.

SCOPE OF THE PLAN CHANGE

73. The 'scope' of the Plan Change is referred to throughout the s42A report. I have reviewed the 'Scope, goals and drivers of the Healthy Rivers: Plan for Change/Wai Ora' report (the scoping report) prepared for the Collaborative Stakeholder Group (CSG) in May 2014 to understand how the scope of the Plan Change was determined.
74. The scoping report says the Plan Change was to 'address the priority issue of effects of discharges to land and water in the Waikato and Waipā River catchments'²³. The project scope, which was established as a resolution of the Waikato Regional Council in August 2012, was outlined to include:
- both diffuse and point source discharges to land and water;
 - adverse effects of rural land use activities on water bodies;
 - all land and water bodies contained within the Waikato and Waipā River catchments; and

²³ Section 2.1 Project Scope

- consequential amendments to regional plan provisions to ensure catchments are integrated with the rest of the regional plan.
75. The scoping report goes on to state that in response to a NIWA report, referred to as the WRISS report, it was identified that about '80% of nutrients, disease-causing organisms and sediment going into the Waikato River catchment now come from 'diffuse sources' (mostly farm run-off)²⁴. As a result, the focus of the Plan Change became '...to address the priority issue of effects of discharges to land and water' to address the biggest contributors to water quality decline in the Waikato and Waipā Rivers (nutrients, bacteria and sediment)²⁵.
76. The project scope resolved by Council appears to have been refined in late 2012 and again in February 2014 where decisions were made about what is in and out of scope²⁶. There are differences between the 'project scope' which outlines that 'diffuse and point source discharges to land and water' are in scope, and the 'content scope' where the 'focus of the project scope to be further defined from "...to address the priority issue of effects of discharges to land and water.." to focusing on the biggest contributors to water quality decline in the Waikato and Waipā Rivers (nutrients, bacteria and sediment)²⁷".
77. In my opinion, reducing the scope of the Plan Change to the management of the discharge of four contaminants; nitrogen, phosphorus, sediment and microbial pathogens (bacteria), and not addressing water quality (and freshwater values) more generally, limits the ability to consider the complex and interconnected nature of effects from discharges. It limits the ability to consider the responses of different water body types to all the different contaminants that enter them (including heavy metals, pesticides, pathogens and chemicals) and their effects on water quality, ecosystem health and other freshwater values.

²⁴ Section 2.1.1 What is in scope

²⁵ IBID

²⁶ Section 2.1 Project Scope

²⁷ IBID

78. In my view, this approach is simplistic in its management of the complex effects of discharging contaminants on waterbodies particularly in the Waikato and Waipā River catchments, which include vast areas of lakes and wetlands, as well as rivers, streams and tributaries, all of which respond differently to contaminants.
79. The Vision and Strategy for the Waikato River seeks the 'restoration and protection of the health and wellbeing of the Waikato River'. I interpret this as a holistic goal and one that requires all the elements that contribute to the health and wellbeing of the river to be understood and is more closely aligned with the original project scope agreed by the Council, as discussed in paragraph 74 above.
80. I am concerned that the scope of the Plan Change limits the ability to consider the range of contaminants that impact water quality and freshwater values, therefore only looking at part of the issue. As a result, it is my opinion that the Vision and Strategy cannot be achieved using this narrow approach to managing discharges.

THE PROCESS FOR SETTING FRESHWATER OBJECTIVES UNDER THE NPSFM

81. In the following paragraphs, I provide a summary of the direction given in the NPSFM for setting freshwater objectives. This process is outlined in Figure 2 above.
82. Section CA of the NPSFM outlines the National Objectives Framework for establishing freshwater objectives. It first requires that FMUs for all waterbodies in the region are identified (Policy CA1). An FMU is defined in the NPSFM as 'the water body, multiple water bodies or any part of a water body determined by the regional council as the appropriate spatial scale for setting freshwater objectives and limits and for freshwater accounting and management purposes'.
83. The process outlined in Policy CA2(a) & (b) requires that once the appropriate scale for the FMUs is determined, the values of each of the FMUs need to be identified in discussion with communities and iwi. This includes applying the compulsory national values of ecosystem health and human health for recreation and any other values that are

appropriate at the national (contained in Appendix 1 of the NPSFM), regional or local level.

84. Once the values for each of the FMUs are understood (including where the values apply spatially or in NPSFM language 'locally'), the next step is to identify the attributes that are relevant to achieving each value in the FMU for the particular lake, river or wetland (Policy CA(3)). The NPSFM defines an attribute as 'a measurable characteristic of freshwater, including physical, chemical and biological properties which supports particular values'. The attributes that are applicable in a particular FMU are those that need to be measured to know whether a particular value is being achieved.
85. Once you understand which attributes are applicable, an attribute state for these attributes is set at a level that describes the minimum acceptable state for that attribute to achieve the identified values (Policy CA2(d)).
86. Policy CA2(e) then outlines that freshwater objectives be formulated to reflect numeric attribute states where possible, or in narrative terms where this is not possible. The NPSFM defines a freshwater objective as 'an intended environmental outcome in a freshwater management unit'. Some attributes will contribute to achieving more than one value in an FMU and may require different minimum attribute states to achieve the different values. In this case, the most conservative minimum attribute state should be adopted as the numeric freshwater objective. This is to ensure that the attribute states to achieve the most sensitive values in the FMU to are recognised and provided for (CA2(e)(iii)).
87. Policy A1 of the NPSFM requires that every regional plan establish freshwater objectives in accordance with the process outlined above. The plan must then set freshwater quality limits for all FMUs to give effect to the objectives of the NPSFM. The policy requires that the freshwater objectives and limits set must have regard to at least the following matters:
 - Reasonably foreseeable impacts of climate change
 - The connection between water bodies

- The connection between freshwater bodies and coast water
88. Limits are defined as ‘the maximum amount of resource use available, which allows a freshwater objective to be met’. For water quality, a limit is the total amount of a contaminant that can enter a water body, from all the sources within the FMU, that will ensure that the freshwater objective can be met, and therefore the values for the FMU are provided for.
89. For some attributes, such as clarity and *E. coli*, I understand that it is not appropriate to allocate an amount of available ‘clarity’ to resource users within an FMU to achieve the freshwater objective. However, freshwater limits (in-stream) can still be set for these attributes to support freshwater values. Where freshwater limits can be set for an attribute, they are required to be²⁸.
90. Methods are also required under Policy A1(b) of the NPSFM to avoid over-allocation. Over-allocation is defined in the NPSFM as being where either a resource has been allocated to users beyond a limit, or where a freshwater objective is no longer being met²⁹. If a limit is set and is being exceeded, it follows that the freshwater objective will not be met and freshwater values will not be supported.
91. Policy A2 describes that where the freshwater objectives in an FMU are not being achieved, targets and implementation methods need to be provided ‘to assist the improvement of water quality in freshwater management units to meet those targets, and within a defined timeframe’. The NPSFM defines a target as ‘a limit which must be met at a defined timeframe in the future’.
92. Implementation method 8.1.3 of the RPS reiterates this process by directing that the regional plan shall ‘recognise identified values and establish freshwater objectives **based** on the identified values’ (my emphasis added) and ‘establish limits and targets based on the identified values and freshwater objectives, including for minimum and allocable flows, lake levels, wetland levels and contaminant discharge’.

²⁸ NPSFM Policy A1(a)

²⁹ ‘Over-allocation’ definition NPSFM

93. I note that Policy A5 requires regional plans to identify specified rivers and lakes, and primary contact sites and state:
- ‘what improvements will be made, and over what timeframes, to specified rivers and lakes and primary contact sites, so they are suitable for primary contact more often’ and
 - how ‘specified rivers and lakes and primary contact sites, will be maintained if regional targets have been achieved’.
94. The requirement for final regional targets to improve water quality to be set was 31 December 2018 as outlined in Policy A6. It appears that a report was put to WRC on 27 November 2018 from the Director Science and Strategy, Tracey May³⁰ which sought to finalise regional targets and that these targets are “40.4% of rivers and 79% of lakes [are] swimmable by 2030” however I am not clear from this document which the specified rivers and lakes or primary contact site are and where the priorities across the Waikato Region for improvement are.
95. In my view, the Plan Change does not clearly identify specified rivers and lakes, and primary contact sites. Nor does it state ‘what improvements will be made, and over what timeframes, to specified rivers and lakes and primary contact sites, so they are suitable for primary contact more often’. It does not state how specified rivers and lakes and primary contact sites will be maintained if regional targets have been achieved or even what regional targets are. These requirements are necessary to ensure the Waikato Regional Plan gives effect to the NPSFM.
96. Giving effect to this requirement of the NPSFM could be something that the council is planning to achieve at a later date, although I am not clear on this from the detail provided in the implementation plan. Regardless, I am concerned that the lack of apparent consideration of these requirements of the NPSFM results in a failure of the Plan Change to be adequately informed in which watercourses are affected, how they are affected, and by how much.

³⁰ Page 177 <http://waikatoregion.govt.nz/assets/WRC/Community/Council-Meetings-and-Agendas/council-2018/Open-Council-agenda-12-December-2018.pdf>

PLAN CHANGE 1 – PROCESS FOR SETTING FRESHWATER OBJECTIVES.

97. The process for setting freshwater objectives for water quality used in PC1 is not straight forward, and it appears there are different views on what constitutes a freshwater objective in the Plan Change.³¹
98. There is also confusion around whether the attributes and numbers contained in Table 3.11-1 represent targets (i.e. limits to be achieved in future)³² as referred to in the description of the tables under Section 3.11.6 of the Plan Change or whether they represent freshwater objectives³³.
99. The lack of clarity about what the different aspects of the Plan Change represent as identified above is not clarified by officers in the s.42a report. In fact, I consider that officers add to the confusion by proposing to amend the reference to 'long-term water quality targets as "water quality states"'. The Plan Change needs clearly articulate what the freshwater objectives are and what the limits and targets are as without this clarity, it is not clear whether Table 3.11-1 represents the freshwater objectives outlining the intended environmental outcome for the freshwater management unit, or whether they the table represents limits/targets that represent the amount of resource use available in order for the freshwater objective to be met, or met at a defined time in the future, in the case of targets. Or whether in fact it is intended that the table represents freshwater objectives, limits and targets.
100. I have prepared a table, attached as Appendix 3, and some commentary of this table which highlights the existing confusion and multiple possible interpretations of the Plan Change as it is currently. In this appendix I have highlighted three different ways of interpreting the different aspects of the Plan Change as it is currently written can be interpreted, including the role of Table 3.11-1. I have based this interpretation on the requirements of the various components needed

³¹ Paragraph 399 of s.42a report

³² As referenced for example in paragraph 32 of the s42A report

³³ As referenced in paragraph 302 of the s42A report

to set freshwater objectives and limits under the process outlined in Policies CA2 and A1 of the NPSFM.

101. Of the three different interpretation options I have considered, it appears to me that the most complete and appropriate interpretation is Option 3, that the Table 3.11-1 represents both freshwater objectives and limits/targets. This means that the numbers in the table represent both the intended environmental outcome for that attribute in the sub-catchment and the maximum amount of resource use available.

Identification of Freshwater Management Units for the Waikato and Waipā Catchments

102. The first step towards setting freshwater objectives for values in the Plan is for the council to identify freshwater management units that include all freshwater bodies in its region. This aligns with the requirements of Policy CA2 in the process outlined under CA National Objectives Framework.
103. PC1 as notified includes 8 FMUS,
104. As outlined above, the FMU is the management unit at which freshwater objectives and limits are set, the scale at which freshwater quality accounting is recorded and that a specific management approach to that catchment or sub-catchment applies.
105. I agree with Ms McArthur who states, in her evidence³⁴, that the ideal situation is that FMUs are identified at a scale that allows for local identification of values and therefore a more localised and specific framework to achieve these values can be set, i.e. the identification of appropriate attributes and the setting of freshwater objectives. I note that Ms McArthur clarifies that values can be set at a finer spatial resolution than the FMUs as the objectives and limits/targets are relevant to the values at that scale³⁵.

³⁴ Paragraph 28

³⁵ Paragraph 30

106. As outlined in the Ministry for the Environment guidance on the NPSFM³⁶, it is important that the spatial scale of the FMU is appropriate for the management activities that are undertaken, including freshwater accounting and monitoring³⁷. The guidance recommends that councils consider surrounding land use and any recharge areas affecting freshwater bodies when establishing FMUs. It also recognises that FMUs may be influenced by the values and freshwater objectives that are likely to be set, highlighting that revision of FMUs may be needed through the process of determining values, where they apply and freshwater objectives.
107. In defining FMU boundaries in PC1, it appears a number of options were identified with four 'simple' options explored further based on a document provided to the CSG from the TLG³⁸. The document identifies principles, policy considerations and other consideration for how to establish FMUs. My reading of the TLG guidance from this report is that it fails to put the purpose of identifying an FMU at the forefront of decision making. The guidance in this document focuses on a simplistic approach, application of simplistic objectives and the need to monitor water quality in FMUs.
108. For example, one of the items identified for the CSG to consider when delineating FMUs, is whether they are 'simple and intuitive for the community'³⁹.
109. The TLG guidance states that increasing the number of FMUs 'increases the likelihood that an individual property spans more than one FMU, resulting in additional complexity of management'⁴⁰. It is my view that it is entirely appropriate and necessary for one property to sit within more than one FMU if it is located where it forms part of more than one catchment or sub-catchment where different values apply and

³⁶<http://www.mfe.govt.nz/publications/fresh-water/guide-identifying-freshwater-management-units-under-national-policy>

³⁷ IBID 'Why the concept of freshwater management units was added to the NPSFM' Page 6

³⁸ Freshwater Management Unit options for consideration by the Collaborative Stakeholder Group, 1 August 2014 <https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/HR/S32/C/3121490.pdf> DOC#3121490

³⁹ IBID Page 14

⁴⁰ Paragraph 2, Page 3

subsequently different freshwater objectives are needed to achieve those values.

110. The TLG guidance also states that ‘... objectives should be consistent across all management units, where possible, while rules and other methods are likely to differ...’⁴¹. The NPSFM requires that the FMUs be defined at a scale that ensures the effective management of issues and specifies this through the setting of freshwater objectives to achieve the identified values. While I acknowledge that some FMUs may be facing similar issues, for example if the FMUs have like land uses contributing similarly to water quality issues, I consider that the freshwater objectives need to set outcomes for water quality that will manage the issues in each of the FMUs to ensure that issues are effectively managed.
111. In the case the PC1, the values of the FMUs have been universally applied and therefore it follows that the freshwater objectives also universally apply.
112. Monitoring water quality within an FMU is a critical component in understanding changes in water quality and to understand whether the management approaches in the FMU are achieving the changes necessary to provide for the values. The NPSFM outlines, in Section CB, the requirements for the monitoring of progress towards the achievement of freshwater objectives and values and recognises, through Policy CB1(c) the ‘importance of long-term trends in monitoring results and the relationship between results and the overall state of fresh water...’. The NPSFM requires, at Policy CB1(b), that a representative site or sites be identified for each FMU for the purpose of monitoring.
113. The TLG guidance appears to have considered the location of existing monitoring sites as a factor for defining FMUs and this is outlined in the section which identifies ‘Possible basis for delineating FMU’. I consider that instead, the delineation of FMUs should determine where

⁴¹ Paragraph 3, Page 3

representative monitoring sites are required, as outlined in Policy CB1(b).

114. However, I acknowledge that monitoring currently occurs at almost all of the sub-catchments identified in Table 3.11-1 and according to the s42A report, further monitoring sites are planned to fill any gaps over time⁴².
115. Overall, it appears that the approach to setting FMUs in PC1 has not focussed on the reasons that FMUs are required as outlined in the NPSFM. The approach taken makes it difficult to undertake values identification at specific locations. This means that setting freshwater objectives at an appropriate scale to recognise the unique characteristics of the different sub-catchments and the varying water quality found within these catchments is not achievable.
116. The submission of the Director-General does not include the scope to review the scale of identification of all freshwater management units within the PC1, but does highlight concerns with the approach taken to the grouping of lakes into 4 FMU and the lack of an FMU for the Whangamarino wetland.
117. Ms McArthur suggests that a potential solution to the challenges presented by the current approach to FMU identification is to ensure that overall outcomes for water quality are reflected in the sub-catchment targets in Table 3.11-1, including tributaries, and for high value priority areas, more stringent water quality targets are set to provide for the values in those sub catchments⁴³. Ms McArthur's suggested approach is an alternative to re-evaluating the spatial scale of values identification and I am supportive of this approach.
118. The Director-General's submission [PC1-10504] has highlighted concern with the scale of Map 3.11-1 identifying that the scale used to identify FMU boundaries is not useful for understanding the accuracy of mapping of FMU boundaries and their catchments.

⁴² Paragraph 503

⁴³ Paragraph 30.

119. Reporting officers have responded to this point by recommending that a smaller scale will assist with the usability and implementation of PC1. I agree, however it would be useful to understand what scale is likely to be recommended to ensure that the extent of each FMU can be clearly identified. The amendments provided in the mark-up of the Plan Change do not clarify the intended scale or show a map of a different scale. It is necessary, in my view, that the scale of the maps needs to be clear enough to enable individual property owners to determine which FMU/FMUs their property is contained in, or that an alternative tool is available, such as a GIS interface sitting outside of PC1.

Lake FMUs

120. The Director-General raised concern through his submission [PC1-10465] about the grouping of lakes into the 4 lake FMUs and sought that FMUs be included for each individual lake and its catchment. Officers have rejected this relief in the s.42a report⁴⁴.

121. I note that implementation method 8.3.7 from the RPS outlines how lakes are to be managed in collaboration with territorial authorities, tāngata whenua and other stakeholders to:

- identify lakes that are, or could potentially become degraded;
- ascertain the likely causes of this degradation; and
- investigate and recommend options, including regional or district plan changes, to maintain or enhance the values of the lakes.

122. Dr Phillips has considered the distribution of Lake FMUs in her evidence. She considers, at paragraph 74 that the approach taken in PC1 to defining lake FMUs is “overly simplistic” and that grouping lakes by geomorphological formation processes does not account for the “extremely diverse” nature of lake’s physical characteristics.

123. While Dr Phillips agrees with officers⁴⁵ that 59 individual FMUs for lakes may not be practicable, she agrees that there is a need for the variability

⁴⁴ Paragraph 491

⁴⁵ Paragraph 78

of lakes be recognised to ensure appropriate management strategies and freshwater targets.

124. Dr Phillips identifies⁴⁶ a multivariate analysis of Waikato lakes which she considers is a more robust way of classifying the lakes. This study identified 12 lake classes that reflect the complexity and diversity of lake types in the Waikato Region according to the author. Dr Phillips goes on to recommend, at paragraph 83, further refinement of the lake FMUs based on this study.
125. I am supportive of the recommendations by Dr Phillips to refine the lakes FMUs and to group lakes into FMUs which more accurately represents complex and diverse physical characteristics of these lakes. I consider that better refined lake FMUs will better reflect the requirements of the RPS and NPSFM by defining an 'appropriate spatial scale for setting freshwater objectives and limits and for freshwater accounting and management purposes'⁴⁷.

Mapping of Lake Catchments

126. In his submission [PC1-10465], the Director-General questioned the accuracy of the lake catchment maps, on the basis of differences between the mapped Lake FMU catchments and those in other national databases (e.g. Freshwater Environments of New Zealand (FENZ)). It appears that this point was not addressed by officer's in the s 42A report, although there is clarification, at paragraph 504, that sub-catchment boundaries have been established using aerial photography and a digital terrain model with 5 metre contours.
127. The scale of the maps provided in the Plan Change provide no certainty to land owners, plan users or decision makers about which FMU a property or part of a property falls within i.e. whether it might fall in one of the lake FMUs or whether it is in one of the river FMUs. Even the mapping of sub-catchments, in Map 3.11-2, is at a scale where sub-catchment boundaries are not easily discernible.

⁴⁶ Paragraph 82

⁴⁷ Definition of Freshwater Management Unit in the NPSFM.

128. Accurate mapping is an important component of the plan change including for decision makers. It is therefore important in my view, that mapping is available to ensure that all FMUs, but in particular those relating to lakes can be viewed at a scale where the boundaries and properties within that FMU are clearly identifiable. I consider an online mapping tool is likely to be the most appropriate way to achieve this.

Whangamarino Wetland FMU

129. The Director-General also raised concern in his submission about the lack of identification of an FMU for the Whangamarino Wetland [PC1-10504, V1PC1-1139]. Dr Robertson discusses the importance of a separate FMU for the Whangamarino at paragraphs 140-148 of his evidence.

130. Dr Robertson summarises the need for a separate FMU for the Whangamarino for the following reasons:

- The international significance of the wetland;
- The risk of irreversible degradation of significant wetland values;
- The need for a different suite of water quality attributes to protect the significant values of the wetland;
- That there is sufficient data available to define current state of a Whangamarino Wetland FMU; and
- That the existing sub-catchment targets in the Plan Change will not achieve the outcomes sought for the wetland⁴⁸.

131. Given the reasons above, and the requirements of the NPSFM that define that an FMU is set at "...the appropriate spatial scale for setting freshwater objectives, and limits and for freshwater accounting and management purposes", I agree with Dr Robertson that an FMU to specifically manage the water quality and ecosystem health of the Whangamarino Wetland is appropriate.

⁴⁸ Paragraph 140

132. I consider, from Dr Robertson's evidence, that there is sufficient information on the extent of the FMU (per the map in Appendix 4 of Dr Robertson's evidence), values of the wetland and on the current state of water quality to enable freshwater objectives, limits and targets to be set, per the tables attached as Appendix 6 and 7 in Dr Robertson's evidence. I have included these tables and map in my markup of the Plan Change at Appendix 1 of this evidence.

Values identification

133. The Vision and Strategy seeks to restore and protect the relationship of the Waikato Region's communities with the Waikato River, including their economic, social, cultural and spiritual relationships⁴⁹. It also specifies that the economic, social, cultural and spiritual relationships of Waikato River iwi with the Waikato River be restored and protected, according to their belief and cultural practices (tikanga and kawa)⁵⁰. I consider that the relationships referred to here, are in essence, the values that iwi and the community have for the Waikato River and it is these values that need to be restored and protected in order for the Vision and Strategy to be achieved.

134. Section CA of the NPSFM provides guidance to regional councils on the establishment of freshwater objectives for compulsory national values, and for any other appropriate values. As discussed above, the process for developing freshwater objectives for all freshwater management units is outlined in Policy CA2. It begins with identifying the values for each FMU, in discussion with the community, followed by identifying the attributes that apply to each value, and therefore an FMU and determining the minimum acceptable state for each attribute to ensure the values are provided for. From this, freshwater objectives are then developed.

135. The RPS includes requirements for community identification of values of fresh water bodies and the subsequent establishment of fresh water objectives, limits and targets (policy 8.1). It also requires, at policy 8.2, that the outstanding values of a fresh water body, that result in the water

⁴⁹ Objective D

⁵⁰ Objective C

body being identified as outstanding, are protected and where appropriate enhanced. I discuss outstanding fresh water bodies further in paragraph 288 below.

136. Policy 8.3 (RPS) directs that the effects of activities be managed to maintain or enhance the identified values of freshwater bodies and coastal water while implementation method 8.1.4 outlines the matters that are considered as part of the values setting process for freshwater bodies.
137. The Director-General's submission [PC1-8131] outlined that it was not clear which values have been identified for each FMU. The s42A officer's report usefully clarifies that the eight identified FMUs in the Plan Change are the four 'river' FMUs and the four 'lake' FMUs and that the values and use statements identified in 3.11.1 apply to all FMUs⁵¹.
138. I consider that the approach used in PC1 to identify values has the effect of identifying freshwater values at a Plan Change-level, rather than at the FMU level which is not what the NPSFM requires. I am concerned that the approach taken in PC1 means that any values specific to a particular FMU such as those valued as fish spawning habitat for example have not been identified and therefore cannot be provided for through attributes and the freshwater objectives of the Plan Change.
139. As outlined above, the Vision and Strategy allows for economic, social, cultural and spiritual relationships to be provided for. I consider these relationships can be considered to form some of the values held by the community for these catchments. However, the approach to values identification and application in PC1 i.e. applying generic values everywhere means that the entire Plan Change area including all river and lake FMUs will be managed to the most sensitive value. This may be limiting for some parts of the catchments where there may be more resource available for use. I consider that the current approach to values setting does not achieve the objectives of the Vision and Strategy.

