IN THE MATTER of the Resource Management Act 1991

AND

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

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STATEMENT OF OPENING EVIDENCE OF TRACEY-LEE MAY

For the Waikato Regional Council

DATED 15 FEBRUARY 2019

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INTRODUCTION

1. My full name is Tracey-Lee May.

2. I am the Director of the Science and Strategy directorate of the Waikato Regional Council ("**Council**").

3. I hold a Bachelor of Resource and Environment Planning (Honours) from Massey University, and a Post Graduate Diploma in Business Administration (Management), also from Massey University. I have been a full member of the New Zealand Planning Institute since 2001, and have 25 years planning experience in consultancy and local government in Australia and New Zealand.

4. I am the Project Sponsor of the Proposed Plan Change 1 – Waikato and Waipā River Catchments ("Proposed PC1") to the Waikato Regional Plan project, initially having taken on this role on an interim basis in August 2013 when I was the Acting Group Manager Policy and Transport. When I was appointed to the Director Science and Strategy in August 2014 the project sponsor role became permanent. As project sponsor I have overall accountability for the project. My role is to ensure that the project is focussed throughout its life on achieving its objectives, and I am ultimately responsible to the Chief Executive and Council for delivery of the project.

5. I provide this Opening Evidence in my role for Council as proponent of Proposed PC1.

6. This evidence sets out:
    - An overview of the proposed plan change
    - The statutory drivers giving rise to the plan change
    - Co-governance responsibilities
    - Core reasons for undertaking the plan change
    - Plan development process for Proposed PC1
    - Notification process of Proposed PC1
    - High level explanation of Proposed PC1 policy framework and content
    - National direction on freshwater management – ongoing programme of change.

7. I confirm that I am familiar with the Code of Conduct for Expert Witnesses as set out in the Environment Court Practice Note 2014. I have read and agree to comply with the Code. Except where I state that I am relying upon the specified evidence or advice of

another person, my evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

OVERVIEW

8. The decision to commence the project, as agreed to by Waikato Regional Council and Waikato and Waipā River iwi partners, was by way of a Council resolution in August 2012.[1] A map of the area covered by the Waikato and Waipā River catchments is included in Proposed PC1[2]. This is the catchment of the Waikato and Waipā Rivers as defined by the three statutes enacting the Vision and Strategy.

9. Proposed PC1 is a catchment-specific change to the Waikato Regional Plan that will result in the addition of a new sub-regional plan chapter, chapter 3.11, specifically to manage water quality in the Waikato and Waipā River catchments as statutorily defined. The plan change includes consequential amendments to other chapters of the Waikato Regional Plan. As the proposed objectives and provisions contained in Plan Change 1 apply to the specific geographical area of the Waikato and Waipā catchments, they will apply in addition to the current provisions of the Waikato Regional Plan.

10. The plan change is focussed on the management of non-point discharges to land and water bodies. It puts in place a resource management framework to manage the inputs of nitrogen, phosphorus, sedimentation, and *E.coli* (microbial pathogens), with a view to restoring and protecting the Waikato and Waipā Rivers.

11. The plan change responds to the Council's statutory resource management functions, addresses outcomes required by Treaty Settlement legislation, and was developed under a co-governance partnership with River Settlement Iwi. [3]

12. Proposed PC1 was the product of a collaborative plan development process where sector and community members co-authored the entirety of the plan change. Members of the collaborative group spent over 600 hours at plan development meetings, hui,

[1] Attached as Appendix 1

[2] Attached as Appendix 2

[3] Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, Ngāti Tūwharetoa, Raukawa and Te Arawa River Iwi Waikato River Act 2010, and the Nga Wai o Maniapoto (Waipa River) Act 2012.

workshops and site visits. This effort was complemented by considerable sector and community engagement, often undertaken at the representatives' own expense and in their own time.

13. The plan development process was supported by an independent technical alliance who provided independent commissioning and oversight of a significant amount of technical evidence. The entirety of this technical evidence can be sourced from the Waikato Regional Council website. Each report produced by the technical alliance was peer reviewed and placed on the website as it was produced.