⁵¹ Paragraph 152 of s. 42a officer's report

140. I have reviewed the 'Community held values of rivers, lakes and streams in the Waikato and Waipā River catchments' report (the values report) provided to the Collaborative Stakeholder Group in relation to the setting of values. The approach taken to identify values was to consult with members of the community⁵² about what they valued in relation to lakes, rivers and streams. The consultation appears to not have specifically asked or referenced which water bodies values applied to which waterbodies. The exception for this is the geothermal values which officer's provide comment on in paragraph 166 of the s42A report. Here officer's state that geothermal values only apply in 'geothermal areas' however I note that there is nowhere in the Plan Change where geothermal areas are identified or defined⁵³.

Values of wetlands and the coastal environment

141. The Director-General's submission [PC1-8139, PC-8136, PC1-8152, PC-8532, PC1-8533, PC1-8535, PC1-8540] identifies the need for the values of lakes, wetlands and the coastal environment be recognised, in addition to rivers, to ensure that the values of all waterbodies within the catchments are appropriately provided for in the Plan Change.
142. I also note that the Director-General seeks [V1PC1-1006] that attributes, limits or targets be set for tributaries are set as part of the Plan Change. In order to do this, the values of these tributaries must also be identified. I consider that the Director-General's submission on allowing consequential relief⁵⁴ allows these values to be identified. The importance of tributaries is reiterated in the evidence of Ms McArthur at paragraph 26 of her evidence.
143. As outlined above, after defining the extent of FMUs, identifying the values of these FMUs is the next step in the process towards setting freshwater objectives. Policy CA2 requires that in identifying values, the regional council apply a process of considering compulsory and other

⁵² Through focus groups, internet and telephone surveys as referenced in "Community held values of rivers, lakes and streams in the Waikato and Waipā River catchments" Document #2746337

<https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/HR/S32/B/2746337.pdf>

⁵³ I also note that the operative Regional Plan does not provide a definition for "geothermal areas".

⁵⁴ Paragraph 63 of the Director-General's submission, Page 21 which I believe has not been given a submission number by the Council.

values, **'through discussion with communities, including tangata whenua'** (my emphasis added).

144. Based on my reading of the values report, there has been no discussion with the community or consideration by the CSG regarding the values of wetlands or the values of the coastal environment that are also influenced by water quality in the Waikato and Waipā River catchments. As a result, I consider that the NPSFM process for values identification has not been followed.
145. In his submission, the Director-General sought that the values of lakes, wetlands, and the coastal environment be added to the intrinsic values of ecosystem health, history, natural form and character and to the use values of tai tapu, mahinga kai, human health for recreation and transport/tauranga waka.
146. The s42A report officers acknowledge, at paragraph 173, 'that lakes and wetlands should be referred to alongside rivers where relevant' in the values and use statements. The officer recommendations go on to outline that amendments be made to 'specifically address the FMUs containing lakes and wetlands' and that this is to ensure that PC1 'clearly gives effect to the NPSFM'. I am supportive of these changes.
147. However, I note that officers appear not to have considered the applicability of the values and use statements on the coastal environment. Given that the approach to values setting is to recognise the integrated nature of the Waikato and Waipā River catchments, it is not clear why the values relating to where the river meets the coastal environment have not been considered, for example, at Port Waikato and within the wider Waikato Delta. Identification of values, such as the relationships of the community with the Waikato River, are vital to ensuring that the Vision and Strategy can be achieved.
148. I note that although the PC1 extent is restricted to the boundary of the coastal marine area (CMA), as outlined in s30(d) of the RMA, the integrated nature of catchments means that effects of freshwater quality can extend beyond the CMA. This is acknowledged in the provision of the NPSFM, specifically Part C Integrated management and under the NZCPS under Policy 4 Integration.

149. I am concerned that the lack of work with the community to understand community values may mean that some values of tributaries, wetlands and the coastal environment are not captured in the current Plan Change. An example of this is highlighted by Dr Robertson⁵⁵ and Mr David Klee from Fish and Game in their evidence where the recreational values of wetlands for duck hunting, for example, are not recognised.
150. Ideally, to align with the process directed by the NPSFM, for the Plan Change to appropriately recognise the community values associated with tributaries, wetlands and the coastal environment, further engagement with the public and iwi on these matters is needed. This is as directed by higher level documents, outlined in paragraphs 133 - 135 above.
151. I acknowledge however that it is likely that information on values of wetlands and the coastal environment within the Plan Change area will be available through existing statutory and non-statutory documents and through submissions on this plan change. This information will provide a more complete picture of the values of wetlands and the coastal environment and this can be reflected in the Plan Change. This values identification work could be built on in future to ensure that a complete understanding of wetland and coastal environment values are recorded in the Regional Plan.
152. At the very least, references to tributaries, wetlands and the coastal environment need to be recorded against the existing values in the Plan Change to ensure that the values of these waterbodies are identified and can be achieved through the setting of freshwater objectives, limits and targets.

Intrinsic values

Ancestry and History values

153. In relation to Ancestry and History values, s6(e) of the RMA requires that the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga are

⁵⁵ Paragraph 85

recognised and provided for. Objective D1 of the NPSFM requires that ‘...tangata whenua values and interests are reflected in the management of fresh water including associated ecosystems, and decision-making regarding freshwater planning, including on how all other objectives of this NPS are given effect to’.

154. As outlined above in paragraph 133, the Vision and Strategy seeks to ensure that iwi relationships with the Waikato River are restored and protected. Objective e of the Vision and Strategy also recognises the integrated, holistic and coordinated approach to management of the natural, physical, cultural and historic resources of the Waikato River. I consider that this includes the linkages of the river to the coastal environment at Port Waikato.
155. Objective 3 of the NZCPS, recognises that in taking into account the principles of the Treaty of Waitangi, it is important to recognise and protect characteristics of the coastal environment that are of special value to tangata whenua.
156. As notified, I consider that PC1 does not give effect to the requirements of the RMA, the NZCPS or the NPSFM in relation to identifying the ancestral and historic values of all FMUs at a meaningful scale that enables the efficient management of the river catchments and achieve the freshwater objectives.
157. In order to be certain that the Plan Change accurately reflects the ancestral and history values of the community and iwi for rivers, streams, lakes, wetlands and the coastal environment, I consider that additional work is required to specify where the existing values are applicable for lakes, rivers and streams, and that additional work is undertaken to identify and understand the ancestral and history values of wetlands and the coastal environment where these are likely to be influenced by freshwater quality coming from the catchment.

Ecosystem Health

158. Ecosystem health is a compulsory national value in the NPSFM. The NPSFM identifies a range of matters to be taken into account for a healthy freshwater ecosystem. The approach taken in PC1, in my view, does not recognise the various components of ecosystem health and

the complex nature of achieving these values. The importance of this is outlined by Ms McArthur at paragraphs 32 - 38 of her evidence.

159. Ms McArthur explains that there is a 'significant risk that PC1 will not deliver water quality outcomes that will achieve "ecosystem health" across all sub-catchments, waterbodies and freshwater ecosystems of the Waikato-Waipā catchments" with the broad 'ecosystem health' value currently included in the Plan (paragraph 35).
160. Ms McArthur, at paragraphs 39 – 61, explains the leading causes of declining indigenous fish in New Zealand which includes degrading water quality. Given the poor state of indigenous fish nationally and poor fish diversity and threat status compared to global trends, Ms McArthur concludes that remaining fish habitats with high diversity (species richness), and intact indigenous fish communities and habitats for threatened and at-risk fish are of significant biodiversity value in New Zealand.
161. As a result, I propose amendments at Appendix 1, to the existing definition of ecosystem health value to recognise and provide for the key characteristics of ecosystem health identified by Ms McArthur. This will ensure that PC1 gives effect to the requirements of s6 of the RMA which identifies the protection of significant habitats of indigenous fauna as a matter of national importance. It will also better reflect the direction in the NPSFM compulsory value for ecosystem health.
162. Submission point PC8139 from the Director-General seeks a number of points of relief in relation to the ecosystem health value.
163. The s42A officer's report, at paragraph 193, considers that the changes sought 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'. Officer's also state that the amendments sought are unnecessary due to the 'high level and positive intent of the value statements'. Ms McArthur explains the issues with this approach throughout her evidence and I have addressed this above in paragraphs 138-139.
164. I note that community identified values relating to ecosystem health were only sought in relation to rivers, streams and lakes and that values

were not linked to the waterbody that they apply to. Instead the approach in the Plan Change has been to apply all values to all FMUs. As I have outlined in paragraph 139, this approach lacks specificity in relation to the values of particular FMUs and catchments and may be limiting for some parts of the catchments where there may be more resource available for use.

165. I note that officers do not recommend any changes to the definition of ecosystem health value as notified. This is despite reference, at paragraph 193, being made to amending bullet point four to insert a reference to lakes. I consider that this amendment is appropriate given that the community values of lakes were sought together with values of rivers and streams.
166. I note that there is a table in the WRP at 3.7.7 which identifies wetlands in the Waikato Region and ecological values of those wetlands. I am not clear how these ecological values were identified and placed into the Plan and whether this was done in discussion with iwi and the community, but I consider these values could be useful as a starting point for discussion.

Natural form and character

167. Natural form and character is an identified but not compulsory national value identified in the NPSFM. The natural form and character value in PC1 is, in my view, limited in its application and its identification of possible attributes that contribute to natural character. The value, as notified overlooks the geological and geomorphological aspects of natural character, as well as aspects related to the natural movement of water and sediment. Again, the community's values relating to natural form and character appear to only have been sought through engagement on rivers, streams and lakes and do not include the natural character values of wetlands or the coastal environment.
168. I agree with the Director-General's submission [PC1-8152] which seeks that the natural form and character values of lakes, wetlands and the coastal environment be identified, in addition to rivers. This will ensure that the natural character of these areas is appropriately recognised and provided for, as is required by s6(a) of the RMA and Policy 13 of

the NZCPS and more closely reflects the factors contributing to natural character identified in the NPSFM definition.

169. As included in PC1, the natural form and character value identifies very few of the factors that can contribute to the natural character of a water body and its margins. The NPSFM natural form and character value and the NZCPS Policy 13(2) both provide more comprehensive lists of the factors that make up natural character which are useful for plan users and decision makers to understand what is required. I consider it is appropriate for PC1 to align with the direction in these higher-level documents in terms of identifying the factors that can contribute natural character. I recommend that the identified matters that contribute to natural form and character from the NPSFM be included in the value in PC1 as outlined in the markup in Appendix 1 of my evidence.
170. I note that the NPSFM⁵⁶ requires that the significant values of wetlands are protected. I consider that the Plan Change as proposed does not achieve this direction from the NPSFM. I consider it is critical that natural character values be identified for all wetland areas, including the internationally significant Whangamarino wetland, to ensure that freshwater objectives, limits and targets are set to recognise and provide for these values and to appropriately give effect to the requirements of the NPSFM.
171. It appears that there has been no discussion with the community to identify what they value in the coastal environment⁵⁷, and therefore it is not clear what the natural form and character values of the coastal environment in the Waikato Delta are that need to be protected. Policy 13 of the NZCPS outlines the factors that may contribute to natural character in the coastal environment. In order for PC1 to appropriately protect natural form and character values in the coastal environment, through the setting of freshwater objectives, limits and targets, these values need to be identified.
172. Officers have considered the relief sought by the Director-General to expand the description of what constitutes natural form and character

⁵⁶ Objective A2

⁵⁷ Based on the content of the values report.

in paragraphs 195 – 199 of the s42A report. Officers do not recommend any amendment to the Plan Change is necessary as the 'proposed value, as recommended to be amended to refer to lakes and wetlands, already addresses the matters raised by the submitters' (paragraph 198). Officers appear to have formed this view based on the inclusion of the term 'naturalness values' in the value statement and their view that this encompasses natural character and its qualities⁵⁸.

173. The reference to 'naturalness values' in the Plan Change provides some linkage to the RPS definition of natural character.⁵⁹ I consider however that it is not a term that automatically links plan users and decision makers to the guidance in the NPSFM or NZCPS around what factors can contribute to natural character. Naturalness is, in my view, something quite different to natural character and is better described as a component of natural character. I interpret that 'naturalness' represents the perception of how modified by human activities an environment is i.e. how natural the area is. In my view, this is not the same as natural form and character as for example, natural character in the NZCPS is identified as ranging from pristine, being somewhere that I would consider would have high 'naturalness value' to modified, where I would consider 'naturalness' values would be much less.
174. The content of the values and use statement for natural form and character, in my view, lacks guidance to plan users and decision makers around how natural character values will be identified and how they will be preserved and protected, which is the requirement of s6a of the RMA.

Use values

Wai Tapu and Wai Kino

175. Wai tapu values are an identified but not compulsory national value in the NPSFM and represent the values of the places where rituals and

⁵⁸ Paragraph 198

⁵⁹ Natural character definition from the RPS 'in relation to the coastal environment, wetlands, and lakes and rivers and their margins, the degree of naturalness of an area, as evidenced by the degree to which it possesses qualities and features that are products of nature as opposed to products of human activities'. I note that the WRP currently has a different definition from the RPS on natural character but that as the RPS definition is more recent, this is the one that should be used.

ceremonies are performed or where there is special significance to iwi/hapū. The NPSFM outlines the state of freshwater required for wai tapu values to be provided for area including that the area is free from human and animal waste, contaminants and excess sediment.

176. As currently outlined in PC1, this value has been identified as applicable for the entirety of the River FMU for the full extent of the Waikato and Waipā Rivers. As notified, there is no acknowledgement of any wai tapu values in any of the lakes, wetlands or coastal environment as requested in the Director-General's submission [PC1-8132].
177. Officers recommend at paragraph 204 that the value also apply to lakes and wetlands, as reflected in the mark ups shown in the appendix to the s42A report. This amendment is appropriate for lakes given that lakes values have formed part of community discussions on values.
178. The lack of identification of wai tapu values in relation to the coastal environment is contrary to the direction in Policy 2 of the NZCPS. This policy recognises the relationship of tangata whenua and their kaitiakitanga role in the coastal environment and Policy 6, which acknowledges that areas of cultural and spiritual value to tangata whenua can be a factor contributing to the coastal environment's natural character. Policy 4 of the NZCPS requires that in providing for the integrated management of natural and physical resources in the coastal environment, particular consideration is required of the effects of land use activities on water quality in the coastal environment, including sedimentation. As there is a direct relationship between land use activities, fresh water quality and the water quality of the coastal environment, it is my view that community and iwi wai tapu values of the coastal environment need to be identified. I anticipate that iwi submitters will likely speak to this point.

Mahinga kai and human health for recreation

179. Human health for recreation is a compulsory national value in the NPSFM, with mahinga kai being an identified but not compulsory value. As notified, PC1 identifies that these values apply to Waikato and Waipā Rivers but not the lakes, wetlands or the coastal environment.

180. The NZCPS, through Policy 21 requires that were the 'quality of water in the coastal environment has deteriorated so that is having adverse effects on ecosystems, natural habitats or water based recreational activities...' it is prioritised for improvement through a range of mechanisms. The NPSFM identifies that one of the compulsory national values for water quality is "Human health for recreation". Being a compulsory national value, all waterbodies must be managed to achieve this value. The value itself, in Appendix 1 of the NPSFM outlines that matters that need to be taken into account for a "healthy waterbody for human use including:
- pathogens;
 - clarity;
 - deposited sediment;
 - plant growth (from macrophytes to periphyton to phytoplankton);
 - cyanobacteria; and
 - other toxicants".
181. To ensure that the Plan Change appropriately gives effect to the requirements of the NZCPS and NPSFM, I consider it is necessary to ensure that values relating to contact recreation and mahinga kai be identified and appropriately applied for all lakes, wetlands and the coastal environment. This relief is sought in the Director-General's submission [PC1-8533, PC1-8535].
182. The officer's report recommends, at paragraph 268, that the mahinga kai value be amended to include references to lakes and wetlands but does not include mention of the coastal environment. While this amendment may be appropriate for lakes given that lakes values have been identified in discussion with the community, again the same has not been done for wetlands or the coastal environment. In order for plan users to have a better understanding of the particular mahinga kai values of each FMU, it is my view that greater specificity is required than a blanket value that applies to the entire Plan Change area.

183. In the preamble of the NZCPS, the 'adverse effects of poor water quality on aquatic life and opportunities for aquaculture, mahinga kai gathering and recreational uses such as swimming and kayaking' are identified as one of the key issues facing the coastal environment. Policies 21, 22 and 23 of the NZCPS deal with the management of water quality in the coastal environment. In particular, Policy 21 requires that the quality of coastal water be improved where it has been degraded to the point that it is having significant adverse effects including on recreational uses and on existing uses such as shellfish gathering. Given the relationship between coastal water quality and fresh water quality, as recognised through Policy 4 of the NZCPS, the reference to the coastal environment in relation to mahinga kai and human health for recreation values in PC1 are appropriate.
184. Paragraph 225 of the s42A report accurately identifies that the Vision and Strategy for the Waikato River seeks to achieve water quality where the Waikato River is safe for people to swim in and take food from over its entire length (Objective K). I also note that Objective G seeks to recognise and avoid adverse cumulative effects and potential adverse effects of activities both on the Waikato River and within its catchments on the health and wellbeing of the Waikato River.
185. I note that for the first time in the values section of the Plan Change, the tributaries of the Waikato and Waipā Rivers are specifically mentioned in relation to the definition of mahinga kai values in PC1. As tributaries are not mentioned in relation to any other values but are specifically listed in reference to mahinga kai, I interpret that tributaries are not automatically included in any other intrinsic or use values identified in the Plan Change. I note the concern of Ms McArthur⁶⁰ in relation to the lack of management of water quality and freshwater values in tributaries. I also note that the project scope included 'all land and water bodies contained within the Waikato and Waipā River catchments' which includes tributaries.
186. Therefore, it is my view that in addition to expanding the identification of values to lakes, wetlands and the coastal environment, it is important

⁶⁰ Paragraphs 92-97

to identify the values of all tributaries to the Waikato and Waipā Rivers in order to give effect to the NPSFM and the requirements of the RMA. This approach aligns with a holistic catchment-based approach as directed by section C Integrated Management of the NPSFM. While I note the Director-General's submission has not specifically sought relief in relation to the identification of the values of tributaries, the submission does include a statement seeking that 'further, consequential or alternative relief to give effect to the relief sought in the General Submission and Submission Table'⁶¹ where needed.

187. I consider that recognition and provision for tributary values should form an essential part of the Plan Change due to the interconnected nature of tributaries with the rivers, streams, lakes, wetlands and the coastal environment that they feed and the large spatial and habitat extent of tributaries in the Plan Change area.

Transport and Tauranga waka

188. Transport and tauranga waka is an identified but not compulsory value of the NPSFM. As notified, PC1 identifies that these values apply to Waikato and Waipā Rivers but not the lakes, wetlands or the coastal environment.
189. The officer's report, at paragraph 226, recommends that the value be expanded to apply to 'lakes and rivers'. As with the other values identified above, I note that the officer's do not consider values of wetlands or the coastal environment as also sought in the Director-General's submission [PC1 – 8540]. In my view it is appropriate to recognise the transport link of rivers to the coastal environment.
190. Community and iwi values wetlands and the coastal environment for transport and tauranga waka need to be identified to ensure these are provided for in the setting of freshwater objectives, limits and targets.

Consequential amendment

191. Hononga ki te wai, hononga ki te whenua section of the Plan Change provides useful statements that provide context around the

⁶¹ Paragraph 63 of the Director-General's submission, Page 21 which I believe has not been given a submission number by the Council.

establishment of identity and sense of place through interconnections of land and water. In order to accurately reflect that rivers, streams, tributaries, lakes, wetlands and the coastal environment are all linked, I consider it is appropriate to amend this section to replace references to 'rivers' with 'rivers, streams, tributaries, lakes, wetlands and the coastal environment'.

Attribute identification

192. To understand the process used in PC1 and to identify the necessary water quality attributes relevant to the management of water quality in the Waikato and Waipā catchments, I have reviewed a report commissioned by the Technical Leaders Group entitled 'Water Quality Attributes for Healthy Rivers: Wai Ora Plan Change' (the attributes report)⁶².
193. I prepared the following diagram of my understanding of the process used, as outlined in the attributes report, to identify relevant attributes for water quality.

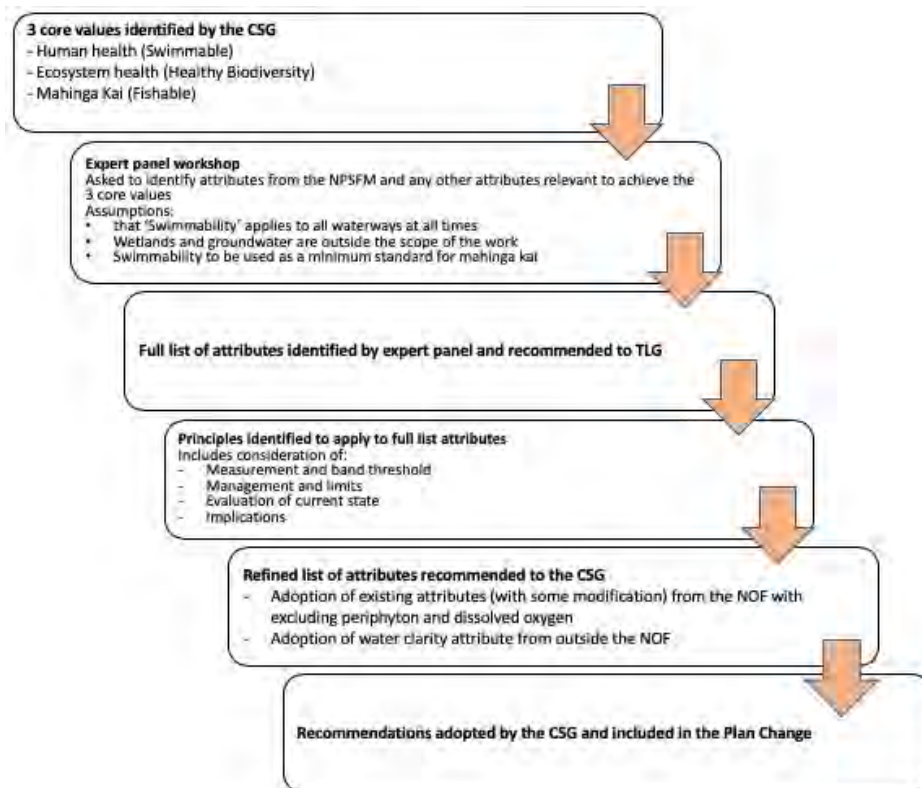


Figure 2 Process used to identify attributes for inclusion in PC1

⁶² Document #6154421

194. The following is a more detailed summary of the process as I understand it.

- 1) An expert panel workshop was convened by the TLG in 2015. The panel was made up of experts in aquatic ecology, mātauranga Māori, ecotoxicology and native biodiversity. These experts were asked to review the attributes from the NPSFM and identify any other attributes relevant to achieve three core values assigned by the CSG being 'Human health ("Swimmable")', Ecosystem Health ("Healthy Biodiversity") and Mahinga Kai ("Fishable")'.
- 2) Assumptions adopted for the expert panel process were that 'swimmability' applied to all waterways at all times of the year and that wetlands and groundwater are outside of the scope of the work.
- 3) The expert panel identified a full set of attributes as relevant to the three core values and made recommendations to the TLG based on these identified attributes.
- 4) Based on the 'scope' of PC1 being the management of nitrogen, phosphorus, sediment and faecal bacteria, the TLG applied a set of principles⁶³ for considering the inclusion of the attribute.
- 5) The principles applied to the full list of attributes by the TLG were:
 - Does the attribute provide a measure of the value?
 - Measurement and band thresholds
 - Are there established protocols for measurement of the attribute?
 - Do experts agree on the summary statistic and associated time period?
 - Do experts agree on thresholds for the numerical bands and associated band descriptors?

⁶³ I understand that the basis for these principles is from the NOF Reference Group who developed the attributes currently contained in the NPSFM.

6) Management and limits

- Do we know what to do to manage this attribute?
- Are the four contaminants (N, P, sediment and faecal microbes) direct drivers of this attribute?
- Do quantitative relationships link the attribute state to limits and/or management interventions to control N, P, sediment and faecal microbes?
- Evaluation of current state
- Is there data of sufficient quality, quantity and representativeness to assess the current state of attributes within Waikato FMUs?

7) Implications

- Can the social, cultural, economic and environmental implications of setting limits be assessed?
- Are we able to model scenarios for these attributes within the Healthy Rivers: Wai Ora timeframe?

8) The TLG applied these principles and then determined which of the attributes they considered appropriate to include in PC1. Essentially, what was recommended to the CSG was the adoption of the existing attributes from the NOF except periphyton and dissolved oxygen with some modification to the attributes to 'increase relevance to Waikato-Waipā catchment conditions'⁶⁴. Water clarity was the only non-NOF attribute identified as being within scope of the plan change and 'developed to the point where they can meet criteria for inclusion'⁶⁵.

195. I am concerned that the limited scope of the Plan Change to 'four contaminants' has been a significant influencing factor in determining which attributes were recommended by the TLG to the CSG for

⁶⁴ DOC# 6154421 Attribute report Recommendations Page 15

⁶⁵ IBID

inclusion with the Plan Change. Ms McArthur discusses her experience with the use of principles in developing attributes in the NOF and her concern about the process used to identify attributes in the Plan Change (paragraphs 83-84).

196. Rather than understanding what attributes were needed and where, to support the values and manage water quality in the catchments, the principles for including an attribute appear to have been heavily influenced by the limited scope of the 'four contaminants' and whether existing information on the attributes was available.
197. The principles applied to the inclusion of attributes has further refined the attributes to be included in the Plan Change from the list originally identified by the expert panel. As outlined by Ms McArthur at paragraph 85, the lack of consideration of values at sub-catchment scale and the full suite of attributes needed to support those values has resulted in 'attributes that could be highly relevant to supporting the values at the finer sub-catchment scale but have not been included in Table 3.11-1, and in many cases the water quality attributes and targets set (both short term and long term) are inadequate to provide for a good state of ecosystem health and thereby the full range of freshwater ecosystems, sustainable populations and communities of indigenous fish and threatened species in the tributaries themselves.'
198. I am not clear from reading the attributes report why wetlands and groundwater were considered to be outside the scope of the attribute setting work⁶⁶ particularly, when they were considered to form part of the scope of the Plan Change, as identified in the scoping report⁶⁷
199. In response to this, Ms McArthur identifies the need for additional attributes in Table 3.11-1 at paragraphs 113 to 134 of her evidence and her Appendix 2. She identifies the following attributes are necessary for the management of water quality in the Waikato and Waipā River catchments:

- Cyanobacteria

⁶⁶ Workshop process described on Page 5

⁶⁷ Section 2.1.1 What is in scope

- Deposited fine sediment
- Trophic state – periphyton
- Dissolved oxygen
- Temperature and pH
- Toxicants/metals
- Dissolved Inorganic Nitrogen
- Dissolved Reactive Phosphorus
- Macroinvertebrate community index (MCI)

200. These attributes were identified in the Director-General's submission [V1PC1- 1139] and were sought for inclusion in Table 3.11-1.

201. Dr Robertson also discusses in his evidence, at paragraphs 149-169 and identifies the complete lack of attributes to represent the values of wetlands in the Plan Change. As a result, he recommends the following additional primary water quality attributes for wetlands to be included in PC1:

- Total phosphorus
- Total nitrogen
- Sediment
- Hydrological regime (where altered hydrology contributes to or exacerbates water quality pressures)

202. Dr Robertson includes, as Appendix 5 of his evidence, a table for inclusion in the Plan Change which identifies the narrative targets for all wetlands in the Plan Change area. He also provides a table in Appendix 6 of his evidence which provides additional attribute targets specifically relating to the Whangamarino wetland. I have included both these tables in Appendix 1 to my evidence.

203. I understand that the tables recommended for inclusion by Dr Robertson are to be additional to the existing attribute table for rivers,

3.11-1 as some of the attributes within this table, such as water clarity, are also important for wetland systems such as the Whangamarino.

204. I note that Dr Robertson also acknowledges a lack of direction in the Plan Change for action to collate data on the current state of wetlands in order to develop numeric targets in future⁶⁸. Dr Robertson recommends that an additional objective be added into PC1 to recognise the need for additional work to be undertaken in setting numeric targets for wetlands. I have included this objective in Appendix 1 of my evidence.
205. Dr Phillips has addressed the approach by officer to retain the long-term lake water quality attribute targets without modification due to the size and difficulty of task to restore lake water quality⁶⁹. She provides evidential examples of where improvement of water quality is possible through examples for many of the lakes, at paragraphs 110-121 of her evidence. She concludes that the 'types of changes to meet the targets predicted in [Appendix I] of the DOC submission are within the realms of modelled results' and that these long-term targets could be 'readily aggregated to provide targets for FMUs derived using the lake classification method she recommends. I understand that Dr Phillips will provide further detail of this to the commissioners at the hearing.
206. The reporting officers appear to agree that periphyton should be included in Table 3.11-1, however, they note 'there is insufficient data available to set appropriate freshwater objectives for periphyton in the upper Waipā catchment'⁷⁰. As a result, officers do not recommend including this attribute in Table 3.11-1. Ms McArthur identified the need for periphyton attributes to apply to all hard-bottomed rivers and streams across the Plan Change area⁷¹.
207. Overall, it is my view that the attributes identified in the Plan Change as notified are inadequate to appropriately provide for the identified values in the Plan Change and that the additions recommended in the

⁶⁸ Paragraphs 138-139

⁶⁹ Paragraph 627

⁷⁰ Paragraph 537

⁷¹ Paragraphs 120-127

evidence of Ms McArthur, Dr Robertson and Dr Phillips are necessary to rectify this.

Objectives

208. There are two types of objectives that can apply to the management of freshwater. Firstly, there are general plan objectives. These can be holistic objectives directing environmental outcomes at a broad scale i.e. for an entire region. The other type of objectives are 'freshwater objectives', as defined under the NPSFM. It is possible that plan objectives and freshwater objectives can be one in the same. The NPSFM provides for narrative objectives at Policy CA2(e)(ii).
209. Section B4 of the officer's report addresses relief sought in relation to the objectives of PC1 while section B5 addresses submissions on targets and limits in Table 3.11-1. I support the clarification sought by the Director-General [PC1-8131] to better understand where the freshwater objectives for the FMUs within the Waikato and Waipā River catchments are located in the Plan Change. These objectives have a fundamental role in implementing the outcomes sought through the Plan Change for water quality, to recognise and provide for the identified values and in meeting the requirements of the NPSFM. As identified in my interpretation options considered in paragraphs 3-95 above, there is potential that the figures contained within Table 3.11-1 are freshwater objectives for the sub-catchments or alternatively, that Objectives 1, 3, 4 & 6 which reference the Table are the narrative freshwater objectives.
210. At paragraph 399 of the officer's report, officers acknowledge that there are differing views on what constitutes a freshwater objective, and welcome evidence on that matter from submitters, particularly in light of the other changes suggested by the officers.
211. Officers outline that 'the freshwater objectives that correspond to the values identified for each FMU are outlined in Tables 3.11-1 and 3.11-2...'. However, officers also refer to Objectives 1-6 of the Plan Change as being freshwater objectives. As a result, I am not clear whether both narrative objectives and the targets and limits for water quality attributes in the tables are intended to all be freshwater objectives.

212. The NPSFM defines a freshwater objective as 'describes an intended environmental outcome in a freshwater management unit'. Policy CA2(f) of the NPSFM outlines the matters to be considered throughout the process of setting freshwater objectives. In my view, this direction is useful in deciding on appropriate freshwater objectives.
213. As I have identified above in the discussion on values, it appears that there are currently gaps in understanding the community values for wetlands and for the coastal environment influenced by freshwater. There are also challenges with the approach to values identification at effectively Plan Change-wide scale rather than more specifically to the sub-catchment level. This challenge extends to a difficulty in setting meaningful freshwater objectives to achieve water quality outcomes that are appropriate to the waterbodies they are intending to manage. Resolving this challenge is manageable with respect to rivers through changes to Table 3.11-1 as outlined in the evidence of Ms McArthur.
214. Without a good understanding of the values of wetlands and the coastal environment, it is difficult to establish meaningful freshwater objectives to achieve water quality outcomes for these waterbodies that aligns with the NPSFM.
215. I note that at paragraph 312 of the officer's report, officers agree that there are 'opportunities to amend the objectives so that they better reflect the outcomes sought in a more clear and concise manner' and that there may be opportunity to adjust the wording of objectives to 'make it more 'plain-English''. I am not certain from the officer's report or markup what changes to the objectives are proposed as a result of these comments.
216. I also note that the s42A markup version of the plan shows that officers have recommended deleting the section of the plan which outlines the reasons for adopting each objective. I am not clear from the s42A report what the reasoning for deleting this text is.
217. I consider that many of these accompanying statements provide useful background for plan users and decision makers regarding the need for the objective. This is particularly important, in my opinion, in the case of Objective 6 relating to the Whangamarino Wetland as it recognises

its international significance and the complexity of this wetland system. I therefore recommend retaining Objective 6 and the reasons for adopting the objective in the Plan.

New Objectives sought

218. The Director-General's submission sought that a number of additional objectives be added into the Plan Change including objectives to:

- Safeguard of ecosystem health and the health of indigenous species [PC1-10521]
- Recognise and provide for the values of freshwater fish species identified in Appendix C of the Director-General's submission [PC1-10521]
- Recognise that all sediments and nutrients in the region ultimately accumulate in the Waikato Delta and Estuary, and which seek restoration of healthy ecosystems from the mountains to the sea, including estuaries. [V1PC1-997, V1PC1-1701]

219. At paragraph 469 of the s42A officer's report, officer's state that their view is any new objectives sought by submitters are either already provided for within the PC1 or within the operative WRP with specific reference to Objective 3.1.2, or are better as implementation methods.

220. Objective 3.1.2 is the sole objective of the Water Module in the WRP and addresses how water bodies should be managed and lists what the management of water bodies should be achieving. While this identifies some of the topics raised in the Director-General's submission, it does not achieve the outcomes sought in the proposed new objectives.

221. 'Safeguarding the life-supporting capacity of ... water... and ecosystems' is a fundamental requirement in the achievement of the sustainable management of natural and physical resources, outlined in s5 of the RMA. It is also central to giving effect to the NPSFM, as outlined in Objective A1 and achieving the purpose of the RMA.

222. I have considered the meaning of the term 'safeguard' in order to better understand the direction that this part of s5 is giving in relation to the

life supporting capacity of water and ecosystems. The Concise Oxford Dictionary defines the verb 'to safeguard' as 'to protect with a safeguard'; 'a safeguard' meaning 'a measure taken to protect or prevent'. 'Protect' in turn means 'to keep safe from harm or injury'.

223. It is my opinion that in order to safeguard the life-supporting capacity of water and ecosystems, as required by the Act, these systems need to be protected in a state that means they are capable of supporting life. I do not consider that any of the objectives proposed in PC1, nor objectives in the operative WRP are sufficient to ensure that this protection occurs throughout the Plan Change area.
224. I note that there is specific direction contained in the RPS through Objective 3.14 which requires that the mauri and identified values of fresh water bodies is maintained or enhanced, including by:
- 'safeguarding ecosystem processes and indigenous species habitats';
 - 'safeguarding the outstanding values of identified outstanding freshwater bodies and the significant values of wetlands';
 - 'safeguarding and improving the life supporting capacity of freshwater bodies that will determine how they will be managed'.
225. This objective also recognises that there will be 'variable management responses required for different catchments of the region'. Policy 8.3 of the RPS directs that in order to manage effects of activities to maintain or enhance the values of fresh water bodies and coastal water, a reduction in sediment from human based activities is required, and an overall reduction in identified contaminants.
226. Ms Kettles identifies in her evidence that sedimentation at the Waikato River Estuary is a known issue⁷². She identifies that turbidity in the estuary was reported in the State of the Environment Report as being 'unsatisfactory' 75% of the time and that seagrass is a "good indicator species for impacts from upstream activities on the health of

⁷² Paragraph 18

estuaries”⁷³. Ms Kettles has provided a map as Appendix A of her evidence which illustrates the decline in seagrass species from 1.8ha to 0.8ha in the period from 2002 – 2007.

227. Therefore, in order for the Waikato Regional Plan and PC1 to give effect to the requirements of the RMA, the NPSFM and the RPS, it is my view an objective is required which directs focus to the protection of the ability of water and ecosystems to support life. This requirement is supported by the evidence of Ms McArthur, Ms Kettles, and Dr Phillips.
228. Objective E of the Vision and Strategy requires that a ‘integrated, holistic and coordinated approach to management of the natural, physical, cultural and historic resources of the Waikato River’ is taken. This is also reflected in Objective C1 of the NPSFM which seeks to ‘improve the integrated management of fresh water and the use and development of land in whole catchments, including the interactions between fresh water, land, associated ecosystems and the coastal environment’. This is also reflected in Policy 4 of the NZCPS where the integrated management of activities that affect the coastal environment needs to be provided for, and that particular consideration is given when ‘land use activities affect, or are likely to affect, water quality in the coastal environment and marine ecosystems through increasing sedimentation’.
229. Ms Kettles identifies the need for improved integration in freshwater and coastal management in order to “reduce risk to, and enhance the health of the Waikato River Estuary (river mouth and delta)”⁷⁴. She identifies, at paragraph 27, that the current separate monitoring of freshwater and estuarine systems is report on separately and that this reporting should be integrated to provide for more meaningful management of these systems.
230. While the operative WRP seems to address integrated management in relation to water quantity and the management of stormwater⁷⁵ and wastewater⁷⁶, it does not appear to identify the importance of integrated

⁷³ Paragraph 21

⁷⁴ Paragraph 6

⁷⁵ At Implementation Method 3.5.11.2

⁷⁶ At Implementation Methods 3.10.4.8, 3.5.7.1

management in relation to water quality. I consider that in order to ensure that these documents are appropriately given effect to, PC1 should include an objective which recognises this requirement and reflects the necessary protection of identified community values throughout the catchment.

231. The Director-General [PC1-10521, V1PC1-997] also sought additional recognition of wetlands and in particular, the Whangamarino Wetland which I address in further detail below.

Objectives 1 and 3

232. Objectives 1 and 3 of PC1 address the need for both long term targets (80-year) and short term ‘targets’ (with no specified timeframe for achievement) for water quality.
233. I am supportive of the intent of the Objective 1 to set long term targets for water quality improvements to be achieved in 80 years. However, I also acknowledge that there are challenges surrounding how and whether these targets will be achieved. In my view the wording of the objective could be revised as requested in the Director-General’s submission [PC1-105350 to focus on the achieving the 80-year targets by managing the input of all discharges.
234. I recommend amendments to Objective 1 to reflect a positive focus on achievement of the targets through the management of discharges as outlined in Appendix 1.
235. I disagree with the amendment to the objective recommended by officers⁷⁷ to include the reference to long-term water quality targets as ‘water quality states’ in response to relief sought by submitters. There is no definition for ‘water quality states’ proposed, nor does one exist in the NPSFM.
236. I consider that the NPSFM already provides sufficient terminology to reflect when a waterbody or FMU meets water quality targets. The NPSFM outlines that a limit ‘is the maximum amount of resource use available, which allows a freshwater objective to be met’ and that a

⁷⁷ Paragraph 335

target is effectively a limit that isn't being met yet, and that has a future timeframe for when the target must be achieved.

237. The NPSFM also defines an attribute state as 'the level to which an attribute is to be managed for those attributes specified in Appendix 2'. Given that this definition only applies to attributes in Appendix 2 of the NPSFM, I consider it is more appropriate to refer to limits and targets in the table and through references in the objectives to avoid confusion.
238. Where a sub-catchment meets a water quality target for a particular attribute, that target becomes the limit for that attribute in the sub-catchment. This limit must then be at least maintained as this is the level that is identified as being the maximum amount of resource use available, or the maximum amount of the particular attribute/contaminant, that can occur in the sub-catchment to achieve the freshwater objectives.
239. As a result, in my view, there is no need to introduce a new term for this such as the term 'water quality state' suggested by some submitters and accepted by officers. Instead, I recommend that an appropriate amendment to this objective and subsequent objectives referencing Table 3.11-1 and to Table 3.11-1 (and any necessary consequential amendments throughout the Plan Change) is to refer to the water quality attributes set in table 3.11-1 as 'limits/targets' to account for the waterbodies that are meeting the level set for the attribute (the limit) and for those that need to work toward achieving the level set for the attribute by a specified timeframe (the target).
240. In my view it is unnecessary for the objective to refer only to the discharge of nitrogen, phosphorus, sediment and microbial pathogens as it currently does. As I have stated above, the limited scope is limited to the consideration of only these four contaminants, but this does not address the effects on water quality from the full range of contaminants. As a result, I recommend deleting these references.
241. As written, Objective 3 and the water quality attribute states in Table 3.11-1 for the 'short-term' have no time-based component and are therefore not targets as defined by the NPSFM. I consider there are at least two options to address this. One, is that the short-term water

quality attribute states are fixed for achievement within a defined timeframe i.e. 10 years, and therefore they become NPSFM targets and then once achieved will operate as limits. Alternatively, an additional table could be included in the Plan Change which contains the details of 'guidelines' for water quality improvements i.e. what is currently proposed in the short-term columns of the table.

242. It is my recommendation that the plan include short term limits/targets. It is my view that short term limits/targets are an important way for PC1 to signal that improvements in water quality are necessary and required now. As the officer's report and the Plan Change itself allude to, it is going to take a long time for changes in water quality to be realised but there is direction from the Vision and Strategy together with other higher-level documents that steps towards that change need to start now.
243. To achieve this, I consider that Objective 3 requires amendment to ensure that the short-term water quality attribute states become targets with a timeframe for achievement for any sub-catchments where this level of attribute state is not already achieved, or limits for those where this level is achieved.
244. I note that the Director-General's submission [PC1-10540] was supportive of this objective as a 'first step in improving water quality' however I believe that this position of support resulted from the initial understanding that the short term water quality attribute states in Table 3.11-1 were short term, time bound targets to be achieved within 10 years.
245. I also disagree with the amendments to this objective recommended by officers to refer to water quality attribute states rather than water quality limits and targets. My disagreement is the same as I have outlined in paragraphs 235- 237 above in relation to Objective 1.
246. I am supportive of the amendment to include reference to 'diffuse and point source' discharges as sought as part of the Director-General's submission [PC1-10537]. I consider this provides additional clarity about the level of management required. I also consider that as the range of contaminants from both diffuse and point sources is wider than

the 'four contaminants', it is appropriate in my opinion to delete reference to nitrogen, phosphorus, sediment and microbial pathogens in the objective.

247. My recommended amendments to Objective 3 to require short-term targets, for achievement in 10 years, from the date of the operative Plan Change, which I have assumed will be some time in 2020. This reflects the necessary signal that changes are required now, in response to the acknowledgement by officer's and in the Plan Change that this problem is going to take a long time to resolve.

Objective 2

248. The focus for Objective 2 is the economic benefit to the Waikato and Waipā communities from the restoration and protection of water quality through PC1 and that this economic benefit will enable people and communities to continue to provide for their social, economic and cultural wellbeing.
249. I consider that the focus of this objective should be revised to ensure that it recognises all of the benefits associated with improvements to water quality in the Waikato and Waipā catchments. This is supported by the relief sought at PC1-10537 in the Director-General's submission. In my opinion these benefits include social (such as safe swimming, fishing and boating), cultural and spiritual (such as mahinga kai gathering and wai tapu) as well as significant environmental benefits (such as ecosystem health and protection of aquatic and coastal habitats and species).
250. While I acknowledge that the objectives and policies of the Regional Plan are intended to be read together, there do not appear to be any other objectives within the operative Regional Plan that recognise the range of benefits that can be experienced from improved water quality.
251. I consider that amendment to the objective to recognise all benefits is a better reflection of the direction from the Vision and Strategy which recognises all these matters as benefits arising from the restoration and protection of the health and wellbeing of the Waikato River.

Objective 4

252. I consider that Objective 4, as notified provides guidance on how water quality improvements will be achieved, and not an outcome statement of what is to be achieved. As such, it is my view that the wording of Objective 4 more closely aligns with the wording of a policy.
253. I do not consider that Objective 4, as notified, provides certainty to plan users and decision makers about what is to be expected with the 'staged approach to change'. I note that officers recommend a change to the objective which removes the word 'changes' and replaces it with a staged approach to 'reducing contaminant losses'. In my view, this wording provides greater certainty about the focus of the objective.
254. When reading (a) and given that the existing short-term values in table 3.11-1 are not targets, it is unclear to what extent 'considering the values and uses' is required. I disagree with the amendment in (a) to remove 'targets' and replace this with 'states'. As explained in my evidence above (paragraph 235) the reference to water quality targets should include 'limits' to recognise the instances where water quality attributes for a water body are achieving the short-term and 80-year targets.
255. I also disagree with the amendment recommended by officers to remove reference to the 'values and uses' when taking action to achieve water quality limits/targets. Without the reference to the values in this objective, the context of 'taking action' is not clear. Ultimately, the action required in improving water quality is required to achieve the values of the waterbodies and FMUs. If the objective is to be retained, I recommend that the wording 'values and uses' should also be retained.
256. Further uncertainty for plan users and decision makers is introduced through (b) where it is mentioned that 'further contaminant reductions' will be required. I am not clear what the reference to 'further' reductions is referring to, given that as notified there are no short-term targets for water quality improvements, nor are there any contaminant reduction requirements currently outlined in the Plan Change for the short term. It is also unclear what the objective is seeking to achieve by stating that changes will be required in future without identifying what the changes

are or will be, how they might be implemented and who might be affected by such changes.

257. I note that officers have recommended removing part of (b), but I do not consider that these changes provide any greater certainty for plan users and decision makers about the 'further contaminant reductions' as outlined above.
258. The Director-General sought that the uncertainty created by the Objective be rectified [PC1-10542].
259. Overall, I am concerned that the lack of direction provided to plan users and decision makers by Objective 4 and the fact that it reads as a policy rather than an objective, result in greater uncertainty and disruption to the community than if it was removed from the Plan Change entirely. I note that officers have considered deleting the objective in its entirety at paragraph 417 of their report and I agree with this recommendation.

Objective 5

260. I am supportive of the intent of Objective 5 to provide for the co-management of the Waikato and Waipā River catchments with iwi. I consider however that clarification needs to be provided for in (b) to understand what is meant by 'impediments to the flexibility of use... are minimised'. I note that the reasons for adopting the objective outline that '...Historic impediments included customary tenure in the nineteenth century, public works, rating law, Te Ture Whenua Māori Act, and confiscation'. In my opinion, this is particularly important given the officers are recommending the removal of the section of the Plan Change where the reasons for adopting the objective are outlined. I am also not clear whether the content of (b) is in fact a matter over which the regional council has control without understanding the nature of the impediments being referred to.
261. The submission from the Director-General [PC1-10545] outlines the need for the objective to be amended to recognise and provide for intrinsic values and in particular, the matters identified in s5 and 6 of the RMA. The reason for this relief is to ensure that these values are not considered as impediments under (b). I agree that additional

wording would provide greater certainty for plan users and decision makers and include a recommended amendment in Appendix 1.

262. Officers appear to delay the evaluation of this objective and other related matters (at Paragraph 432) stating that the 'submission points relate to the issue of development of Māori land... these matters will be addressed more fully and cohesively in Section C2...'. I am not clear whether this deferral will enable changes to be made to Objective 5 and I consider that it is appropriate to initiate the necessary changes to the objective now and recommend amendment to the objective in Appendix 1.

Objective 6

263. The Director-General is supportive of the reinstatement of Objective 6 relating to the management of the Whangamarino wetland. I note that officers consider that Objective 6 is a duplicate of Objective 1 and 3 and recommend that this objective could be deleted or that the objective as notified remain unchanged.
264. I agree with the statement of Dr Robertson at paragraphs 126-132 of his evidence, where he seeks that Objective 6 not be 'replaced' by Objective 1 and 3 due to the greater level of protection required for the Whangamarino Wetland than will be achieved through the river-focussed targets contained in Table 3.11-1.
265. I consider that Objective 6 can be amended to reflect the need for integrated management in the protection of the Whangamarino Wetland, and to refer to the new tables of Whangamarino Wetland targets proposed by Dr Robertson at Appendix 6 of his evidence. My recommended amendments to Objective 6 are included in Appendix 1 of my evidence.
266. I provide a summary table as Appendix 4, which provides an analysis of the all objectives as amended by officers and of my recommended amendments. This includes the new objectives I have recommended be added, analysed against a set of criteria to help determine the appropriateness of the objectives.