14. Council staff provided support to the process but did not have a hand in authoring the plan change. The draft plan change, as developed through the collaborative process, was advanced through the co-governance committee of river iwi and elected members, and then advanced to full Council. Neither the co-governance committee nor Council altered the content of Proposed PC1 as received from the collaborative group.

15. The plan change was notified on the 22 October 2016, with a variation to the plan change notified on 10 April 2018. After the variation had merged into the plan change under clause 16B of Schedule 1 of the Resource Management Act 1991 ("RMA"), further submissions were called for on the merged instrument from 20 August to 17 September 2018. Approximately 1,100 submissions have been received on the plan change which are the subject of these hearings.

STATUTORY FRAMEWORK

River Settlement legislation

Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010

16. The Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010 (the Waikato-Tainui Act) gave effect to the 2009 deed of settlement in respect of the Raupatu claims of Waikato-Tainui over the Waikato River. The overarching purpose of the settlement is to restore and protect the health and wellbeing of the river for future generations. The purpose of the Waikato-Tainui Act, as set out in section 4 is to:

    "a) give effect to the settlement of raupatu claims under the 2009 deed:
    b) recognise the significance of the Waikato River to Waikato-Tainui:
    c) recognise the vision and strategy for the Waikato River:
    d) establish and grant functions and powers to the Waikato River Authority:
    e) establish the Waikato River Clean-up Trust:
    f) recognise certain customary activities of Waikato-Tainui:

g) provide co-management arrangements for the Waikato River:

h) provide redress to Waikato-Tainui relating to certain assets:

i) recognise redress to Waikato-Tainui of the Kiingitanga Accord and other accords provided for in the schedule of the Kiingitanga Accord."

Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010

17. The Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 gives effect to the co-management deeds entered into between the Crown and Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi. The Crown and each iwi have agreed to the establishment and participation of each iwi in a co-governance framework. The overarching purpose of the Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 is to restore and protect the health and wellbeing of the Waikato River for present and future generations.

18. The purpose of the Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010 as set out in section 4 is to:

"a) recognise the significance of the Waikato River to Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi:

b) recognise the vision and strategy for the Waikato River:

c) establish and grants functions and powers to the Waikato River Authority:

d) establish the Waikato River Clean-up Trust:

e) acknowledge and provide a process that may recognise certain customary activities of Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi:

f) provide co-management arrangements for the Waikato River."

Nga Wai o Maniapoto (Waipā River) Act 2012

19. The Nga Wai o Maniapoto (Waipā River) Act 2012 gives effect to the co-management deeds entered into between the Crown and Ngāti Maniapoto. The overarching purpose of the Nga Wai o Maniapoto (Waipā River) Act 2012 is to restore and maintain the quality and integrity of the waters that flow into and form part of the Waipā River for present and future generations and the care and protection of the mana tuku iho o Waiwaia.

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

20. Te Ture Whaimana o Te Awa o Waikato – the Vision and Strategy for the Waikato River ("the Vision and Strategy") is set out in schedules to the above Acts.

21. The Vision and Strategy is the primary direction-setting document for the Waikato and Waipā Rivers and their catchments which include the lower reaches of the Waipā River.

The legislation required it to be directly inserted into the Waikato Regional Policy Statement (RPS) without the use of the Schedule 1 process and accordingly with no ability for public submission or comment.

22. The Vision and Strategy in the Waikato Regional Policy Statement cannot be altered or changed by any subordinate policy process, and any alteration to the Vision and Strategy itself can only be done through the process stated in the River Settlement legislation.

23. The Operative Waikato Regional Plan, and any subsequent proposed plan, must give effect to the Vision and Strategy. Importantly, if there is any inconsistent provision in a Resource Management Act 1991 planning document, including any national policy statement, the Vision and Strategy prevails. The Vision and Strategy prevails over any national policy statement where there are any inconsistencies, and requires more stringent water quality conditions than those stated in the National Policy Statement for Freshwater Management 2017 (NPSFM). It requires the Waikato and Waipā Rivers to be safe for people to swim in and safe to take food from over their entire length.