LIMITS/TARGETS FOR IMPLEMENTING PC1

267. The approach taken in PC1 by the CSG is to stage the full implementation of the Vision and Strategy by setting both short-term and long-term goals. The s42A officer's report identifies, at paragraph 308, that the 2096 goal of achieving the Vision and Strategy is likely to be 'costly and difficult' while at paragraph 13, the officers consider that to achieve the 80-year water quality targets in PC1 '... will require technologies or practices that are not yet available or economically feasible...'. Officer's also state that '... effects of the actions and changes on the land may not be seen as water quality improvements in the short term'⁷⁸.
268. While I agree with officers that changes in water quality will take some time to be realised, it is my view that the approach taken in Plan Change 1 seeks to do very little in the short term, particularly as the Plan Change appears to not impose actual short-term targets for the improvement of water quality.
269. The section 'Full achievement of the Vision and Strategy will be intergenerational', at paragraph 2 at the beginning of the Plan Change, discusses the staged approach to the change required to restore and protect water quality in an 80-year timeframe. It identifies that the first step is to 'put in place and implement a range of actions in a **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' (emphasis added).
270. I interpret from this section of the Plan Change that actions to achieve 10% improvement in water quality are required in a 10-year period. I understand that this same interpretation led the Director-General in his submission [V1PC1- 1006] to seek clarification in Table 3.11-1 of the dates that the targets are to be met i.e. seeking that short term be replaced with a date 10 years from the date of the Plan Change being made operative.

⁷⁸ Paragraph 15, s.42a officer's report

271. However, this is at odds with the 'Explanatory note to Table 3.11-1' which sits within section 3.11.6 of the Plan Change. Here, the Plan Change outlines that the achievement of the attribute targets in Table 3.11-1 will be 'determine through analysis of 5-yearly monitoring data' and that due to 'variability in water quality and the variable response times of the system to implementation of mitigation' that the water quality attributes are 'not observed for every attribute in the short term'.
272. Officers discuss submissions seeking a date for achieving the short-term targets in Table 3.11-1 at paragraph 557 where they recommend that no date be added given that the targets are likely to be reached at variable times. Yet at paragraph 102, officers refer to the acknowledgement from the CSG that actions need to begin straight away 'along with an explicit set of short-term, or 10-year, targets to set that immediate direction of travel'.
273. The NPSFM defines a target as 'a limit which must be met at a defined time in the future' (applying in the context of over allocation). Policy A2 specifies that where an FMU does not meet the freshwater objectives, council are required to specify 'targets and implement methods... to assist the improvement of water quality in FMUs, to meet those targets, and within a defined timeframe'.
274. What I now understand of PC1 is that no short-term targets have been set for water quality improvement. Instead the Plan Change requires unspecified 'actions' are put in place to work toward reductions in the discharge of contaminants. The Plan Change then sets water quality targets for an 80-year timeframe which the officers have stated will rely on technologies or practices that are not yet available or economically feasible to be achieved.
275. This raises questions for me about what it is that the Plan Change will actually achieve and provides little if any certainty for plan users and decision makers in its current state, about what the next 10 years looks like. This is particularly of concern when officers have recognised, at paragraph 102, that 'continuing existing practices will lead to further water quality decline – so continuing with the status quo is not a viable option' nor does the current approach give effect to the requirement of Objective h of the Vision and Strategy which outlines 'the recognition

that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities’.

276. Dr Phillips identifies that the current plan change ‘does not provide a coherent or holistic management framework for lakes’⁷⁹ and as a result, it ‘provides little direction and certainty regarding their future management’⁸⁰. Ms McArthur also identifies that the lack of short-term targets in the Plan for rivers means that ‘the Vision and Strategy and provision for the values of the Waikato and Waipā Rivers is jeopardised’⁸¹. Dr Robertson has identified that in the absence of a Whangamarino Wetland FMU “the absence of attributes and targets for wetlands is considered a critical gap”⁸².
277. Plan Change 1 as proposed, in my view, does the opposite of the direction from Objective H. It does not require short term changes to water quality and means that existing activities will continue to degrade the water quality of the Waikato and Waipā catchments, particularly in the tributaries. This is also against the clear direction in the NPSFM to ensure that overall quality of fresh water within an FMU is maintained or improved⁸³. Policy A1 of the NPSFM requires that regional council change regional plans to ensure that plans ‘establish methods (including rules) to avoid over-allocation’. ‘Over-allocation’ is defined in the NPSFM to apply to both water quality and quantity and is considered to be when a resource has either been allocated to users beyond a limit, or is being used to a point where a freshwater objective is no longer being met.
278. As I have outlined above, it is not clear from the Plan Change what the freshwater objectives are. Therefore, it is difficult to understand when over-allocation is occurring based on the achievement of objectives as the objectives themselves are not clear.
279. As I have recommended at paragraph 242, the Plan Change should include short term limits/targets for rivers, lakes and wetlands. I consider that short term limits/targets are an important way for PC1 to

⁷⁹ Paragraph 68

⁸⁰ IBID

⁸¹ Paragraph 23

⁸² Paragraph 149

⁸³ Objective A2

signal that improvements in water quality are necessary and required now.

New short-medium term target

280. I note that the Director-General's submission {v1PC1-1006} also seeks that a further interim target for 20 years be included in the Plan. The submission seeks that a 20% improvement in water quality toward the 80-year targets be set for this interim target.
281. I am supportive of adding in a further short-term term target or targets for water quality. It is essential, in my opinion, for plan users and decision makers to look beyond the life of this plan to resolving water quality issues in the Waikato and Waipā River catchments. Anything beyond a 10-year target is beyond the 'life of the plan' based on the current requirements in the RMA⁸⁴ which requires that a review of provisions in any plan must be undertaken every 10 years. Given the scale of the water quality issues facing the Waikato and Waipā River catchments, I can only see benefits in providing greater certainty to plan users and decision makers about the targets for water quality into the future.
282. It often takes a number of years for a plan review to occur and during this time, as currently written, there is no short-medium term target to guide plan users and decision makers and to ensure momentum for water quality improvements continues with the 80-year targets being relied on. In my view, the benefits of certainty and clear guidance to plan users and decision makers on projected water quality improvements that comes from setting targets outweighs the uncertainty and lack of direction that comes from not including them.
283. I also acknowledge that any targets set can be reviewed each time a review of provisions is required to comply with the statutory framework. This can ensure that any targets set are still applicable and accurate to the problem to be resolved, and to accommodate any advances in understanding or technology that may become available.

⁸⁴ Section 79

284. As outlined in the evidence of Dr Phillips, the targets within table 3.11-1 for lakes do not include any short-term targets for improvement of lake water quality. As Dr Phillips explains ‘clear short-term/intermediate [term] lake water quality attribute targets should be set in PC1 to reflect the fact that response time to mitigations in lakes is much greater than in rivers’⁸⁵. She further outlines how large changes are required, due to the response time for lakes and that ‘frequent and faster changes will result in a faster response’. Dr Phillips states that it is “far more cost effective to proactively maintain water quality... rather than try and restore lakes...”⁸⁶.
285. Paragraph 529 of the officer’s report outlines that officers consider additional targets are best deferred to future planning processes and reject the inclusion of any additional interim targets. There is no justification of the officer’s position on this matter.
286. Dr Phillips is supportive of the relief sought by the Director-General [PC1-10540] to set short term targets for lakes that achieve a 20% improvement in lakes water quality in the first 10 years of the Plan and to support this, she will present an analysis of what these targets should be at the hearing⁸⁷.
287. As a result, I recommend that additional interim targets for rivers and wetlands, such as the 20% improvement in water quality in 20 years as suggested in the Director-General’s submission, is a useful target to implement through this Plan Change to ensure that progress on improving water quality is focussed. I also recommend the inclusion of short-term targets which seek to improve water quality in lakes by 20% of the 80-year target by 2030.

OUTSTANDING WATER BODIES

288. Objective A2 of the NPSFM requires that overall quality of freshwater within an FMU is maintained or improved while “protecting the significant values of outstanding freshwater bodies...”.

⁸⁵ Paragraphs 122-125

⁸⁶ Paragraph 59

⁸⁷ Paragraph 125

289. Policy 8.2 of the RPS requires that the outstanding values of fresh water bodies, that result in a water body being identified as an outstanding fresh water body and significant values of wetlands, are protected and where appropriate, enhanced. A number of implementation methods in the RPS provides direction on achieving the policy including:
- 8.2.1 which requires that a values setting process is used to identify the outstanding water bodies and the significant values of wetlands, including those water bodies identified in sections 8A & 8B.
 - 8.2.2 which provides a list of the matters that regional plans shall provide for in managing outstanding fresh water bodies and the significant values of wetlands.
290. Policy 5, section 3.2 Management of Water Resources of the WRP appears to be the only mention of outstanding water bodies. This reference identifies those water bodies in the 'Natural State Water Class' as being 'outstanding waterbodies and important habitats because they are unmodified or substantially unmodified by human intervention'. These waterbodies are mapped on the 'Water Classification' maps available on the Council's website⁸⁸ but don't appear to be identified by name, only by number.
291. The Director-General's submission [PC1-10504, V1PC1-1139] identifies a number of sites that he identifies should be considered as outstanding water bodies and therefore where additional protection is warranted including:
- Waikato River river mouth and delta
 - Whangamarino Wetland
 - Waitomo Caves and River
 - Lake Rotokotuku

⁸⁸<https://waikatomaps.waikatoregion.govt.nz/Viewer/?map=11b87e5bebb14ca2a8b4a39ef8be87cb>

- Waikato Peat Lakes.

292. Officers appear to have not addressed outstanding water bodies, or the relief sought by the Director-General in the s42A report. It is therefore not clear whether officers have given any consideration to this matter and to the requirements of higher-level documents in regard to identifying and protecting the values of outstanding water bodies.
293. Ms McArthur provides some background on Outstanding Water Bodies and references the fact that there is currently no standardised method for determining whether a river in New Zealand is outstanding. Further, she identifies that regional or national ecological values and the potential of these ecological values to be irreparably diminished if they are not protected are important to consider in identifying outstanding water bodies.
294. I have prepared a brief table, attached as Appendix 2, which lists each of the waterbodies identified in the Director-General's submission and provides a summary of some existing information on values of these waterbodies. It is my view that this provides enough information to suggest that all the sites should be further considered for recognition in the plan as an outstanding freshwater body.
295. The information I was able to find on Lake Rotokotuku was limited and therefore other information is likely to exist that may provide further detail on the significance of values associated with this fresh water body.
296. Dr Phillips, at paragraphs 133 – 140 of her evidence provides some background to the importance of the Waikato Peat Lakes and Lake Rotokotuku and her support for their inclusion in the Waikato Regional Plan as outstanding fresh water bodies. Table 7 of her evidence provides further information of the characteristics of fresh water bodies where the Council have identified high value in waterbodies which contribute to their status as outstanding water bodies in Dr Phillips view.
297. Dr Robertson, at paragraphs 68-76 of his evidence, identifies the factors that in his view, contribute to the Whangamarino Wetland being justified for recognition as an outstanding water body. Dr Robertson raised three key reasons for his view as:

- a significant decline in wetland values (at a national and international scale) would result if the natural character or ecosystem health of Whangamarino were diminished. This decline is likely to be irreversible;
- the wetland is an internationally significant site for the protection of nationally critical threatened species, such as the Australasian Bittern;
- large areas of the sensitive raised bog remain in relatively pristine condition (good water quality, indigenous dominance, natural ecological processes) and it is one of the best global examples of a restiad raised bog.

298. Based on the above, and the information contained in the table attached as appendix 2 to my evidence, I consider that the Whangamarino Wetland appears to be justified as an outstanding water body and that the significant values of this wetland system need to be protected in accordance with Objective A2 of the NPSFM.

WETLANDS

299. The officer's report, at paragraph 311, outlines that 'the management of wetlands is already provided for in Sections 3.1 and 3.7 of the operative WRP' or through Objective 6 of PC1. Officers conclude that no other objectives are needed and that amendments to protect wetlands generally are outside the scope of PC1. I note that this appears to not align with the scoping report which 'includes measures that do not specifically control discharges, but aim to mitigate the effects of discharges (i.e. riparian and wetland management)⁸⁹.

300. It is also noted by officers that a review of the existing regional plan wetland provisions is commencing however there are no further details on when this is happening or what the scope of the review is.

301. Section 3.1 of the operative WRP relates to Water Resources where wetlands, together with lakes and rivers, are acknowledged for their

⁸⁹ Content scope Page 4

scenic and aesthetic qualities that contribute to character of the Waikato Region. A number of the issues of this chapter identify effects on wetlands including:

- the degradation of the mauri of water that can occur as a result of many things, including the draining of wetlands and the resulting effects of this on the relationship of tangata whenua as kaitiaki
- the effects on the mauri of water resulting from contaminants
- the effects of shallow ground water takes on water quality and levels in wetlands
- drainage effects on wetland water levels

302. As a result of these issues, the plan identifies as part of the Objective in 3.1.2 that water bodies be managed in a way that ensures:

- An increase in the extent and quality of the Region's wetlands
- The management of non-point source discharges of nutrients, faecal coliforms and sediment to levels that are consistent with the identified purpose and values for which the water body is being managed.
- The natural character of ... wetlands... and their margins is preserved and protected from inappropriate use and development
- Concentrations of contaminants leaching from land use activities and non-point sources do not reach levels (in shallow ground water and surface waters) that present significant risks to human health or aquatic ecosystems.

303. The plan then goes on to provide policies and rules (in section 3.3 and 3.4) which seek to manage the taking and use of water and the effects on wetlands. Policies in 3.5 relating to discharges also provides some guidance on managing discharges to ensure that there are no significant adverse effects on wetlands.

304. Section 3.7 is a section in the plan on wetlands and includes policies and rules relating to the control of land drainage that could affect wetland areas and includes a table of the wetlands in the Waikato Region and identifies their ecological values.
305. The operative WRP contains some consideration of the effects of diffuse discharge of contaminants and that these should not present significant risks to human health or aquatic ecosystems. In addition, there is a table that includes the identification of ecological values of wetlands⁹⁰ (directly related to a discretionary rule controlling the creation of new drains and the deepening of drain levels).
306. I disagree with officers that the WRP sufficiently already manages wetlands. There is no consideration in the WRP of the effects of contaminants and degraded water quality on wetlands or on their ecosystems, habitats, natural character or natural functions. In order to truly apply a holistic 'mountains to the sea' approach to managing water quality in the Waikato and Waipā catchments, wetlands need to be part of the picture. It is my view that the current WRP provision are not sufficient to give effect to the requirements of the Vision and Strategy, the NPSFM or the RMA.
307. Dr Robertson also addresses the current lack of wetland protection in the operative plan in his evidence where he notes that freshwater wetlands 'exist because of the fresh water they receive from surface water, groundwater or rainfall'⁹¹. He also notes that 'freshwater sources, including runoff are the primary vector for water contaminants including nutrients and sediments'⁹².
308. I therefore consider it is critical that land use activities and discharges be managed, taking into account the significant values of wetlands, and consider that this is not already provided for through the Plan Change.

⁹⁰ Table 3.7.7. Table of Wetlands in the Waikato Region for Rule 3.7.4.6

⁹¹ Paragraph 37

⁹² IBID

309. In my view, the recommendations by Dr Robertson, to include attributes and targets for wetlands, is a vital part of ensuring that these important waterbodies are protected.

Recognition of the Whangamarino Wetland

310. The Director-General's submission [PC1-10504, PC1-10536, V1PC1-1006, V1PC1-997, PC1-10521] also sought additional recognition, through objectives and a specific FMU, of the importance of the Whangamarino Wetland, and the significant values of all wetlands. Objectives were sought in the Plan Change to achieve the following:

- Recognise the significant values of all wetlands
- Recognise the value and significance of the Whangamarino Wetland as a whole wetland system, comprising marsh, swamp, fen and bog wetland types and ensure that these values are maintained and enhanced, and that overall quality of freshwater is improved
- Give effect to the NPSFM in recognising and protecting the significant values of wetlands and overall quality of freshwater is improved
- Recognise the importance of managing both the concentration of contaminants and the quantity of water that is discharged into the Whangamarino Wetland and wetlands generally by setting targets for water quality that take account of both the natural and controlled flows.

311. The s42A officer's report states that the management of wetlands is addressed through Sections 3.1 and 3.7 of the operative WRP or through Objective 6 of PC1 and that no other objectives are needed.

312. Dr Robertson has drawn on his significant understanding of wetlands and provides evidence to support the need for integrated catchment management to include wetlands. This includes the requirement for clear objectives, attributes and targets in the plan change that deal specifically with the requirements of wetlands.

313. I note that part of this integration requires the recognition of the Pungarehu Canal Stream as identified in the Director-General's submission [V1PC1-1006]. Dr Robertson outlines, at paragraph 147 of his evidence, that there is a substantial flow of water from Lake Waikare to the Whangamarino Wetland via the Pungarehu Canal. He considered it is critical a riverine monitoring site be defined to monitor this flow. He also recommends, at paragraph 161, that a water clarity target be provided for this site. I have included such a target in Appendix 1 to my evidence.
314. I also note that the Director-General's submission [V1PC1-1006] seeks that the Pungarehu Canal be included as a priority 1 sub-catchment in Table 3.11-2. Officers have acknowledged the relief sought by appear not the have addressed it in the s42A report and have not recommended any changes as a result. I recommend that this amendment be made given the significance of this water body to the Whangamarino Wetland.
315. As a result, I have recommended new objectives and amendment to existing objectives to the plan, outlined in Appendix 1.

LAKES

Prioritisation of lakes

316. Table 3.11-2 provides a list of sub-catchments showing their priority for improvement. These priorities are used when setting rules managing activities and developing Nitrogen Reference Points and Farm Environment Plans.
317. The Director-General's submission [V1PC1-1008] sought that all wetland and lake sub-catchments be included as Priority 1 in Table 3.11-2. At paragraph 645 of their report, officers appear to share the concern of Dr Phillips that 'lakes are particularly vulnerable, and particularly difficult and expensive to restore if they become

degraded'⁹³. Dr Phillips shares these concerns and outlines that a more detailed response to prioritisation of lake catchments.

318. She recommends that lake prioritisation be based on “multiple lines of evidence and incorporates sound science and up-to-date information”⁹⁴. Using the information available to make decisions is sound planning practice. I support the position of Dr Phillips and recommend that lakes prioritisation be revisited using the information available to ensure the accuracy and relevance of Table 3.11-2.



DATED this 15th day of February 2019

⁹³ Paragraph 100

⁹⁴ Paragraph 104

Appendix 1 – Recommended amendments to the Plan Change

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

~~Notified version (October 2016)~~

Officer's "Tracked Changes" Version
Hearing Block 1 Recommendations Only with
amendments sought by the Director-General of
Conservation

Red tracked changes are insertions or deletions due to
Variation 1

Black tracked changes are insertions or deletions
recommended by the Council Officers

Blue tracked changes are insertions or deletions
recommended by experts for the Director-General of
Conservation

Numbers in square brackets identify the reference number
given to the Director-General's submission

3.11 Waikato and Waipa River Catchments/Ngā Riu o ngā Awa o Waikato me Waipā

Area covered by Chapter 3.11/Ngā Riu o ngā Awa o Waikato me Waipā

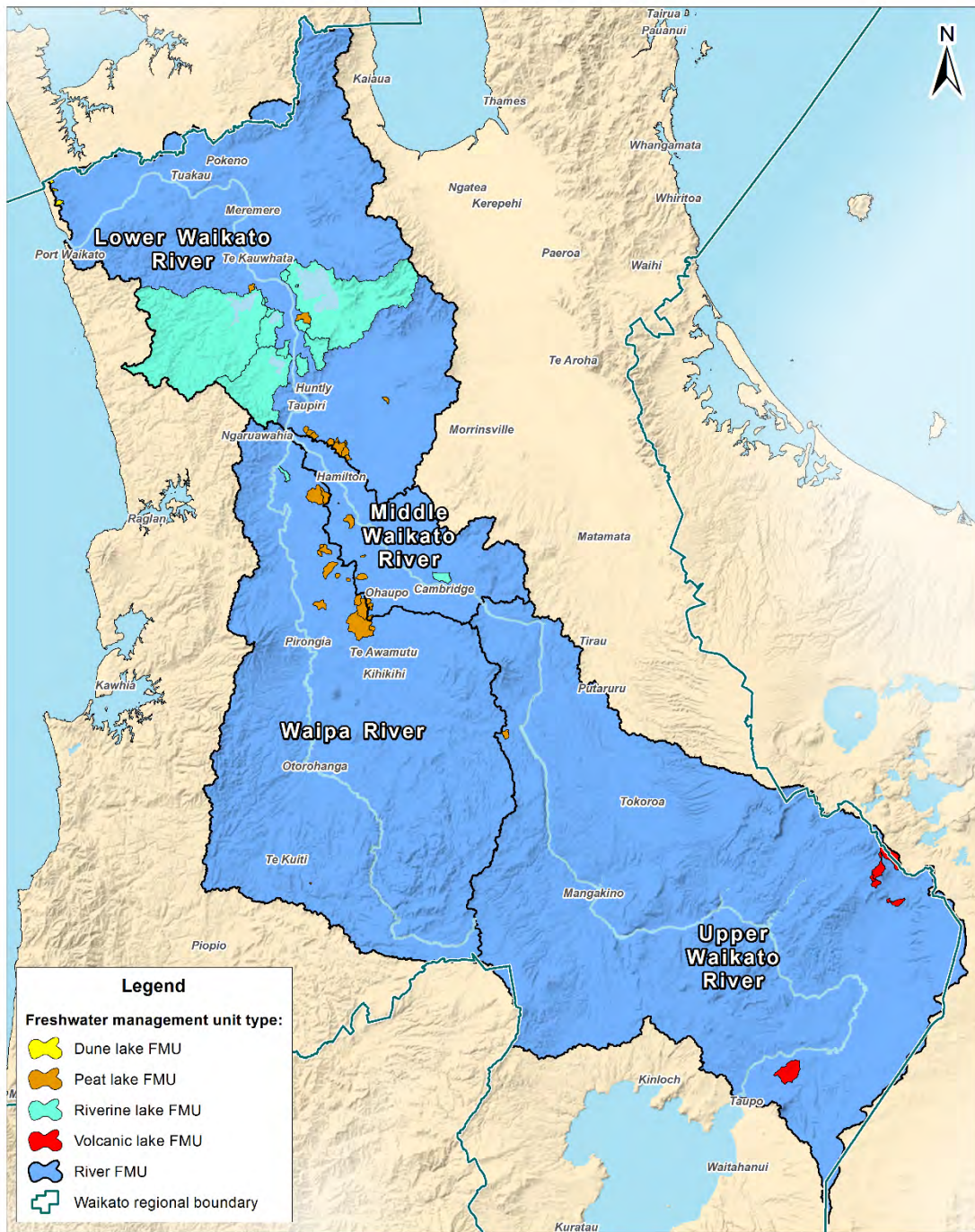
This Chapter 3.11 applies to the Waikato and Waipa River catchments. The map shown in Map 3.11-1 shows the general catchment boundary. This Chapter is additional to all other parts of the Waikato Regional Plan. Where there are any inconsistencies, Chapter 3.11 prevails.

Map 3.11-1 shows the general catchment boundary and includes the boundaries of each Freshwater Management Unit[^] (FMU): The FMUs are:

- Upper Waikato River
- Middle Waikato River
- Lower Waikato River
- Waipa River
- Peat Lakes
- Riverine Lakes
- Dune Lakes
- Volcanic Lakes
- [Whangamarino Wetland \[V1PC1-1139\]](#)

FMUs are required by central government's National Policy Statement for Freshwater Management 2014. FMUs enable monitoring of progress towards meeting targets[^] and limits[^].

The Plan maps of the Waikato and Waipa River catchments are available electronically or for viewing at Waikato Regional Council offices on request.



Acknowledgements and Disclaimers
 1. © Waikato Regional Council 2013-2016. Healthy Rivers: Plan for Change / Wai Ora: He Rautaki Whakapaipai Data.
 2. Digital political boundaries data sourced from Statistics New Zealand.
 3. Hydrological data sourced from Land Information New Zealand. Crown Copyright Reserved.

Freshwater management units

0 5 10 15 20 25 30 35 40 km

Scale at A3
 = 1:630,000

Created by: A Jeffries
 Date: 21/09/2016
 Version: 1
 Job No.: 33102
 File: 33102 FMUs Lake and FMUs River.mxd



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Map 3.11-1: Map of the Waikato and Waipa River catchments, showing Freshwater Management Units

Updated map showing corrected regional boundaries, legend and lake colours to be inserted

[Scale of this map to be revised to provide greater certainty to plan users and decision makers on FMU boundaries \[PC1-10504\]](#)

[Also revise map and key to include Whangamarino Wetland FMU extent boundary \[PC1-10504\] \[V1PC1-1139\]](#)

Background and explanation

Co-management of the Waikato and Waipa Rivers

There are three River Acts that establish co-governance arrangements for the Waikato and Waipa Rivers and catchment. These are Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, Ngāti Tuwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 and Nga Wai o Maniapoto (Waipa River) Act 2012.

The iwi partners in the development of Chapter 3.11 are Maniapoto, Raukawa, Ngāti Tuwharetoa, Te Arawa River Iwi and Waikato-Tainui. The processes for preparing, reviewing, changing or varying the regional plan, in terms of River Iwi involvement in the process, is set out in the legislation. This includes a requirement for Council to establish a Joint Working Party with each of the River Iwi, the purposes of which include making joint recommendations to the Council regarding the plan change.

The three River Acts established the Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato (Vision and Strategy) as the primary direction setting document for the Waikato and Waipa Rivers. The Vision and Strategy prevails over any inconsistencies in a national policy statement or New Zealand coastal policy statement, and is deemed to be part of the Waikato Regional Policy Statement.

The Vision and Strategy states that the Waikato and Waipa Rivers are degraded and require, amongst other things, restoration and protection. One objective⁽¹⁾ has been given particular focus for this chapter: 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. The Vision and Strategy is being given effect to in Chapter 3.11 by:

- Reducing nitrogen, phosphorus, sediment and microbial pathogen losses from land
- Ongoing management of diffuse and point source discharges of nitrogen, phosphorus, sediment and microbial pathogens
- Giving people and communities time to adapt to the requirements of Chapter 3.11 and supporting actions to achieve short-term objectives while being clear that further reductions in nitrogen, phosphorus, sediment and microbial pathogen losses from land will be required in subsequent regional plans
- Ensuring that Waikato Regional Council continues to facilitate ongoing research, monitoring and tracking of changes on the land and in the water to provide for the application of Mātauranga Māori and latest scientific methods, as they become available
- Preparing for future requirements on what can be undertaken on the land, with limits[^] ensuring that the management of land use and activities is closely aligned with the biophysical capabilities of the land, the spatial location, and the [likely effects of discharges on the protecting and restoring the intrinsic values and uses of lakes, rivers, wetlands and estuaries](#) in the catchment. [Consequential amendment]

Collaborative approach

The co-governance partners agreed to adopt a collaborative approach to investigate and develop fresh water management approaches that would be implemented in the Waikato and Waipa River Catchments.

A key feature of the collaborative approach was the Collaborative Stakeholder Group (CSG), which represented stakeholders and the wider community in Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai. The CSG was the central channel for stakeholder and broader community collaboration in the project. It intensively reviewed and deliberated on technical material from a group of external technical experts from a range of disciplines. For Proposed Plan Change 17 the CSG also sought input from their sectors and from the community, and ultimately proposed the contents of Chapter 3.11 to decision makers.

Consultation

¹ Te Ture Whaimana o te Awa o Waikato, Objective K

Schedule 1 of the RMA includes requirements to consult with certain parties, including iwi authorities, during the preparation of the Variation. Consultation has taken place with affected parties including the relevant iwi authorities and the issues raised during consultation have been taken into account by Waikato Regional Council in the development of Variation 1. Consultation has led to a Variation to proposed Plan Change 1

Water quality and National Policy Statement for Freshwater Management

The National Policy Statement for Freshwater Management 2014 (NPS FM) requires regional councils to formulate freshwater objectives[^] and set limits[^] or targets[^] (a target is a limit to be achieved within a specified timeframe). Regional councils must ensure over-allocation[^] of the water resource is avoided, or addressed where that has already occurred.

Current water quality monitoring results show that while there is variability across the Waikato and Waipa River catchments, there are adverse effects on water bodies associated with discharges of nitrogen, phosphorus, sediment and microbial pathogens. The CSG concluded that from a water quality point of view, over-allocation[^] has occurred. Water bodies in the Waikato and Waipa River catchments are not able to assimilate further discharges of nitrogen, phosphorus, sediment and microbial pathogens, without adversely affecting community-held values. Achieving the numeric, long-term freshwater objectives[^] in Chapter 3.11 will require reductions in diffuse and point source contaminants.

The NPS FM directs the Waikato Regional Council to establish freshwater objectives[^] that give effect to the objectives of the NPS FM and describe the state that Waikato regional communities want for fresh water in the future.

The NPS FM process followed in developing Chapter 3.11, included identifying FMUs and the values for each, and then choosing relevant water quality attributes[^] and attribute states[^] that can be monitored over time. Freshwater objectives[^] and limits[^] or targets[^] set out what is required to achieve the attribute states[^]. Under the NPS FM, a limit[^] is the maximum amount of resource use available, which allows a freshwater objective[^] to be met.

[The NPS FM also directs regional councils to protect the significant values of wetlands. The establishment of specific objectives and attributes for wetlands is provided in Tables 3.11-3 and 3.11-4, which ensures that policies and rules are established for wetlands that align with their core values and uses.](#)[Consequential amendment]

The CSG identified resource use that affects the achievement of the freshwater objectives[^] and long-term desired water quality, and for achieving the Vision and Strategy. Chapter 3.11 sets out policies and methods that restrict what can be done on the land and discharged to land or water.

Full achievement of the Vision and Strategy will be intergenerational

The CSG has chosen an 80-year timeframe to achieve the water quality objectives of the Vision and Strategy. The timeframe is intergenerational and more aspirational than the national bottom lines set out in the NPS FM because it seeks to meet the higher standards of being safe to swim in and take food from over the entire length of the Waikato and Waipa Rivers and catchment. Based on the information currently available, the CSG has concluded full achievement of the Vision and Strategy by 2096 is likely to be costly and difficult. The 80-year timeframe recognises the 'innovation gap' that means full achievement of water quality requires 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).

Because of the extent of change required to restore and protect water quality in the 80-year timeframe, the CSG has 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 in a 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 Waikato Regional Council 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 innovation in technology and practices that will need to be developed to meet the targets[^] and limits[^] in subsequent regional plans to be developed.

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 this Plan 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 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 nitrogen 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 nitrogen 'load to come' from historic land use that is yet to be seen in the water.

The approach to reducing contaminant losses from pastoral farm land implemented by Chapter 3.11 requires:

- stock exclusion from water bodies as a priority mitigation action
- Farm Environment Plans (including those 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
- a property scale nitrogen reference point 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
- an accreditation system to be set up for people who will assist farmers to prepare their Farm Environment Plan, and to certify agricultural industry schemes
- Waikato Regional Council 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.

There are a number of existing provisions, including rules, in the Waikato Regional Plan 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 expire.

There are a range of existing provisions in this Plan that deal with activities that relate to forestry. Forestry activities will continue to be managed by these existing provisions, with the addition of requirements around preparing harvest plans and notifying Waikato Regional Council of harvest activities.

In the short term, 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. Provision has been made for some flexibility of land use for Māori land that has not been able to develop due to historic and legal impediments. As these impediments have had an impact on the relationship between tangata whenua and their ancestral lands, with associated cultural and economic effects, Chapter 3.11 seeks to recognise and provide for these relationships. These constraints on land use change are interim, until a future plan change introduces a second stage, where further reductions in discharges of sediment, nutrients and microbial pathogens from point sources and activity on the land will be required. This second stage

will focus on land suitability and how land use impacts on water quality, based on the type of land and the sensitivity of the receiving water. Methods in Chapter 3.11 include the research and information to be developed to support this.

Reviewing progress toward achieving the Vision and Strategy

The overall intent of Chapter 3.11 is to require resource users to make a start on reducing discharges of contaminants as the first stage of achieving the Vision and Strategy, with on-farm actions carried out and point source discharges reviewed as existing resource consents come up for renewal. The staged approach gives people and communities time to adapt, while being clear that further reductions will be required by subsequent regional plans.

The Vision and Strategy contained in each of the three River Acts is required to be reviewed periodically by the Waikato River Authority, which may make changes to insert limits and methods.

The Resource Management Act requires that regional councils commence reviews of their regional plans 10 years after those plans are operative. When this is done in the future, further changes to reduce diffuse and point source discharges will need to follow the initial preparatory stage embodied in Chapter 3.11 of this Plan.

During the life of this Plan, Waikato Regional Council will track the progress of actions undertaken on the land towards achieving the Vision and Strategy. In addition, research and information collation will be used when this Plan is reviewed, to inform any future property-level allocation of contaminant discharges.

3.11.1 Values and uses for the Waikato and Waipa Rivers/Ngā Uara me ngā Whakamahinga o ngā Awa o Waikato me Waipā

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

Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato²

“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.”³

The values below have been prepared and are supported by the Collaborative Stakeholder Group.

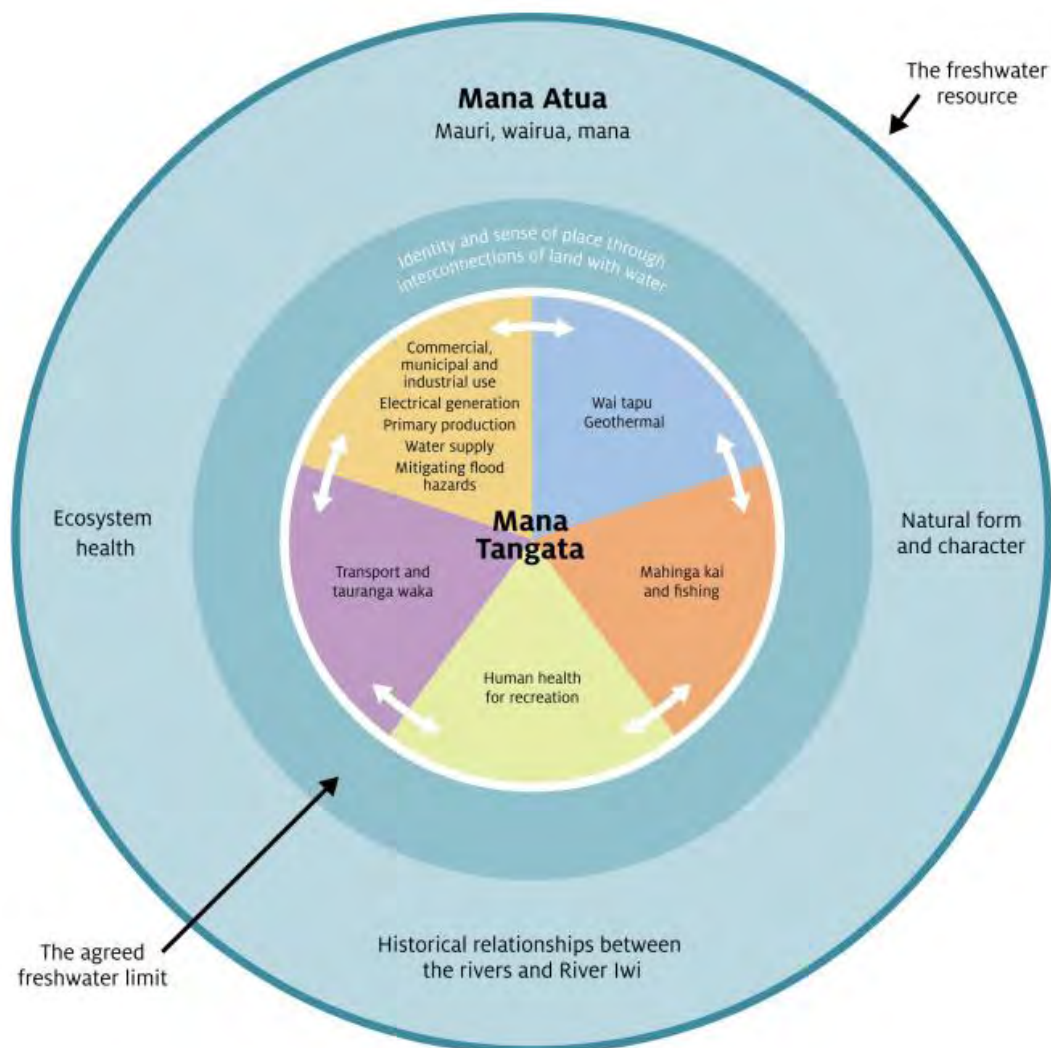
² The Nga Wai o Maniapoto (Waipa River) Act 2012 extended Te Ture Whaimana o te Awa o Waikato to also cover the Waipa River and its catchment

³ The Vision and Strategy is intended by Parliament to be the primary direction setting document for the Waikato River and activities within its catchment affecting the Waikato River. Values and uses are intrinsic to, and embedded in the Vision and Strategy.

Te Mana o te Wai: Mana Atua, Mana Tangata

Values can be thought of in terms of Mana Atua and Mana Tangata, which represent Te Mana o te Wai⁴. Mana Atua represents 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 the water and its ecosystems in their natural state. Mana Tangata refers to values of water arising from its use by people for economic, social, spiritual and cultural purposes. Mana Atua and Mana Tangata values encompass past, present and future.

A strong sense of identity and connection with land and water (hononga ki te wai, hononga ki te whenua) is apparent through the Vision and Strategy and the many values associated with the rivers. This is represented in the figure below as a unifying value that provides an interface between the Mana Atua and Mana Tangata values.



Note: New diagram from Variation 1 to be inserted.

⁴ The National Policy Statement for Freshwater Management 2014 states that the aggregation of a range of community and tangata whenua values, and the ability of fresh water to provide for them over time, recognises the national significance of fresh water and Te Mana o te Wai.

Hononga ki te wai, hononga ki te whenua - Identity and sense of place through the interconnections of land with water

- The rivers, [streams, tributaries, lakes, wetlands and the coastal environment](#) contribute to a sense of community and sustaining community wellbeing.
- The rivers [streams, tributaries, lakes, wetlands and the coastal environment](#) are an important part of whānau/family life, holding nostalgic feelings and memories and having deep cultural and historical significance.
- For River Iwi [and other iwi](#), respect for the rivers, [streams, tributaries, lakes, the coastal environment, wetlands and springs](#) lies at the heart of the spiritual and physical wellbeing of iwi and their tribal identity and culture. The river, [streams, tributaries, lakes, the coastal environment, wetlands and springs](#) are ~~is~~ not separate from the people but part of the people, “Ko au te awa, ko te awa ko au” (I am the river and the river is me).
- [Whanaungatanga is at the heart of iwi relationships with rivers, streams, tributaries, lakes, the coastal environment, wetlands and springs. Te taura tāngata is the cord of kinship that binds iwi to rivers, wetlands and springs. It is a braid that is tightly woven, tying in all its strands. It is unbroken and infinite, forming the base for kaitiakitanga and the intergenerational role that iwi have as kaitiaki.](#)
- The rivers, [streams, tributaries, lakes, wetlands and the coastal environment](#) are a shared responsibility, needing collective stewardship: kaitiakitanga – working together to restore the rivers. There is also an important intergenerational equity concept within kaitiakitanga.
- Mahitahi (collaborative work) encourages us all to work together to achieve common goals. [\[Consequential amendment\]](#)

3.11.1.1 Mana Atua – Intrinsic values

Intrinsic values — ~~Ancestry and History~~

~~Ko te whakapapa o ngā iwi ki ōna awa tūpuna Ko ngā hononga tūpuna me ngā hononga o mua i waenga i ngā iwi o te awa me ētehi atu iwi me ngā awa, ngā repo me ngā puna /~~ [Ancestral and Historical relationships connections between the rivers, wetlands, springs and River Iwi and other iwi](#)

Ko ngā kōrero [tūpuna me ngā Kōrero o Mua](#) ~~neherā~~ / [Ancestry and History](#)

<p>Each River Iwi and other iwi have has their own unique and intergenerational relationship with the rivers, tributaries, lakes, estuaries, wetlands and springs.</p>	<ul style="list-style-type: none"> ▪ The Rivers, tributaries, lakes, estuaries, wetlands and springs have always been seen as taonga (treasures) to all River Iwi and other iwi. ▪ The Rivers, tributaries, lakes, estuaries, wetlands and springs have always given River Iwi and other iwi a strong sense of identity and connection with the land and water. ▪ Rivers, tributaries, lakes, estuaries, wetlands and springs were used holistically; River Iwi and other iwi understood the functional relationships with and between all parts of the rivers, tributaries, lakes, estuaries, wetlands and springs, spiritually and physically as kaitiaki. ▪ Tribal taniwha and tupua dwell in the rivers which are also the location of continued spiritual and cultural traditions and practices maintained over the many centuries. ▪ Iwi tupuna inhabited a rohe that teemed with life in the rivers, tributaries, lakes, estuaries, wetlands and springs. These resources were subject to access and use rights as an essential part of kaitiakitanga. ▪ Iwi strive to maintain and restore these relationships despite the modification and destruction that has occurred through different types of development along affecting the rivers, tributaries, lakes, estuaries, wetlands and springs. [PC1-8136]
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Intrinsic values—Ecosystem health

Ko te hauora me te mauri o te wai / The health and mauri of water

Ecosystem health

<p>The Waikato and Waipa catchments support resilient freshwater ecosystems and healthy freshwater populations of indigenous plants and animals.</p>	<ul style="list-style-type: none">▪ Clean fresh water restores and protects aquatic native vegetation to provide habitat and food for native aquatic species and for human activities or needs, including swimming and drinking.▪ Clean fresh water restores and protects macroinvertebrate communities for their intrinsic value and as a food source for native fish, native birds and introduced game species.▪ Clean fresh water supports the natural ecological functioning of river, wetland, lake and estuarine ecosystems▪ Clean fresh water supports healthy populations and intact communities of native freshwater fish and their habitats, including spawning and migration habitats, and restores and sustains threatened and at-risk fish species into the future.▪ Wetlands and floodplains provide water purification, refuge, feeding and breeding habitat for aquatic species, habitat for water fowl and other ecosystem services such as flood attenuation.▪ Fresh water contributes to unique habitats including peat lakes, shallow riverine lakes and karst formations which all support unique biodiversity.▪ Rivers and adjacent riparian margins are critical components of ecosystem health have value as ecological corridors.▪ Protection and regonition of Priority Biodiversity Areas is a key component of achieving ecosystem health [PC1-8139]
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Intrinsic values—Natural form and character

Ko te hauora me te mauri o te taiao / The health and mauri of the environment

Natural form and character

<p>Retain the integrity of the lakes, rivers, tributaries and wetlands within the landscape and its aesthetic features and natural qualities for people to enjoy.</p>	<ul style="list-style-type: none">▪ The Lakes, rivers, tributaries, estuaries, and wetlands have amenity and naturalness values, including native vegetation, undeveloped stretches, and significant sites.▪ People are able to enjoy the natural environment; it contributes to their health and wellbeing.▪ The rivers are an ecological and cultural corridor.▪ The lakes, rivers, tributaries, estuaries and wetlands as a whole living entity.▪ Matters contributing to the natural form and character of fresh water bodies are the biological, visual and physical characteristics that are valued by the community including:<ul style="list-style-type: none">i. its biophysical, ecological, geological, geomorphological and morphological aspects;ii. the natural movement of water and sediment including hydrological and fluvial processes;iii. the location of the water body relative to its natural course;iv. the relative dominance of indigenous flora and fauna;v. the presence of culturally significant species;vi. the colour of the water; andvii. the clarity of the water. [PC1-8152]
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3.11.1.2 Mana Tangata – Use values

Use values—Wai tapu

Ko ngā wai tapu [me ngā wai kino](#) / Sacred [and harmful](#) waters

Wai tapu [and wai kino](#)

<p>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.</p>	<ul style="list-style-type: none">▪ The Lakes, rivers, tributaries, estuaries and wetlands are a place for sacred rituals, wairua, healing, spiritual nurturing and cleansing.▪ The Lakes, rivers, tributaries, estuaries and wetlands provide for cultural and heritage practices and cultural wellbeing, particularly at significant sites.▪ The Lakes, rivers, tributaries, estuaries and wetlands have different states of wai tapu and wai kino that are adhered to and respected. [PC1-8132]
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Use values – Geothermal

Ko ngā Ngāwhā / Geothermal

Geothermal

<p>A valued resource that is naturally gifted to sustain certain activities (meeting spiritual and physical needs).</p>	<ul style="list-style-type: none">▪ Geothermal areas and their various resources were prized by tūpuna (ancestors) for their many uses and are still valued and used today.▪ Geothermal areas of the river have natural form and character, and unique flora found only in the geothermal environment.▪ Geothermal areas are a special microclimate.
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Use values – Mahinga kai

Ko ngā wāhi mahinga kai / Food gathering, places of food

Mahinga kai

<p>The ability to access the Waikato and Waipa Rivers, lakes, tributaries, estuaries 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, tributaries, estuaries and wetlands provide for freshwater native species, native vegetation, and habitat for native animals.▪ The Lakes, rivers, tributaries, estuaries and wetlands provide for freshwater game and introduced kai species.▪ The Lakes, rivers, tributaries, estuaries 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 tributaries, estuaries should be safe to take food from, both fisheries and kai.▪ The Lakes, rivers, tributaries, estuaries and wetlands support aquatic life, healthy biodiversity, ecosystem services, flora and fauna and biodiversity benefits for all.▪ The rivers and tributaries are a corridor.▪ The Lakes, rivers, tributaries, estuaries 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. [PC1-8133]
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Use values – Human health for recreation

Ko te hauora me te mauri o ngā tāngata / The health and mauri of the people

Human health for recreation

<p>The Lakes wetlands, tributaries, estuaries and rivers are a place to swim and undertake recreation activities in an environment that poses minimal risk to health.</p>	<ul style="list-style-type: none">▪ The Lakes, wetlands, tributaries, estuaries and rivers provide for recreational use, social needs and social wellbeing, are widely used by the community, and are a place to relax, play, exercise and have an active lifestyle.▪ An important value for the lakes, estuaries, and rivers and tributaries is cleanliness; the lakes, estuaries, and rivers and tributaries should be safe for people to swim in.
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	<ul style="list-style-type: none"> The <u>lakes, estuaries, and</u> rivers <u>and tributaries</u> provide resources available for use which could be managed in a sustainable way. [PC1-8135]
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~~Use values – Transport and tauranga waka~~

He urungi / Navigation

Transport and tauranga waka

All communities can use the <u>lakes and</u> rivers to pilot their vehicles and waka and navigate to their destinations.	<ul style="list-style-type: none"> The <u>Lakes and</u> rivers provide for recreational use (navigation), and sporting opportunities. The <u>Lakes and</u> rivers are a corridor, mode of transport and mode of communication. The <u>Lakes and</u> rivers provide for culture and heritage, cultural wellbeing, and social wellbeing, particularly at significant sites.
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~~Use values – Primary production~~

Ko ngā mahi māra me ngā mahi ahu matua / Cultivation and primary production

Primary production

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 other industries and communities within rural and urban settings.	<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 <u>and urban</u> Waikato.
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~~Water supply~~

Ko ngā hāpori wai Māori / Municipal and domestic water supply

Water supply

The rivers provide for community water supply, municipal supply <u>and</u> drinkable water supply <u>and</u> health.	<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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~~Use values – Commercial, municipal and industrial use~~

Ko ngā āu putea / Economic or commercial development

Commercial, municipal and industrial use

<p>The rivers, lakes, and wetlands provide economic opportunities to people, businesses and industries.</p>	<p>Fresh water is used for industrial and municipal processes, which rely on the assimilative capacity for discharges to surface water bodies. In addition:</p> <ul style="list-style-type: none"> ▪ The Lakes, rivers and wetlands provide for economic wellbeing, financial and economic contribution, individual businesses and the community and the vibrancy of small towns. They are working lakes, rivers and wetlands; they create wealth. ▪ Those industries are important to the monetary economy of Waikato region, enabling a positive brand to promote to overseas markets. ▪ The Lakes, rivers and wetlands provide for domestic and international tourism. Promotion of a clean, green image attracts international and domestic visitors. ▪ The Lakes, rivers and wetlands provide assimilative capacity for wastewater disposal, flood and stormwater, and ecosystem services through community schemes or on site disposal. ▪ Wetlands and floodplains provide water purification [Consequential amendment]
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Use values – Electricity generation

Electricity generation

<p>The river provides for reliable, renewable hydro and geothermal energy sources and thermal generation, securing national self-reliance and resilience.</p> <p>New Zealand’s social and economic wellbeing are dependent on a secure, cost-effective electricity supply system. Renewable energy contributes to our international competitive advantage. Electricity also contributes to the health and safety of people and communities.</p>	<ul style="list-style-type: none"> ▪ Waikato hydro scheme extends over 186km, comprising Lake Taupō storage, dams, lakes, and power stations. Tongariro Power scheme adds 20 per cent to natural inflows to Lake Taupō. ▪ Huntly Power Station’s role in the New Zealand electricity system is pivotal, particularly when weather dependent renewable generation is not available. Fresh water is used for cooling and process water. ▪ Geothermal power stations located on multiple geothermal systems use fresh water for cooling, process water and drilling. ▪
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Use values – Mitigating flood hazards

Mitigating flood hazards

<p>Flood management systems protect land used and inhabited by people and livestock.</p>	<ul style="list-style-type: none"> ▪ River engineering, including stopbanks and diversions, protect land and infrastructure from damage by flooding. ▪ Natural infrastructure that mitigate flood impacts, recognising that altered flood regimes, can impact on intrinsic values and uses. [Consequential amendment]
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3.11.2 Objectives/Ngā Whāinga

New Objective 1

Air, land, fresh water bodies, the coastal marine area and ecosystems are managed as integrated and connected resources to restore the health and wellbeing of the Waikato and Waipā River catchments; ki uta ki tai – mountains to the sea. [PC1-10521][VCPC1-1701]

New Objective 2

To restore and protect the health and wellbeing of fresh water bodies and the coastal marine area within the Waikato and Waipā River catchments, waterbodies are managed to:

- Safeguard the life supporting capacity of aquatic ecosystems; [PC1-10521]
- Recognise and provide for indigenous biodiversity including freshwater fish species; [PC1-10521]
- Recognise and provide for the significant values of all wetlands; and[PC1-10521] [VCPC1-997]
- Ensure that overall water quality in the catchments is improved. [V1PC1-997]

By 2026, policies and methods are implemented that safeguard the ecosystem health of all wetlands by specifically minimising and avoiding the impact of nitrogen, phosphorus and sediment on natural wetlands, and associated hydrological drivers of water quality decline, including a programme for benchmarking and setting numeric targets for wetland attributes

~~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 at the latest, 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 states in Table 3.11-1 are met. To restore and protect the Waikato and Waipā catchments so that the 80-year water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved by 2096 [PC1-10535]~~

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

~~Waikato and Waipā communities and their economy benefit from the Long-term restoration and protection of water quality in the Waikato and Waipā River catchments, from the reduction of discharges, which will enable the people and communities to continue to provide for their social, economic and cultural wellbeing. [PC1-10537]~~

~~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 diffuse and point source discharges of nitrogen, phosphorus, sediment and microbial pathogens, are sufficient to achieve the short-term water quality attribute states/limits/targets in Tables 3.11-1, 3.11.1a, 3.11-3 and 3.11-4 by 2030, 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. [PC1-10537]~~

~~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 Waipa 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.