24. The Operative Waikato Regional Policy Statement cannot be inconsistent with the Vision and Strategy. If there is any inconsistency, the Vision and Strategy prevails over that part of the Regional Policy Statement. This also applies to any future reviews of the Vision and Strategy.

25. The Vision and Strategy for the Waikato and Waipā River is appended to this evidence[4]. The Vision and Strategy takes a holistic approach and aims for the restoration and protection of the economic, social, cultural and spiritual relationships that Waikato and Waipā River Iwi have with the Waikato and Waipā Rivers. The vision for the Waikato and Waipā Rivers is as follows:

> *"Tooku awa koiora me oona pikonga he kura tangihia o te maataamuri - "The river of life, each curve more beautiful than the last"*
>
> *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."*[5]

[4] Appendix 3

[5] Te Ture Whaimana o Te Awa o Waikato – the Vision and Strategy for the Waikato River ("the Vision and Strategy")

Resource Management Act

National Policy Statement Freshwater Management

26. National Policy Statements are developed by central government to provide direction to local government about matters of national significance. The purpose of a national policy statement, as stated in s45 of the RMA, is to state objectives and policies for matters of national significance that are relevant to achieving the purpose of the RMA. The "NPSFM" recognises the national significance of freshwater and Te Mana o te Wai, the mana of water. In accordance with the NPSFM Council must set objectives for the state its communities want to see for their water bodies in the future, and must set limits to meets these objectives. The NPSFM objectives that relate to water quality are:

    "Objective A1, To safeguard:

    - *The life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of freshwater; and*
    - *The health of people and communities, at least as affected by secondary contact with fresh water;*
    - *In sustainably managing the use and development of land, and of discharges of contaminants*

    "Objective A2, The overall quality of fresh water within a region is maintained and improved while:

    - *Protecting the significant value of outstanding freshwater bodies;*
    - *Protecting the significant values of wetlands; and*
    - *Improving the quality of freshwater in water bodies that have been degraded by human activities to the point of being over allocated."*

27. Other National Policy Statements or National Environmental Standards taken into consideration in development of the plan change include the National Policy Statement for Renewable Electricity Generation (NPS REG) and the National Environmental Standard for Sources of Human Drinking Water. These are discussed in more detail in the section 32 evaluation report of Proposed PC1.[6]

28. Council is charged with the responsibilities for policy and plan making under the RMA in accordance with its functions stated in s30 of the RMA. Council is specifically charged with the development of a Regional Policy Statement that has the purpose as stated in

[6] Proposed Waikato Regional Plan Change 1 – Waikato And Waipā River Catchments, Section 32 Evaluation report, A.2.2.3 Other national policy, p 15

s59 of the RMA to 'achieve the purpose of the Act by providing an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region'.

29. Council is also charged with the responsibility to develop a regional coastal plan and a regional plan. The purpose of a regional plan is as stated in s62 of the RMA:

> *"The purpose of the preparation, implementation, and administration of regional plans is to assist a regional council to carry out any of its functions in order to achieve the purpose of this Act."*

30. Proposed PC1 is a change to the operative Waikato Regional Plan which was made operative on 31 August 2007. Proposed PC1 is required to give effect to the Vision and Strategy, the River Settlement legislation, and the NPSFM.

Waikato Regional Policy Statement

31. The Waikato Regional Policy Statement (2016) contains issues, objectives, policies and methods that are relevant to managing water quality and associated land use activities that may impact on water quality. Under s62(3) of the RMA, the RPS must "give effect to" a national policy statement or New Zealand coastal policy statement. Likewise, under the Waikato and Waipā River legislation (as discussed above) the Vision and Strategy in its entirety is part of the RPS and the RPS cannot be inconsistent with the Vision and Strategy. RPS objectives that are of particular relevance to Plan Change 1 are appended to this evidence[7].