OR

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

~~A staged approach to reducing contaminant losses 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[^] states for the Waikato and Waipa 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 order to meet Objective 1. [PC1-10542]~~

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.
- d. [Intrinsic values of waterbodies and ecosystems are recognised and provided for. \[PC1-10521\] \[VCPC1-997\]\[PC1-10545\]](#)

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.~~

OR

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.~~

[To achieve the restoration and protection of the Whangamarino Wetland, an integrated approach to the reduction of contaminant discharge in the catchment is required and shall be consistent with achieving the water quality attribute limits/targets in Tables 3-11.1, 3.11-1a and 3.11-4. \[PC1-10545\]](#)

New Objective #3

[By 2026, policies and methods are implemented that safeguard the ecosystem health of all wetlands by specifically minimising and avoiding the impact of nitrogen, phosphorus and sediment on natural wetlands, and associated hydrological drivers of water quality decline, including a programme for benchmarking and setting numeric targets for wetland attributes. \[PC1-10521, V1PC1-997\]](#)

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. Objective 1 sets the overall context for what is to be achieved in terms of water quality improvements. There is not any hierarchy of Objectives 1 to 6

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.

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.

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 (the short term 10 year period) 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.

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.

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.~~

Hearing Block 1 Only

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 use activities in the lakes Freshwater Management Units[^].

Hearing Block 1 Only

3.11.1 List of Tables and Maps/Te Rārangi o ngā Ripanga me ngā Mahere

Table 3.11-1: Short term water quality limits and targets and long term numerical desired water quality limits and targets states targets for the rivers and streams in the Waikato and Waipa River catchments/Ngā whāinga ā-tau taupoto, tauroa hoki mō te kounga wai i te riu o ngā awa o Waikato me Waipā [Consequential amendment]

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

Map 3.11-1: Map of the Waikato and Waipa River catchments, showing Freshwater Management Units

Map 3.11-2: Map of the Waikato and Waipa River catchments, showing sub-catchments

Table 3.11-1: Short term water quality limits and targets and long term numerical desired water quality limits and targets states targets for the rivers and streams in the Waikato and Waipa River catchments/Ngā whāinga ā-tau taupoto, tauroa hoki mō te kounga wai i te riu o ngā awa o Waikato me Waipā [Consequential amendment]

Within the rivers and streams in the Waikato and Waipa River catchments, excluding those rivers and streams within Lake FMU catchments, these limits and 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 states, that they be used directly as receiving water compliance limits/standards. Reference should also be made to Method 3.2.4.1. [Consequential amendment]

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.

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).

[Consequential amendment]

Table 3.11-1: Upper Waikato River Freshwater Management Unit [V1PC1-1006]

Catchment number	Protection priority (P) or fish (F) ranking	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) NOF Band		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
73		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
66		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
67		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
64		Waikato River Waipapa 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

74		Pueto Stm Broadlands Rd Br	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>		0.450	0.450	0.530	0.530	0.003	0.003	0.009	0.009	<u>92_C</u>	<u>92_B</u>	1.8	3.0
72		Torepatuhi Stm Vaile Rd Br	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>		0.500	0.500	0.800	0.800	0.002	0.002	0.011	0.011	<u>216_C</u>	<u>216_B</u>	<u>1.0</u>	<u>1.6</u> -
65		Waiotapu Stm Homestead Rd Br	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>		1.257	1.0	1.563	1.5	0.112	0.03	0.176	0.05	<u>281_C</u>	<u>281_B</u>	<u>1.0</u>	<u>1.6</u> -
69		Mangakara Stm (Reporoa) SH5	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>	<u>N_A³</u>		1.270	1.0	1.590	1.5	0.008	0.008	0.062	0.05	<u>1584_C</u>	<u>540_B</u>	0.9	1.0
62		Kawaunui Stm SH5 Br	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>	<u>N_A³</u>		2.580	2.4	2.850	1.5	0.006	0.006	0.079	0.05	<u>2335_C</u>	<u>540_B</u>	1.4	1.6
58		Waiotapu Stm Campbell Rd Br	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>	<u>N_A³</u>		0.915	0.915	1.100	1.100	0.291	0.24	0.315	0.05	<u>18_C</u>	<u>18_B</u>	1.2	1.6
59		Otamakore Stm Hossack Rd	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>	<u>N_A³</u>		0.740	0.740	1.190	1.190	0.006	0.006	0.024	0.024	<u>680_C</u>	<u>540_B</u>	1.2	1.6
56		Whirinaki Stm Corbett Rd	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>	<u>N_A³</u>		0.770	0.770	0.870	0.870	0.002	0.002	0.012	0.012	<u>98_C</u>	<u>98_B</u>	2.7	3.0
54		Tahunaata Ra Stm Ohakuri Rd	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>	<u>N_A³</u>		0.555	0.555	0.830	0.830	0.003	0.003	0.015	0.015	<u>783_C</u>	<u>540_B</u>	1.3	1.6
57		Mangaharakeke Stm SH30 (Off Jct SH1)	<u>NA³</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA₃</u>	<u>NA³</u>	<u>N_A³</u>		0.525	0.525	0.750	0.750	0.003	0.003	0.015	0.015	<u>684_C</u>	<u>540_B</u>	1.1	1.6

70		Waipapa Stm (Mokai) Tirohanga Rd Br	NA ³	NA ₃	NA ₃	NA ₃	NA ₃	NA ₃	NA ³	N/A ³	1.189	1.0	1.500	1.5	0.003	0.003	0.005	0.005	1147C	540B	1.2	1.6
71	P	Mangakino Stm Sandel Rd	NA ³	NA ₃	NA ₃	NA ₃	NA ₃	NA ₃	NA ³	N/A ³	0.650	0.650	0.860	0.860	0.003	0.003	0.012	0.012	251C	251B	1.8	3.0
49		Whakauru Stm SH1 Br	NA ₃	NA ³	NA ₃	NA ₃	NA ₃	NA ₃	NA ³	N/A ³	0.260	0.260	0.450	0.450	0.003	0.003	0.033	0.033	2106C	540B	0.8	1.0
48		Mangaming i Stm Paraonui Rd Br	NA ₃	NA ³	NA ₃	NA ₃	NA ₃	NA ₃	NA ³	N/A ³	2.760	2.4	3.12	1.5	0.091	0.03	0.296	0.05	2151C	540B	0.8	1.0
45		Pokaiwhenua Stm Arapuni - Putaruru Rd	NA ₃	NA ³	NA ₃	NA ₃	NA ₃	NA ₃	NA ³	N/A ³	1.680	1.0	2.040	1.5	0.002	0.002	0.020	0.020	1363C	540B	1.3	1.6
44		Little Waipapa Stm Arapuni - Putaruru Rd	NA ₃	NA ³	NA ₃	NA ₃	NA ₃	NA ₃	NA ³	N/A ³	1.522	1.0	2.040	1.5	0.002	0.002	0.085	0.05	1377C	540B	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 [V1PC1-1006]

Catchment number	Protection priority (P) or fish (E) ranking	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> (E. coli/100mL) NOF Band		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
33	P	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	340C	260B	1.7	1.7
25	P	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	774C	540B	1.4	1.6
32		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	451 & C	540B	0.9	1.0
35		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	292C	540B	0.3	1.0
29		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	637C	540B	1.0	1.0
31		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	205C	540B	0.9	1.0

30	P	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	11394C	540B	0.5	1.0
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Catchment number	Protecti on priority (P) or fish (F) ranking	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 E. coli (E.coli/100 mL) NOF Band		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
28	P	Waitawhiriwhiri Stm Edgecumbe Street	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	0.243	0.318	0.05	5922C	540B	0.40.5	1.0
23	P & F	Kirikiroa Stm Tauhara Dr	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	2124C	540B	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 [V1PC1-1006]

Catchment number	Protection priority (P) or fish (F) ranking	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 E. coli (E.coli/100m L) <u>NOF Band</u>		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
20	P	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 C 1494 C	540 B 540 B	0.9	1.0
9	P & F	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	1584 C 3474 C	540 B 540 B	0.9	1.0
4		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	4955 C 1944 C	540 B 540 B	0.7	1.0
22	P & F	Komakorau Stm Henry Rd	NA ³	NA ₂	NA ³	NA ₂	NA ³	NA ₂	NA ³	NA ₂	1.279	1.0	4.40 3.5	3.5 1.5	0.25 0.24	0.24 0.03	0.419 0.40	0.40 0.05	3474 C	540 B	0.3 0.5	1.0
17	P & F	Mangawara Stm Rutherford Rd Br	NA ³	NA ₂	NA ³	NA ₂	NA ³	NA ₂	NA ³	NA ₂	0.765	0.765	2.760	1.5	0.103	0.03	0.172	0.05	3474 C	540 B	0.3 0.5	1.0

Catchment number	Protection priority (P) or fish ranking (F)	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 E. coli (E.coli/100 mL) NOF Band		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	P & F	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 C	540 B	0.8	1.0
14	P & F	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 C	540 B	0.4	1.0
16	P	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 C	540 B	0.3	1.0
12		Waerenga Stm SH2 Maramarua Taniwha Rd	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 C	540 B	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 5	0.62 5	1.84 2	1.5	0.01 2	0.01 2	0.14 7	0.05	4712 C	540 B	0.6	1.0
2	P	Mangatangi River SH2 Maramarua	NA ³	NA ₃	NA ³	NA ₃	NA ³	NA ₃	NA ³	NA ₃	0.11 0	0.11 0	1.12 0	1.12 0	0.00 5	0.00 5	0.03 8	0.03 8	5567 C	540 B	0.5	1.0
1	P	Mangatawhiri River Lyons Rd Buckingham Br	NA ³	NA ₃	NA ³	NA ₃	NA ³	NA ₃	NA ³	NA ₃	0.01 3	0.01 3	0.37 0	0.37 0	0.00 3	0.00 3	0.01 1	0.01 1	5108 C	540 B	1.6	1.6
10	P	Whangamarino River Island Block Rd	NA ³	NA ₃	NA ³	NA ₃	NA ³	NA ₃	NA ³	NA ₃	0.07 5	0.07 5	0.70 0	0.70 0	0.01 1	0.01 1	0.05 4	0.05	655 C	540 B	0.3 0.6	1.0
3		Whakapipi Stm SH22 Br	NA ³	N A ³	N A ³	NA ³	NA ³	NA ₃	NA ³	NA ³	3.39 0	2.4	5.12 0	3.5	0.00 6	0.00 6	0.08 1	0.05	1773 C	540 B	1.1	1.1
7		Ohaeroa Stm SH22 Br	NA ³	N A ³	N A ³	NA ³	NA ³	NA ₃	NA ³	NA ³	1.47 3	1.0	1.80 6	1.5	0.00 3	0.00 3	0.01 5	0.01 5	4667 C	540 B	0.8	1.0
11		Opuatia Stm Ponganui Rd	NA ³	N A ³	N A ³	NA ³	NA ³	NA ₃	NA ³	NA ³	0.74 0	0.74 0	1.06 0	1.06 0	0.00 5	0.00 5	0.01 6	0.01 6	2898 C	540 B	0.6	1.0
5		Awaroa River (Waiuku) Otua Rd Br Moseley Rd	NA ³	N A ³	N A ³	NA ³	NA ³	NA ₃	NA ³	NA ³	1.36 9	1.0	2.31 0	1.5	0.02 1	0.02 1	0.13 5	0.05	1017 C	540 B	0.4 0.5	1.0
NEW		Pungarehu Canal/Stream at Waerenga																			04. 0.6	

		Rd or Farm Bridge																		
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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: Waipa River Freshwater Management Unit [V1PC1-1006]

Catchment number	Protection priority (P) or fish (F) ranking	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
68		Waipa River Mangaokewa Rd	0.380	0.380	0.600	0.600	0.003	0.003	0.017	0.017	2417 C	540 B	1.5	1.6
60		Waipa River Otewa	0.228	0.228	0.502	0.502	0.003	0.003	0.008	0.008	2036 C	540 B	2.1	2.1
51	F	Waipa River SH3 Otorohanga	0.370	0.370	1.050	1.050	0.004	0.004	0.020	0.020	3289 C	540 B	1.2	1.6
43		Waipa River Pirongia-Ngutunui Rd Br	0.565	0.565	1.270	1.270	0.008	0.008	0.023	0.023	4441 C	540 B	0.7	1.0
34	P	Waipa River Whatawhata Bridge	0.673	0.673	1.319	1.319	0.009	0.009	0.026	0.026	3657 C	540 B	0.6	1.0
26	F	Ohote Stm Whatawhata/Horotiu Rd	0.495	0.495	1.370	1.370	0.023	0.023	0.052	0.05	2142 C	540 B	0.6	1.0

36	P	Kaniwhaniwha Stm Wright Rd	0.350	0.350	0.890	0.890	0.007	0.007	0.022	0.022	1917 C	540 B	0.9	1.0
38		Mangapiko Bowman Rd Stm	1.369	1.0	2.490	1.5	0.022	0.022	0.076	0.03	7074 C	540 B	0.6	1.0
39		Mangaohoi Stm South Branch Maru Rd	0.230	0.230	0.390	0.390	0.003	0.003	0.008	0.008	943 C	540 B	1.6	1.6
37	P	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 C	540 B	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 C	540 B	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 C	540 B	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 C	540 B	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 C	540 B	0.7	1.0
52	F	Waitomo Stm Tumutumu Rd	0.630	0.630	0.800	0.800	0.004	0.004	0.013	0.013	2241 C	540 B	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 C	540 B	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

NEW Table 3.11-1a Additional water quality short term and 80 year targets for sub-catchments in the Waikato-Waipā Rivers to account for hard-bottomed stream types, and provide for conservation protection priorities (P), indigenous fish (F), ecosystem health and recreation and mahinga kai values. *N.B. where the current attribute state for a sub-catchment or waterbody reflects better water quality than the short term or 80 year targets, water quality shall be maintained in the current state and shall not be allowed to degrade towards the target.* [V1PC1-1006]

Upper Waikato River Freshwater Management Unit

Protection priority or fish rank : P/F	Periphyton biomass (NOF band) ¹		Periphyton %WCC ²		DIN (mg/L) ³		DRP (mg/L) ³		Cyano-bacteria (NOF band/ % benthic) ⁴		Fine deposited sediment % cover ⁵		Dissolved oxygen (NOF band) ⁶		Temperature max. ⁷		pH range ⁷		Toxicants / metals % species protection ⁸		MCI ⁹		
	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	
Waikato River Ohaaki Br					0.8	0.4	0.015	0.01	B	B			B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Waikato River Ohakuri Tailrace Br					0.8	0.4	0.015	0.01	B	B			B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Waikato River Whakamaru Tailrace					0.8	0.4	0.015	0.01	B	B			B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Waikato River Waipapa Tailrace					0.8	0.4	0.015	0.01	B	B			B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Pueto Stm Broadlands Rd Br					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Torepatutahi Stm Vaile Rd Br					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Waiotapu Stm Homestead Rd Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5 - 8.5	95	95	80	100

Protection priority or fish rank: P/F	Periphyton biomass (NOF band) ¹		Periphyton %WCC ²		DIN (mg/L) ³		DRP (mg/L) ³		Cyano-bacteria (NOF band/ % benthic) ⁴		Fine deposited sediment % cover ⁵		Dissolved oxygen (NOF band) ⁶		Temperature max. ⁷		pH range ⁷		Toxicants / metals % species protection ⁸		MCI ⁹		
	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	
Mangakara Stm (Reporoa) SH5					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Kawaunui Stm SH5 Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5 - 8.5	95	95	80	100
Waiotapu Stm Campbell Rd Br					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Otamakokore Stm Hossack Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5 - 8.5	95	95	80	100
Whirinaki Stm Corbett Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5 - 8.5	95	95	80	100
Tahunaatara Stm Ohakuri Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5 - 8.5	95	95	80	100
Mangaharakeke Stm SH30 (Off Jct SH1)					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Waipapa Stm (Mokai) Tirohanga Rd Br					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5 - 8.5	95	95	80	100	
Mangakino Stm Sandel Rd	HB P	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5 - 8.5	95	95	80	100

Protection priority or fish rank: P/F	Periphyton biomass (NOF band) ¹		Periphyton %WCC ²		DIN (mg/L) ³		DRP (mg/L) ³		Cyano-bacteria (NOF band/ % benthic) ⁴		Fine deposited sediment % cover ⁵		Dissolved oxygen (NOF band) ⁶		Temperature max. ⁷		pH range ⁷		Toxicants / metals % species protection ⁸		MCI ⁹		
	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	
Whakauru Stm SH1 Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Mangamingi Stm Paraonui Rd Br						0.8	0.4	0.015	0.01					B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Pokaiwhenua Stm Arapuni - Putaruru Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Little Waipa Stm Arapuni - Putaruru Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100

Table 3.11-1a Middle Waikato River FMU [V1PC1-1006]

Protection priority or fish rank: P/F	Periphyton biomass (NOF band) ¹		Periphyton %WCC ²		DIN (mg/L) ³		DRP (mg/L) ³		Cyano-bacteria (NOF band/ % benthic) ⁴		Fine deposited sediment % cover ⁵		Dissolved oxygen (NOF band) ⁶		Temperature max. ⁷		pH range ⁷		Toxicants / metals % species protection ⁸		MCI ⁹		
	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	
Waikato River Narrows Boat Ramp	P				0.8	0.4	0.015	0.01	B	B			B	B	24	20	6-9	6.5-8.5	95	95	80	100	
Waikato River Horotiu Br	P				0.8	0.4	0.015	0.01	B	B			B	B	24	20	6-9	6.5-8.5	95	95	80	100	
Karapiro Stm Hickey Rd Bridge					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5-8.5	95	95	80	100	
Mangawhero Stm Cambridge-Ohaupo Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Mangaonua Stm Hoeka Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Mangaone Stm Annebrooke Rd Br					0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5-8.5	95	95	80	100	
Mangakotukutuku Stm Peacockes Rd	P	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Waitawhiriwhiri Stm Edgcombe Street	P				0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5-8.5	95	95	80	100	
Kirikiroa Stm Tauhara Dr	P & F				0.8	0.4	0.015	0.01					B	B	24	20	6-9	6.5-8.5	95	95	80	100	

Tbale 3.11-1a Lower Waikato River Freshwater Management Unit [V1PC1-1006]

Protection priority or fish rank: P/F	Periphyton biomass (NOF band) ¹		Periphyton %WCC ²		DIN (mg/L) ³		DRP (mg/L) ³		Cyano-bacteria (NOF band/ % benthic) ⁴		Fine deposited sediment % cover ⁵		Dissolved oxygen (NOF band) ⁶		Temperature max ⁷		pH range ⁷		Toxicants / metals % species protection ⁸		MCI ⁹			
	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		
Waikato River Huntly-Tainui Br type: HB	P	N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	B	B	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Waikato River Mercer Br	P & F	N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	B	B	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Waikato River Tuakau Br		N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	B	B	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Komakorau Stm Henry Rd	P & F	N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Mangawara Stm Rutherford Rd Br	P & F	N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Awaroa Stm (Rotowaro) Sansons Br @ Rotowaro-Huntly Rd	P & F	N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Matahuru Stm Waiterimu Road Below Confluence	P & F	N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Whangape Stm Rangiriri-Glen Murray Rd	P	N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100
Waerenga Stm SH2 Maramarua		N/A	N/A	N/A	N/A	N/A	0.8	0.4	0.01 5	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5- 8.5	95	95	80	100

Protection priority or fish rank: P/F	Periphyton biomass (NOF band) ¹		Periphyton %WCC ²		DIN (mg/L) ³		DRP (mg/L) ³		Cyano-bacteria (NOF band/ % benthic) ⁴		Fine deposited sediment % cover ⁵		Dissolved oxygen (NOF band) ⁶		Temperature max. ⁷		pH range ⁷		Toxicants / metals % species protection ⁸		MCI ⁹		
	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	
Whangamarino River Jefferies Rd Br	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100	
Mangatangi River SH2 Maramarua	P HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Mangatawhiri River Lyons Rd Buckingham Br	P HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Whangamarino River Island Block Rd	P	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Whakapipi Stm SH22 Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Ohaeroa Stm SH22 Br		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Opuatia Stm Ponganui Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Awaroa River (Waiuku) Otatau Rd Br Moseley Rd	P & F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100

Table 3.11-1a Waipā River Freshwater Management Unit [V1PC1-1006]

Protection priority or fish rank: P/F		Periphyton biomass (NOF band) ¹		Periphyton %WCC ²		DIN (mg/L) ³		DRP (mg/L) ³		Cyano-bacteria (NOF band/ % benthic) ⁴		Fine deposited sediment % cover ⁵		Dissolved oxygen (NOF band) ⁶		Temperature max. ⁷		pH range ⁷		Toxicants / metals % species protection ⁸		MCI ⁹	
		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
Waipa River Mangaokewa Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Waipa River Otewa	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Waipa River SH3 Otorohanga	HB F	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Waipa River Pirongia-Ngutunui Rd Br		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Waipa River Whatawhata Bridge	P	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Ohote Stm Whatawhata/Horoti u Rd	F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Kaniwhaniwha Stm Wright Rd	P	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Mangapiko Bowman Rd Stm		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Mangaohoi Stm South Branch Maru Rd	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100
Mangauika Stm Te Awamutu Borough W/S Intake	HB P	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6-9	6.5-8.5	95	95	80	100

Protection priority or fish rank: P/F	Periphyton biomass (NOF band) ⁵		Periphyton %WCC ⁶		DIN (mg/L) ⁵		DRP (mg/L) ⁷		Cyano- bacteria (NOF band/ % benthic) ⁸		Fine deposited sediment % cover ⁹		Dissolved oxygen (NOF band) ¹⁰		Temperature max. ¹¹		pH range ¹⁰		Toxicants / metals % species protection ¹²		MCI ¹³		
	Hard-bottomed stream type: HB	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
Puniu River Bartons Corner Rd Br		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5- 8.5	95	95	80	100
Mangatutu Stm Walker Rd Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6 - 9	6.5- 8.5	95	95	80	100
Waitomo Stm SH31 Otorohanga		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5- 8.5	95	95	80	100
Mangapu River Otorohanga		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5- 8.5	95	95	100	100
Waitomo Stm Tumutumu Rd	F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5- 8.5	95	95	100	100
Mangaokewa Stm Lawrence Street Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6 - 9	6.5- 8.5	95	95	100	100

⁵ Trophic state for rivers (periphyton biomass) is a compulsory attribute under the NPS-FM and must apply wherever there are hard-bottomed streams in the Waikato-Waipā catchments, to manage for ecosystem health values. Many hard-bottomed streams are identified by sub-catchment in Table 1, some streams have become heavily sedimented over time due to pastoral development with encroachment of grasses and weeds (Davies-Colley 1997), and a lack of riparian vegetation. Some of these catchments may be restored to a more hard-bottomed state over time if sediment, riparian margins and nutrients are managed appropriately. Periphyton can also grow on sand, plant and wood substrates within streams where nutrient and flow conditions are suitable.

⁶ Periphyton cover is relevant for hard-bottomed streams. Numeric cover values are from the weighted composite cover (WCC) percent thresholds from Matheson et al. (2012) for ecological condition (40% as the bottom of the 'good' band as a short term target). The 80 year attribute state is set at the recreation threshold of 30%WCC.

⁷ Dissolved inorganic nitrogen (DIN) and dissolved reactive phosphorus (DRP) targets were based on collation of multiple, similar, nutrient thresholds considered appropriate to manage the risk of periphyton exceeding the NOF biomass attribute or the %WCC attributes recommended from Matheson et al. (2012). Similar dissolved nutrient limits are recommended by Dr Canning in evidence for Fish and Game to provide for ecosystem health values and have been implemented in Regional Plans including: Plan Change 6: Tukituki catchment, Hawkes Bay; Plan change 6a: Otago Region; and the One Plan Schedule E targets, Manawatū-Whanganui Region. The limits/targets are the best approximation of nutrient concentrations appropriate to control periphyton biomass/cover and to lessen the dissolved nutrient contribution to growth of nuisance aquatic macrophytes in soft-bottomed streams.

⁸ Cyanobacteria is a risk to people and animals and can proliferate on the bed of hard-bottomed streams as benthic growth, potentially becoming toxic. Thresholds from the MoH/MfE (2009) guidelines are recommended to safe-guard recreational and mahinga kai values in benthic systems. Systems susceptible to planktonic cyanobacteria have the NOF B band (green) applied.

⁹ Deposited fine sediment is a critical attribute for ecosystem health in hard-bottomed streams. Short term targets are for recreational and aesthetic values, with 80 year targets set to provide for biodiversity and fish spawning aspects for ecosystem health.

¹⁰ Dissolved oxygen is a critical attribute for all freshwater life and ecosystem health values. The NOF requires dissolved oxygen as an attribute below point sources, however, this is inadequate to provide for ecosystem health or aquatic life in all freshwater systems and the dissolved oxygen attribute should apply to all waterbodies.

¹¹ Based on Davies-Colley et al. (2012) recommended temperature, pH and dissolved oxygen attributes for the NOF. Temperature thresholds is the summer-period measurement of the Cox-Rutherford Index (CRI), averaged over the five (5) hottest days (from inspection of a continuous temperature record). pH range does not apply to naturally acid or humic stained streams.

¹² Excludes nitrate and ammonia toxicity and applies to relevant metal and toxicant concentrations associated with the species protection levels as derived from the ANZECC (2000) guidelines or any updates to those guidelines. Particularly important to support ecosystem health in waterbodies affected by urban or industrial contaminants (point-sourced or diffuse).

¹³ Based on Collier et al. (2014) macroinvertebrate attribute for the NOF and in response to the 2017 amendments to the NPS-FM requiring methods to address MCI <80 or sites showing a degrading trend.

Table 3.11-1: Dune, Riverine, Volcanic 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	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

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.

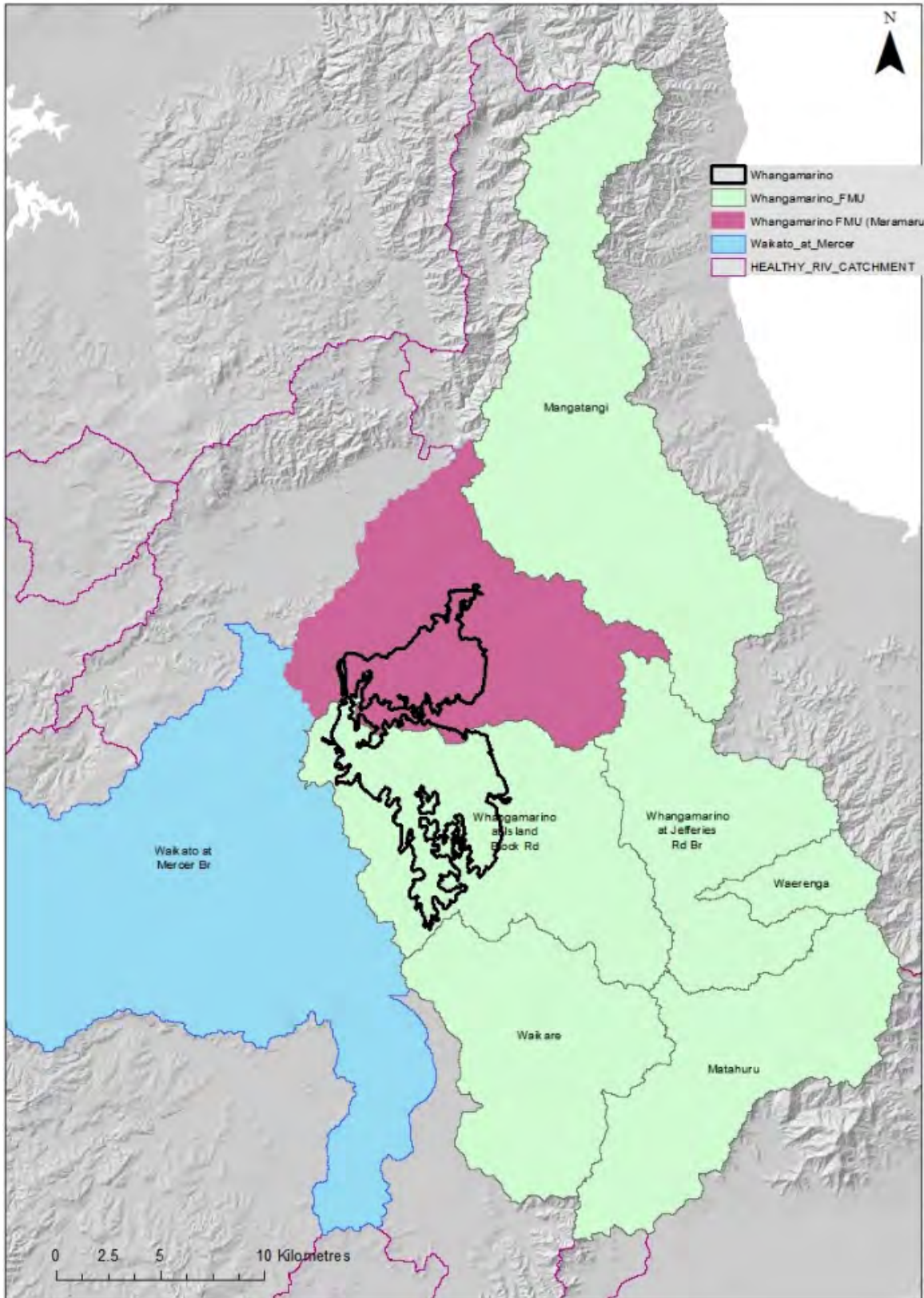
Sub-catchment identifier	Sub-catchment number	Priority
<u>Mangatangi</u>	<u>2</u>	<u>1</u>
<u>Whakapipi</u>	<u>3</u>	<u>1</u>
<u>Whangamarino at Jefferies Rd Br</u>	<u>8</u>	<u>1</u>
Whangamarino at Island Block Rd	10	1
Opuatia	11	1
<u>Waerenga</u>	<u>12</u>	<u>1</u>
Waikare	13	1
Matahuru	14	1
Whangape	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
Moakurarua	42	1
Little Waipa	44	1
Pokaiwhenua	45	1
Mangamingi	48	1
Waipa 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 Waipapa	64	1
Waiotapu at Homestead	65	1
Waipa at Mangaokewa Rd	68	1
Waipapa	70	1
Torepatutahi	72	1
Waikato at Tuakau Br	4	2
Waikato at Port Waikato	6	2 1
Waikato at Rangiriri	15	2 1
Awaroa (Rotowaro) at Sansons Br	19	2 1
Firewood	21	2
Komakorau	22	2
Waipa at Waingaro Rd Br	24	2
Mangaone	31	2
Waipa at SH23 Br Whatawhata	34	2 1
Kaniwhaniwha	36	2
Mangapiko	38	2
Puniu at Bartons Corner Rd Br	40	2
Waipa at Pirongia-Ngutunui Rd Br	43	2
Waitomo at SH31 Otorohanga	46	2
Whakauru	49	2
Tahunaatara	54	2
Otamakokore	59	2
Waipa at Otewa	60	2
Kawaunui	62	2
Waikato at Whakamaru	67	2
Mangakara	69	2
Mangakino	71	2
<u>Mangatawhiri</u>	<u>1</u>	<u>3</u>
Awaroa (Waiuku)	5	3
Ohaeroa	7	3
Waikato at Mercer Br	9	3

Ohote	26	3
Mangaonua	29	3
Karapiro	32	3
Waikato at Narrows	33	3 <u>1</u>
Mangauika	37	3
Mangaohoi	39	3
Waikato at Karapiro	41	3
Mangatutu	47	3
Puniu at Wharepapa	50	3
Whirinaki	56	3
Waiotapu at Campbell	58	3 <u>1</u>
Waikato at Ohakuri	66	3
Waikato at Ohaaki	73	3 <u>1</u>
Pueto	74	3
Pungarehu Canal at Waerenga Rd or Farm Bridge [V1PC1-1006]	NEW	<u>1</u>

Table 3.11-2: List of sub-catchments showing Priority 1, Priority 2, and Priority 3 sub-catchments

*part sub-catchment



Map 3.11-1a Whangamarino Wetland Freshwater Management Unit [PC1-10504]

Note – all green and pink polygons make up the proposed FMU

Table 3.11-3 Primary Wetland attributes for Ecosystem Health (Water Quality) [PC1-10536]

Wetland type	Wetland type description	Attribute relating to water quality (narrative target)			
		TP	TN	Sedimentation	Hydrological regime
Bog	<u>Bog wetlands are nutrient poor, poorly drained and aerated and usually acid. The water table is often close to or just above the ground surface, with rainwater the only source of water. These wetlands are dominated by indigenous vegetation that is representative of bogs in the Waikato, including peat forming plant species.</u>	<u>Nutrient status (TP) is within healthy range for the specific wetland type</u>	<u>Nutrient status (TN) is within healthy range for the specific wetland type</u>	<u>Inputs of external sediment are within healthy range for the specific wetland type</u>	<u>Hydrological regime, if altered, does not exacerbate water quality impacts</u>
Fen	<u>Fen wetlands are of low to moderate acidity and fertility and the water table is usually close to or just below the surface. These wetlands are dominated by indigenous vegetation that is representative of fens in the Waikato, including species adapted to low nutrient environments, such as sedges.</u>				
Swamp	<u>Swamp wetlands are generally of high fertility, receiving nutrients and sediment from surface run-off and ground water. These wetlands are dominated by indigenous vegetation that is representative of swamps in the Waikato, including vegetation cover that is often intermingled.</u>				
Marsh	<u>Marsh wetlands are mineral wetlands with good to moderate drainage that are mainly groundwater or surface water fed and characterised by fluctuation in the water table. Marsh wetlands can be differentiated from swamp wetlands by having better drainage, generally a lower water table and usually more mineral substrate and higher pH.</u>				

Table 3.11-4 Whangamarino Wetland FMU Attributes and Targets [PC1-1139]

In addition to the primary attributes for all wetlands, the following attributes are sought for the Whangamarino FMU specifically:

- [Total Phosphorus – Median TP Concentration – applied to all monitoring sites in FMU](#)
- [Total Nitrogen – Median TN Concentration – applied to all monitoring sites in FMU](#)
- [Sediment – Mean Annual TSS Load – applied to the Pungarehu Canal/Stream monitoring site](#)

The existing attributes in Table 3-11.1 will also apply.

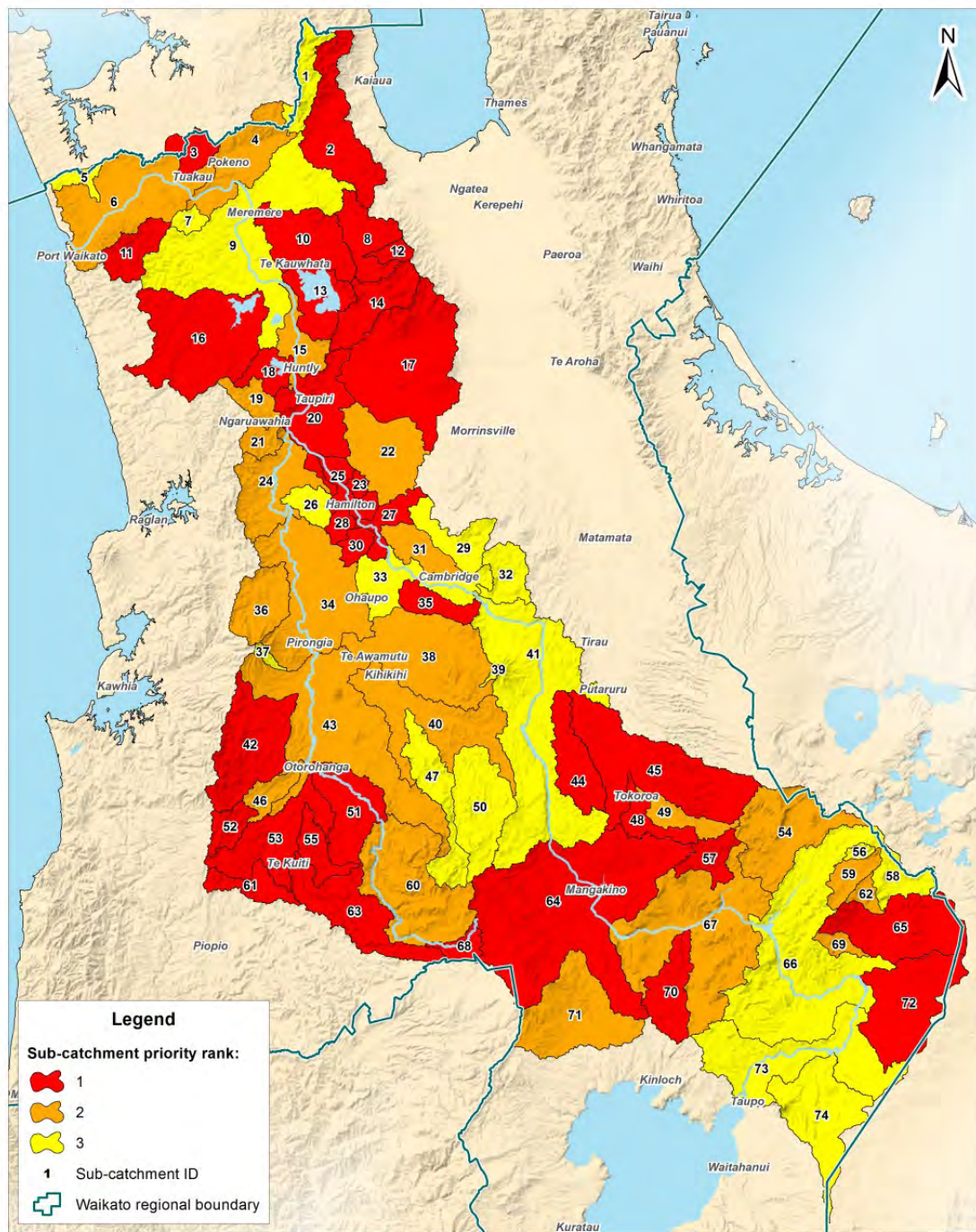
The 80 year targets for the additional primary attributes for the Whangamarino FMU are:

The additional primary attributes for the Whangamarino FMU are:	80 Year Targets¹⁴	Rationale
TP Median Conc (mg/m3)	50 mg/m3¹⁵	The Whangamarino FMU is adversely affected by high phosphorus levels. The 80-year target of 50 mg/m3 aims to reduce TP overtime.
TN Median Conc (mg/m3)	750 mg/m3¹⁶	The Whangamarino FMU is adversely affected by high nitrogen levels. The 80-year target of 750 mg/m3 aims to reduce TN overtime.
TSS Annual Load (T/yr)	>30% reduction (10% reduction by 2030)	Water quality in the Pungarehu Canal is driven by the concentration of sediment, as well as the discharge volume regulated by a control gate. Achieving only the water clarity target for this site will not achieve the ecosystem health outcome.

¹⁴ [In addition to the 80 year targets, short-term targets of 10% reduction over 10 years, and 20% reduction over 20 years are required](#)

¹⁵ [If site is in a better water quality state, 80 year target is to maintain](#)

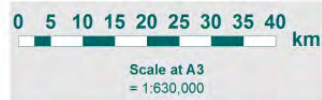
¹⁶ [If site is in a better water quality state, 80 year target is to maintain](#)



Acknowledgements and Disclaimers

1. © Waikato Regional Council 2013-2016. Healthy Rivers: Plan for Change / Wai Ora: He Rautaki Whakapaipai Data.
2. Priority ranking by sub-catchment supplied by NIWA.
3. Digital political boundaries data sourced from Statistics New Zealand.
4. Hydrological data sourced from Land Information New Zealand. Crown Copyright Reserved.

Sub-catchments



Created by: A Jeffries
Date: 21/09/2016
Version: 1
Job No.: 33102
File: 33102 Sub-Catchments by Priority Rank.mxd



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Map 3.11-2: Map of the Waikato and Waipa River Catchments, showing sub-catchments

Updated map showing corrected regional boundaries, priority colours and lake colours to be inserted.

Appendix 2 – Table of values of waterbodies identified by the Director-General to be outstanding.

Identified water body	Reference to significance
<p>Waikato River, river mouth and delta</p>	<p>From Waikato Conservation Management Strategy</p> <ul style="list-style-type: none"> • Excellent shore and estuarine bird habitat – Port Waikato have been assessed as internationally significant site for shorebirds and meet the criteria for inclusion as Wetlands of International Importance under the Ramsar Convention. • Areas of Significant Conservation Values in the Waikato Regional Coastal Plan (2004) • High cultural, historic and aesthetic value with interest from iwi and local communities. • Nationally unique lowland river delta with a range of natural values <p>From Waikato Regional Coastal Plan APPENDIX IV: Areas of Significant Conservation Value</p> <ul style="list-style-type: none"> • Of immense value to Tainui. • Wildlife habitat of high value. • Nationally significance whitebait and native fishery. • Resident and frequenting rare and threatened waders, coastal and freshwater bird fauna. • Nationally significant fossil and land forms exposed. • Geopreservation sites: Port Waikato complex landslide (R13 637 228), Port Waikato (R13 660 248).
<p>Whangamarino Wetland</p>	<p>From Waikato Conservation Management Strategy</p> <ul style="list-style-type: none"> • The Whangamarino Wetland is recognised as internationally significant under the Ramsar Convention • The wetland provides important ecosystem services such as flood protection, nutrient filtering, and functions as a carbon sink. • Historic cultural sites are located at the site which include the Falls Pā and the nearby Meremere Redoubt and Pā • Wetland is an important cultural resource for Hauraki Whānui Flora and native fisheries, especially for Waikato- Tainui • Supports a significant array of threatened and at- risk native plants and wild life. • Provides recreational and educational opportunities for visitors <p>Waikato Regional Policy Statement</p> <ul style="list-style-type: none"> • States that it is internationally recognised wetland site <p>From Lake Waikare and Whangamarino Wetland Catchment Management Plan</p> <ul style="list-style-type: none"> • Contains extensive areas of peat bog which is a relatively rare wetland type throughout New Zealand • Is home to ten threatened plant species and is the only know location in New Zealand for the swamp helmet orchid • Significant site for a range of native birds and fish species • The wetland is a popular game bird hunting location

	<ul style="list-style-type: none"> • Contains options for recreational walking and opportunities to interpret the history and the natural and cultural heritage of the wetland. <p>From Ogle, C., Cheyne, J. 1981. The wildlife and wildlife values of the Whangamarino Wetlands</p> <ul style="list-style-type: none"> • Largest number of breeding Australasian Bitterns and 30,000- 50,000 birds visit the wetland annually. • Provides habitat for a huge number of native plant and animal species. • Especially important for Australasian bittern, spotless Crake, and fernbird. • States “the Whangamarino wetlands are one of the outstanding water bird habitats of New Zealand.” (pg. 83) <p>From the Significant natural areas of the Waikato District: terrestrial and wetland ecosystems (Waikato Regional Council Technical Report 2017/36)</p> <ul style="list-style-type: none"> • The second largest wetland in the north island and the most important and distinctive wetland site located in the Waikato Floodplains Zone. • Supports at least 19 threatened or at- risk species. • The most botanically diverse large lowland peatland in the North Island. 60% of the 239 wetland plant species are indigenous, with several threatened and at-risk species. • Only know location in New Zealand which supports the swamp helmet orchid. • One of the main centres in New Zealand for the nationally at-risk black mudfish. <p>From The health of the Waikato River and catchment Information for the Guardians Establishment Committee, March 2008</p> <ul style="list-style-type: none"> • The second largest Swamp and bog complex in New Zealand and one of the largest wetlands connected with the Waikato river. • States the size, combination of wetland types, and diverse range of species contribute toward the reason why this wetland complex is internationally important to conservation. • It supports over 20,000 species of birds and plant species, some being rare and endemic. • Plays an important role in the Lower Waikato/ Waipā Flood Protection Scheme.
Waitomo Caves/River (Karst system)	<p>From Waikato Conservation Management Strategy</p> <ul style="list-style-type: none"> • Karst features that have internationally significant natural, cultural, recreational and tourism values • Caves and other karst landforms of significant natural value, including sites of national and international geological significance that provide the most important recreational caving opportunities in the North Island. • The caves and lands of the Waitomo area have special value to Ng āti Maniapoto and hapū of Hauāuru ki Uta. Caves embrace the concept of Te Kōpū o Te Whenua (the womb of the Earth Mother, Papatūānuku). The karst landscape includes urupā (burial sites), pā and battle sites, and preserved Māori artefacts. Opapaka Pā and Ruakuri Caves and Bush Scenic Reserve are examples of sites managed by the Department that are important to local iwi. • Undeveloped or ‘wild’ caves in this Place are a nationally important recreational caving resource, especially for the North Island. Examples of recreational cave sites are Gardner’s Gut Cave, Hollow Cave, Waipuna Cave, Reserve Cave and Puketiti Flower Cave. These wild caves are fragile and

	<p>extremely vulnerable to the impacts of human activities, and so are carefully managed to minimise adverse effects.</p> <ul style="list-style-type: none"> • Many significant natural landforms, geological features and landscapes are present, including volcanic cones, karst and fossil deposits. • Archaeological values include numerous pā, middens, urupā (burial sites), food pits and battle sites
Waikato Peat Lakes	<p>From the Waikato Conservation Management strategy</p> <ul style="list-style-type: none"> • Highly representative of the wetland type in the region. • Home to a range of significant plant and animal species, some threatened species. • Lake Rotopiko is valued for having the highest water quality of all the Waipā lakes. • Some recreational opportunities are available at the lakes. <p>From Waipā District Peat Lakes Booklet</p> <ul style="list-style-type: none"> • Significant archaeological values. Sites are home to some of the best preserved prehistoric open air stone-age settlements in the world. • Hold significant historical and cultural values for Māori. Sites are considered tapu for Ngāti Apakura, Ngāti Maniapoto and Waikato- Tainui and. • A range of recreational opportunities such as walking and game bird shooting. • Highly valued by scientists for opportunities to study wetland ecology. • Habitat for rare and threatened plant and animal species. <p>From Wildland Consultants Ltd (2011). Significant natural areas of the Waikato region: Lake ecosystems. Waikato Regional Council Technical Report 2011/5. Hamilton, Waikato Regional Council.</p> <ul style="list-style-type: none"> • Report identifies peat lakes in the Waikato region. Individual values of the lakes are included under the assessment of significance. Several of the Waikato peat lakes are ranked and scored as highly significant, with some ranked very highly. <p>From Waikato Region Shallow Lakes Management Plan: Volume 2</p> <ul style="list-style-type: none"> • Largest collection of this wetland type in New Zealand • Threatened plant and animal species. Significant ecological values at most sites. <p>From Waipā District Peat Lakes and Wetlands: Issues and solutions in the conservation and management of the Peat Lakes and Wetlands of the Waipā District and the role of the Waipā Peat Lake and Wetland Accord</p> <ul style="list-style-type: none"> • Nationally significant and represent the largest collection of this wetland type in New Zealand. • Home to threatened species such as the Australasian bittern and New Zealand dabchick. • Lakes are used for recreational purposes for activities such as game bird hunting, sailing, rowing and walking. • Valued for scientific research and for community and school groups interested in learning about wetland wildlife. • Significant historic sites for Maori as a number of Pa are located in proximity to some lakes.
Lake Rotokotuku	From Waikato Region Shallow Lakes Management Plan: Volume 2

	<ul style="list-style-type: none">• One of the highest quality peat lakes in the Waikato Region, comparable to Lake Maratoto which is the highest quality lake in the Waikato region.• High abundance of invertebrate species, some of conservation significance.
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Appendix 3 – Possible interpretation of components of the Plan Change

1. There is confusion over the components of the Plan Change and where they fit in terms of the requirements of the NPSFM process for setting freshwater objectives. To illustrate this, I explored three possible options for interpretation in the table below.