Waikato Regional Plan

32. The Waikato Regional Plan became operative in part on 28 September 2007 with Variations 2 (Geothermal), 5 (Lake Taupō Catchment), 6 (Water Allocation), and 7 (Geothermal maps and minor changes) being made operative in 2008, 2011, 2012 and 2010, respectively. It is now fully operative. The Regional Plan provides direction regarding the use, development and protection of natural and physical resources in the Region. It provides a policy framework and implementation methods in relation to water, river and lake beds, land and soil, air and geothermal resources.

33. Proposed PC1, which is limited to the Waikato and Waipā River catchments, will be incorporated into the Regional Plan as a new chapter, and with consequential changes

[7] Appendix 4

to embed this new chapter into the overall plan. The new chapter is catchment-specific and is complementary to existing provisions in the Regional Plan.

Iwi management plans

34. Under s66(2A) iwi management plans recognised by an iwi authority must be taken into account in the preparation of a regional plan. Iwi management plans in the Waikato and Waipā River catchments were considered during the development of Plan Change 1.

CO-GOVERNANCE RESPONSIBILITIES

River Settlement legislation and co-governance

35. Under the River Settlement legislation Council shares co-governance and co-management responsibilities with Waikato and Waipā River Iwi. These co-governance and co-management arrangements extend to the development of plans under the RMA, and applied to the development of Proposed PC1.

Joint Management Agreements

36. The co-management arrangements of the River Settlement legislation provide for Joint Management Agreements between River Iwi and Local Authorities. These agreements cover preparation, review, change or variation of RMA planning documents, including the regional plan. Council and the River Settlement Iwi have entered into Joint Management Agreements as is required by the River Settlement legislation.

37. In accordance with the Joint Management Agreements, a Joint Working Party formed of Executive Officers of the five River Settlement Iwi and Council have been the project team providing oversight of the plan review project. It is the role of the Joint Working Party to report to the co-governance Committee who have governance oversight of the project.

Co-governance Committee

38. The Healthy Rivers Wai Ora Committee, consists of 5 elected Councillors of Waikato Regional Council and one Trustee of each of the 5 River Settlement Iwi. The River Settlement Iwi each appointed their representative to sit on the Committee. Council appointees were drawn from those elected members who had constituencies within the Proposed PC1 area. The Committee was Co-chaired by a Council elected representative and an Iwi representative. The River Settlement Iwi Co-Chair was elected by Iwi representatives, from the 5 iwi appointed Committee members. The

Healthy Rivers Wai Ora Committee is a duly constituted co-governance Committee of Council, which has the following purpose:

"To fulfil the requirements of Section 46(2)(c) of the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010, Section 48(2)(c) of the Ngāti Tūwharetoa, Raukawa, and Te Arawa River Iwi Waikato River Act 2010, Section 22(2)(c) of the Nga Wai o Maniapoto (Waipā River) Act 2012 by jointly deciding on the final recommendation to the Waikato Regional Council on the content of the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai."

REASONS FOR UNDERTAKING PLAN CHANGE

39. Along with the philosophical approach outlined in the previous evidence presented by Vaughan Payne, Chief Executive of Waikato Regional Council, there were four key reasons that laid the foundation for initiating Proposed PC1:
    - to fulfil statutory requirements including Treaty settlement legislation
    - to respond to the findings of independent reviews of the Waikato Regional Plan
    - to address stakeholder and community expectations
    - to respond to identifiable trends in water quality monitoring

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

40. As stated above Te Ture Whaimana o Te Awa o Waikato (the Vision and Strategy) is the primary direction setting document for the Waikato and Waipā Rivers, and was directly inserted into the Regional Policy Statement without progressing through a Schedule 1 process. The advent of the Vision and Strategy placed a statutory imperative on Council to progress a resource management framework that sought to improve water quality for the Waikato and Waipā Rivers.

National Policy Statement Freshwater Management

41. As stated above national policy statements are developed by central government to provide direction to local government about matters of national significance. The NPSFM recognises the national significance of freshwater and Te Mana o te Wai, the mana of water. In accordance with the NPSFM Council must set objectives for the state its communities want to see for their water bodies in the future, and must set limits to meets these objectives. In regard to water quality management the Waikato Regional Plan has a historic policy framework that does not fully give effect to the NPSFM, comments of which were reiterated in a 2011 Office of the Auditor General performance audit.