2. I acknowledge these are just some possible interpretations and there may be others however, these varied interpretations highlight how unclear the plan change is, as currently written, in regard to whether it meets the requirements under the NPSFM for developing freshwater objectives.

Table 1 Possible options for interpretation of PC1

NPSFM process for setting freshwater objectives	Interpretation 1 – Table 3.11-1 represents freshwater targets to achieve the identified values	Interpretation 2 – Table 3.11-1 represents freshwater objectives to achieve the identified values	Interpretation 3 – Table 3.11-1 represents freshwater objectives and limits/targets
Define FMUs	PC1 as notified with 8 FMUs. 4 river FMUs and 4 lake FMUs	Sub-catchments are the appropriate scale for FMUs due to freshwater objectives being set, via Table 3.11-1, at this scale.	Sub-catchments are the appropriate scale for FMUs due to freshwater objectives being set, via Table 3.11-1, at this scale.
Identify the values of those FMUs with the community	Use and Intrinsic values identified and apply to all FMUs.	Use and Intrinsic values identifies and apply to the entire Waikato and Waipā River catchments.	Use and Intrinsic values identifies and apply to the entire Waikato and Waipā River catchments.
Identify the attributes that are relevant to achieving the values	Outlined in Table 3.11-1 Process of determining appropriate attributes confirmed in recommendation report to CSG and only limited to attributes that are a direct driver of the 4 contaminants considered within scope of the Plan Change. A full assessment of the values and all of the necessary attributes		

	to achieve them does not appear to have occurred beyond the four contaminants.		
Set a minimum acceptable attribute state needed to achieve values	Not clear. Potentially equate to numbers in Table 3.11-1.	Not clear. Potentially equate to numbers in Table 3.11-1.	Contained in Table 3.11-1.
Formulate freshwater objectives to achieve the FMU values by either: Using numeric attribute states Using narrative terms (for attributes not in App 2)	Objectives 1, 3, 4 & 6 which refer to Table 3.11-1. Do not meet the definition of the freshwater objective under the NPSFM.	Set as concentrations in Table 3.11-1 as short and long term objectives at the sub-catchment level. Table outlines the numeric values for each attribute, in each FMU that needs to be achieved in order to achieve the values. Meets the definition of a freshwater objective.	Freshwater objectives are both the narrative objectives 1, 3, 4 & 6 and the concentrations in Table 3.11-1.
Set limits and where required targets (where freshwater objectives are not being met) or limits are exceeded	Table 3.11-1 - Short term 'targets' (not timebound and do not meet NPSFM target definition) - Long term targets, to be achieved in 80 years (although not clear whether it is 80 years from operative PC date or another date). Not clear whether the numbers in the table represent the 'maximum amount of	Not currently included in the Plan Change	Table 3.11-1 - Short term 'targets' (not timebound and do not meet NPSFM target definition) - Long term targets, to be achieved in 80 years (although not clear whether it is 80 years from operative PC date or another date).

	<p>resource use available' i.e. are the allocable human contribution of the contaminant to the catchment or whether these are the concentration in the river to be achieved at the monitoring point after both natural and human contributions have been considered.</p> <p>I do note that both clarity and E. coli are listed in the table although it is my understand that it is not appropriate to 'allocate' these attributes.</p>		
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Summary of interpretation #1

3. PC1 states that there are eight FMUs; four applying to the Waikato and Waipā Rivers, and four applying to groups of different lake types (dune, peat, riverine, volcanic). The extent of these FMUs is shown on Map 3.11-1. Section 3.11.1 of the Plan Change describes the values and uses for the Waikato and Waipā River catchments as determined in consultation with the community. Intrinsic values and use values are identified and, as clarified at paragraph 152 of the s42A officer's report, these identified values apply to all eight FMUs universally.
4. The attributes (confined to the four contaminants) to achieve these values have then been identified and are listed in Table 3.11-1. I am not clear whether minimum acceptable attribute states have been identified under this interpretation of the Plan Change. They are not evident within the Plan Change itself, if they have been identified. It is possible these attributes states are represented in the figures Table 3.11-1.

5. Objectives of the Plan Change, in particular Objectives 1, 3, 4 & 6 take on the role as freshwater objectives, as well as being plan objectives. These objectives, as notified, refer directly to achieving the restoration and protection of water quality using the targets in Table 3.11-1. Referring back to the NPSFM definition of a freshwater objective, it could be interpreted that Objective 1, 3 and 4 are describing the intended environmental outcome through the targets in Table 3.11-1.
6. That leads on to the limits/targets set for water quality attributes in Table 3.11-1. In this interpretation, the table provides short-term and long-term targets for water quality, in the various sub-catchments which make up the FMUs, or only long-term targets in the case of the lakes FMUs. The short-term targets do not appear to be time bound, which means they do not fit with the NPSFM definition of a target. The 80-year timeframe for the longer-term targets meets this definition.
7. As targets, I interpret that the numbers in Table 3.11-1 represent the limit to be achieved in the future i.e. sometime in the short term and in 80 years. As defined in the NPSFM, the limit that these numbers represent is the maximum amount of resource use available to meet the freshwater objectives. Therefore, these numbers are the amount of resource available in each sub-catchment for human users⁹⁵.
8. Because Table 3.11-1 can be interpreted as showing targets for the different sub-catchment that make up each of the FMUs, there is a question, in my view, about whether the scale of the FMUs is correct given that the NPSFM defines an FMU as being ‘...the appropriate spatial scale for setting...limits...’.

Summary of interpretation #2

9. Leaving aside the identification of FMUs as the first step in this interpretation option, values identification is the same as outlined in paragraph 3 above, as is the identification of attributes.
10. The Plan Change at the explanatory note to Table 3.11-1 outlines that the table describes the attribute concentrations or visibility distance (in

⁹⁵ I have assumed that these numbers do not account for any naturally occurring amounts of contaminants in the catchment and therefore these amounts are in addition to the numeric limits.

the case of the clarity attribute) (the minimum acceptable attribute states) that need to be achieved in the sub-catchment in order for the values to be achieved. As a result, the numbers in Table 3.11-1 can be interpreted to describe an intended environmental outcome for each attribute, in each sub-catchment and therefore meet the definition of freshwater objectives under NPSFM. Although I note the evidence of Ms McArthur states that the examples in the explanatory text do not cover the full range of circumstances across the catchments. Ms McArthur recommends the explanatory text is deleted from PC1.

11. Given that the NPSFM defines freshwater management unit as ‘...the appropriate spatial scale for setting freshwater objectives and limits and for freshwater accounting and management purposes’, it follows that, under this interpretation, the Council have identified that the sub-catchment scale is the appropriate spatial scale to set freshwater objectives and that the identified sub-catchments are the freshwater management units and not the 8 FMUs shown on Map 3.11-1.
12. When the Plan Change is interpreted in this manner, it appears that no limits and targets have been defined. However, these limits/targets are needed to ensure that plan users and decision makers are clear about how the freshwater objectives will be achieved, and ultimately how the FMU values are achieved, when viewed alongside the plan policies and rules.

Summary of interpretation #3

13. Under this interpretation, I consider that the numbers in Table 3.11-1 act as minimum acceptable attribute states, as freshwater objectives and as limits/targets.
14. What this option effectively means is that the minimum acceptable state for an attribute is the equivalent of the maximum amount of that attribute that is available in the catchment, and that the freshwater objectives are set to these numbers to reflect this. This seems to be to be a plausible option.
15. The confusion through the Plan Change means that it is not clear whether either of these interpretation options are what was anticipated

by the CSG and further work to clarify what the numbers in Table 3.11-1 represent and how they will support the freshwater values is needed.

Appendix 4 – Appropriateness of objectives.

	Objective 1 – as amended by Officer's	My recommended amendment to Objective 1	Objective 2 – as amended by Officer's	My recommended amendment to Objective 2	Objective 3 – as amended by Officer's	My recommended amendment to Objective 3
Objective	By 2096 at the latest, 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 <u>Waikato and Waipā Rivers, such that of</u> the 80-year water quality attribute targets states in Table 3.11-1 <u>are met.</u>	To restore and protect the Waikato and Waipā catchments so that the 80 year water quality limits/targets in Tables 3.11-1, 3.11.1a, 3.11-3 and 3.11-4 are achieved by 2096	Waikato and Waipā communities and their economy benefit from the restoration and protection of water quality in the Waikato <u>and Waipā</u> River catchments, which enables the people and communities to continue to provide for their social, economic and cultural wellbeing.	Long-term restoration and protection of water quality in the Waikato and Waipā River catchments, from the reduction of discharges, will enable people and communities to provide for their social, economic and cultural wellbeing	Actions put in place and implemented by 2026 to reduce diffuse and point source discharges of nitrogen, phosphorus, sediment and microbial pathogens, are sufficient to achieve <u>the short-term water quality attribute states in Table 3.11-1.</u> 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 3.11-4.	To reduce diffuse and point source discharges to achieve the short-term water quality limits/targets in Tables 3.11-1, 3.11.1a, 3.11-3 and 3.11-4 by 2030.
Relevance						
Directly related to resource management issue?	Yes, discharge of contaminants	Yes, discharge of contaminants	Yes – “wellbeings” and water quality	Yes – “wellbeings” and water quality	Yes, discharge of contaminants	Yes, discharge of contaminants
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes – s.5(2) RMA	Yes – s.5(2) RMA	Yes – s.5(2) RMA	Yes – s.5(2) RMA	Yes – s.5(2) RMA	Yes – s.5(2) RMA
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	Yes s6(e) RMA	Yes s6(e) RMA	Yes s6(e) RMA	Yes s6(e) RMA	Yes s6(e) RMA	Yes s6(e) RMA
Relevant to statutory functions or to give effect to another plan or policy (i.e., NPS, RPS)?	Vision & Strategy, NPSFM, NZCPS	Vision & Strategy, NPSFM, NZCPS	RMA	RMA	Vision & Strategy, NPSFM, NZCPS	Vision & Strategy, NPSFM, NZCPS
Usefulness						
Will effectively guide decision-making?	Yes, but unlikely to affect short term decision making but a useful signal for longer term	Yes, but unlikely to affect short term decision making but a useful signal for longer term	Not clear	Yes, Guide decision making on the reduction of discharges	Not really – unclear what “actions” are required to achieve the outcome by the timeframe	Clear guidance on what action is required and by when
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes, could be more succinct and focussed on outcome not action required	Yes	No – outlines some benefits from water quality improvement in the river catchments but does not specify when this objective is be achieved and is not really able to be measured to see if it is being achieved.	Yes, outlines that long-term restoration from reduced discharges in the catchment will enable people to provide for their wellbeing.	Can't really be assessed when “actions” are unknown	Yes
Consistent with other objectives?	Yes	Yes	Not really	Yes	Yes	Yes
Achievability						
Will it be clear when the objective has been achieved in the future? Is the objective measurable and how would its achievement be measured?	Yes	Yes	Any restoration in water quality could be seen as achieving the objective but it contains no actual measures for when the objective is achieved.	Recognises that effects from reduction of discharges will have positive effects on the ability of people and communities to provide for their wellbeing	No – what actions. No actual requirement of water quality improvement	Yes, it is clear that a reduction in discharge is required to achieve the short-term targets

Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	Aspirational – likely 80 years	Aspirational – likely 80 years	Aspirational – no timeframe provided	Aspirational – likely 80 years	Life of Plan	Life of Plan
Does the council have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	Yes – policy framework including rules and non-regulatory methods that can be used to achieve the long-term outcomes sought	Yes – policy framework including rules and non-regulatory methods that can be used to achieve the long-term outcomes sought	Yes	Yes – policy framework including rules and non-regulatory methods that can be used to achieve the long-term outcomes sought	Not clear on this based on lack of clarity about what is required	Yes – policy framework including rules and non-regulatory methods that can be used to achieve the short-term outcomes sought
What other parties can the Council realistically expect to influence to contribute to this outcome?	All those who currently discharge contaminants into the Waikato and Waipā River catchments	All those who currently discharge contaminants into the Waikato and Waipā River catchments	Entire community	Entire community	All those who currently discharge contaminants into the Waikato and Waipā River catchments	All those who currently discharge contaminants into the Waikato and Waipā River catchments
What risks have been identified in respect of outcomes?	Relies on knowledge and technology not yet available	Relies on knowledge and technology not yet available	n/a	Risk is that if water quality is not improved,	Not clear	Risk of not achieving short term water quality targets
Reasonableness						
Does the objective seek an outcome that would have greater benefits either environmentally or economically/socially compared with the costs necessary to achieve it?	Could have large costs, not yet known. Will have significant environment, social, cultural benefits when achieved.	Could have large costs, not yet known. Will have significant environment, social, cultural benefits when achieved.	Could have large costs, not yet known. Will have significant environment, social, cultural benefits when achieved.	Could have large costs, not yet known. Will have significant environment, social, cultural benefits when achieved.	Likely to require change in practice, possibly some land use change (to lower emitting land use), actions not know so these could have significant costs Will have significant environment, social, cultural benefits when achieved.	Likely to require change in practice, possibly some land use change (to lower emitting land use), actions not know so these could have significant costs Will have significant environment, social, cultural benefits when achieved.
Who is likely to be most affected by achieving the objective and what are the implications for them?	Dischargers, plan users, Council, community.	Dischargers, plan users, Council, community.	Dischargers, plan users, Council, community.	Dischargers, plan users, Council, community.	Dischargers, plan users, Council, community.	Dischargers, plan users, Council, community.

	Objective 4 – as amended by Officer's	My recommended amendment to Objective 4	Objective 5 – as amended by Officer's	My recommended amendment to Objective 5	Objective 6 – as amended by Officer's	My recommended amendment to Objective 6
Objective	<p>A staged approach to reducing contaminant losses 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:</p> <p>a. considering the values and uses when taking action to achieve the attribute^ targets^ states for the Waikato and Waipā Rivers in Table 3.11-1; and</p> <p>b. recognising that further contaminant reductions will be required by subsequent regional plans and signalling anticipated future management approaches that will be needed in order to meet Objective 1.</p> <p>Or Delete entirely</p>	Delete entirely	<p>Tangata whenua values are integrated into the co-management of the rivers and other water bodies within the catchment such that:</p> <p>a. tangata whenua have the ability to:</p> <p>i. manage their own lands and resources, by exercising mana whakahaere, for the benefit of their people; and</p> <p>ii. actively sustain a relationship with ancestral land and with the rivers and other water bodies in the catchment; and</p> <p>b. new impediments to the flexibility of the use of tangata whenua ancestral lands are minimised; and</p> <p>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.</p>	<p>Tangata whenua values are integrated into the co-management of the rivers and other water bodies within the catchment such that:</p> <p>a. tangata whenua have the ability to:</p> <p>i. manage their own lands and resources, by exercising mana whakahaere, for the benefit of their people; and</p> <p>ii. actively sustain a relationship with ancestral land and with the rivers and other water bodies in the catchment; and</p> <p>b. new impediments to the flexibility of the use of tangata whenua ancestral lands are minimised; and</p> <p>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.</p> <p>d. Intrinsic values of waterbodies and ecosystems are recognised and provided for.</p>	<p>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</p> <p>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.</p> <p>Or Delete entirely</p>	To achieve the restoration and protection of the Whangamarino Wetland, an integrated approach to the reduction of contaminant discharge in the catchment is required and shall be consistent with achieving the water quality attribute limits/targets in Tables 3.11-1, 3.11-1a and 3.11-4.
Relevance						
Directly related to resource management issue?	Yes, discharge of contaminants	-	Yes, discharge of contaminants	Yes, discharge of contaminants	Yes, discharge of contaminants	Yes, discharge of contaminants
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes – s.5(2) RMA	-	Yes – s.5(2) RMA	Yes – s.5(2) RMA	Yes – s.5(2) RMA	Yes – s.5(2) RMA
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	Yes s6(e) RMA	-	Yes s6(e) RMA	Yes s6(e) RMA	Yes s6(e) RMA	Yes s6(e) RMA
Relevant to statutory functions or to give effect to another plan or policy (i.e., NPS, RPS)?	Vision & Strategy, NPSFM, NZCPS	-	Vision & Strategy, NPSFM, NZCPS	Vision & Strategy, NPSFM, NZCPS	Vision & Strategy, NPSFM, NZCPS	Vision & Strategy, NPSFM, NZCPS
Usefulness						
Will effectively guide decision-making?	Reads more as a policy to achieve Objectives 1, 3 and 6	-	Yes, will ensure that tangata whenua values are recognised in decision making	Yes, will ensure that tangata whenua values are recognised in decision making including intrinsic values	Yes	Yes
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	No	-	Yes, assume that objective is to be achieved at all times.	Yes, assume that objective is to be achieved at all times.	Yes	Yes

Consistent with other objectives?	No – reads as a policy to achieve Objective	-	Yes	Yes	Yes	Yes
Achievability						
Will it be clear when the objective has been achieved in the future? Is the objective measurable and how would its achievement be measured?	No is written as a policy	-	Not clear, could apply to all decision making which is appropriate	Not clear, could apply to all decision making which is appropriate	Would be clearer to include a reference to the tables containing targets	Yes, provides all the necessary components to ensure the objective can be achieved and is measurable
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	Aspirational	-	At all times	At all times	Both	Both
Does the council have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	n/a	-	Yes	Yes	Yes	Yes
What other parties can the Council realistically expect to influence to contribute to this outcome?	n/a	-	Tangata whenua	Tangata whenua	Dischargers – diffuse and point source	Dischargers – diffuse and point source
What risks have been identified in respect of outcomes?	n/a	-	?	?	?	?
Reasonableness						
Does the objective seek an outcome that would have greater benefits either environmentally or economically/socially compared with the costs necessary to achieve it?	n/a	-	Outcomes are likely to have greater benefits than costs	Outcomes are likely to have greater benefits than costs	Could have large costs, not yet known. Will have significant environment, social, cultural benefits when achieved.	Could have large costs, not yet known. Will have significant environment, social, cultural benefits when achieved.
Who is likely to be most affected by achieving the objective and what are the implications for them?	n/a	-	Tangata whenua	Tangata whenua	Dischargers, plan users, Council, community.	Dischargers, plan users, Council, community.

	Recommended new Objective #1	Recommended new Objective #2	Recommended new Objective #3
Objective	Air, land, fresh water bodies, the coastal marine area and ecosystems are managed as integrated and connected resources to restore the health and wellbeing of the Waikato and Waipā River catchments; ki uta ki tai – mountains to the sea.	To restore and protect the health and wellbeing of fresh water bodies and the coastal marine area within the Waikato and Waipā River catchments, waterbodies are managed to: <ul style="list-style-type: none"> • Safeguard the life supporting capacity of aquatic ecosystems; and • Recognise and provide for indigenous biodiversity including freshwater fish species • Recognise and provide for the significant values of all wetlands • Ensure that overall water quality in the catchments is improved 	By 2026, policies and methods are implemented that safeguard the ecosystem health of all wetlands by specifically minimising and avoiding the impact of nitrogen, phosphorus and sediment on natural wetlands, and associated hydrological drivers of water quality decline, including a programme for benchmarking and setting numeric targets for wetland attributes.
Relevance			
Directly related to resource management issue?	Yes- integrated management of catchments	Yes – management of water quality and protection of values and ecosystems	Yes- protection of wetlands
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes	Yes - 5(2)(a) – (c), 6(a) & (c)	Yes – s.5(2) RMA
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	Yes	Yes	Yes s6(e) RMA
Relevant to statutory functions or to give effect to another plan or policy (i.e., NPS, RPS)?	Yes – NPSFM, NZCPS, RMA	Yes – NPSFM, NZCPS, RMA	Vision & Strategy, NPSFM, NZCPS
Usefulness			
Will effectively guide decision-making?	Yes, ensures that a holistic approach is taken to the management of catchments at all times	Yes, the achievement of objective should be considered all the time	Yes
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	Yes, management at all times is required to be integrated and connected	Yes, management at all times of the water quality in freshwater bodies and CMA to achieve the outcomes sought	Yes
Consistent with other objectives?	Yes, provides management overview of achieving other objectives	Yes	Yes
Achievability			
Will it be clear when the objective has been achieved in the future? Is the objective measurable and how would its achievement be measured?	Should occur at all times. Achievement is that decision making is holistic and considers catchments in an integrated and connected way.	Yes	Yes
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	Both aspirational and should be used for decisions in the lifetime of the plan.	Both aspirational and should be used for decisions in the lifetime of the plan.	Both
Does the council have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	Yes – policy framework including rules and non-regulatory methods that can be used to achieve integrated management of resources	Yes – policy framework including rules and non-regulatory methods that can be used to achieve the outcomes sought	Yes – policy framework including rules and non-regulatory methods that can be used to achieve the outcomes sought
What other parties can the Council realistically expect to influence to contribute to this outcome?	Entire community	Entire community	Entire community
What risks have been identified in respect of outcomes?	None	Risks of not achieving objective are that waterbodies are not appropriately managed	Risk of not achieving objective is that appropriate protection for wetlands is not included in the Regional Plan.
Reasonableness			

Does the objective seek an outcome that would have greater benefits either environmentally or economically/socially compared with the costs necessary to achieve it?	Yes, integrated management outcomes can be considered with all catchment management activities and do not require significant costs to achieve. Understanding of integrated catchment management is needed	Achievement of the objective will be different depending on the current state of water quality in a catchment/FMU – in those where water quality is more degraded, the	Outcomes are likely to have greater benefits than costs Will have significant environment, social, cultural benefits when achieved.
Who is likely to be most affected by achieving the objective and what are the implications for them?	Entire community	Entire community	Dischargers, plan users, Council, community.