42. Proposed PC 1 was notified on 22 October 2016. The NPSFM 2017 came into effect on 7 September 2017. In anticipation of any potential misalignment between Proposed PC1 and the NPSFM 2017 the submission on the Waikato Regional Council and others potentially provide scope for amendments to be made to Proposed PC1.

2011 Office of Auditor General Performance Audit

43. In September 2011, the Office of the Auditor General (OAG) published a performance audit report on how effectively four regional councils (Waikato Regional Council was one of these) were managing the effects of land use for the purpose of maintaining and enhancing freshwater quality in their regions. The Auditor General provided two reports to each regional council one of which was a general report covering recommendations on freshwater management for all regional and unitary authorities[8] and the other a specific report for each regional council audited[9].

44. The first set of recommendation applied to all regional and unitary authorities and focused on links between policy development and implementation, the critical importance of reviewing policy effectiveness, the role of environmental monitoring, and the need to report these factors and causal links to the public every five years as required by section 35 of the RMA.

45. The second set of recommendations, applying specifically to the Waikato Regional Council, focused on:
    - the ineffectiveness of the current permissive framework for the Waikato Regional Plan in relation to land and freshwater quality management.
    - the need for SMART (specific, measurable, achievable, relevant, time-based), targets and measures for our RMA policies and plans and our Long Term Plan
    - the need to integrate policy development, implementation, review and reporting to give Council and the community a clear picture of the management of freshwater resources
    - a series of improvements to our compliance and monitoring of consents including annual reporting
    - improvements to pollution complaints services.

[8] Controller and Auditor General, 2011; *Managing freshwater quality: Challenges for regional councils*. An independent assurance report about a performance audit carried out under section 16 of the Public Audit Act 2001. ISBN 978-0-478-38321-8

[9] Controller and Auditor General, 2011; *Performance audit on management of freshwater quality Interim findings discussion document for Waikato Regional Council.* Environment Waikato Document # 2069925

46. An accompanying independent policy effectiveness review of the Operative Regional Plan and Regional Coastal Plan was completed by GHD in 2011[10], the main findings of this review were:

- *"There are many parts of the plans that would benefit from being improved and updated. Many changes are probably not urgent, but collectively, they do inhibit effective achievement of plan objectives.*
- *There is benefit in combining the Waikato Regional Plan and Regional Coastal Plan into one regional plan. Both plans would also benefit from a different structure.*
- *The most important matter to deal with is the regional plan approach to managing the effects of agriculture on water bodies. No other matters really match this in terms of urgency and importance. The water quality plan change currently being developed for the Waikato and Waipā River catchments, which addresses this matter, is therefore the highest priority project in terms of changes to the regional plans."*

47. Building on the Vision and Strategy and statutory responsibilities in the NPSFM, the final bullet point above very much added to the overall picture that was emerging in regard to the operative regional plan, and the need for increased intervention.

48. During 2017 and 2018 the OAG has had a renewed focus on water management. The OAG is presently revisiting how well the public sector manages water, and how well it delivers services that affect or make use of water. The work of the OAG has again focussed on the work of the four councils audited in 2011 to see what gains have been made, the results of which are anticipated mid 2019. The findings of this audit will be reported to the Panel.

Environmental Attitudes and Awareness Survey, Your Environment – What Matters?

49. The Your Environment-What Matters survey, previously the Environmental Attitudes and Awareness Survey, is a 20 year longitudinal survey undertaken at three yearly intervals that has helped Council gain a greater understanding of the regional communities' views, opinions and priorities about environmental issues. It complements scientific data and other consultation processes by providing social science data on the perspectives of the broader population, especially those who may not normally attend public meetings or make submissions on plans. As the survey is regionally representative, great care is taken to get a demographically representative cohort of each territorial authority in the Region. A separate district report is provided to each of the Region's territorial

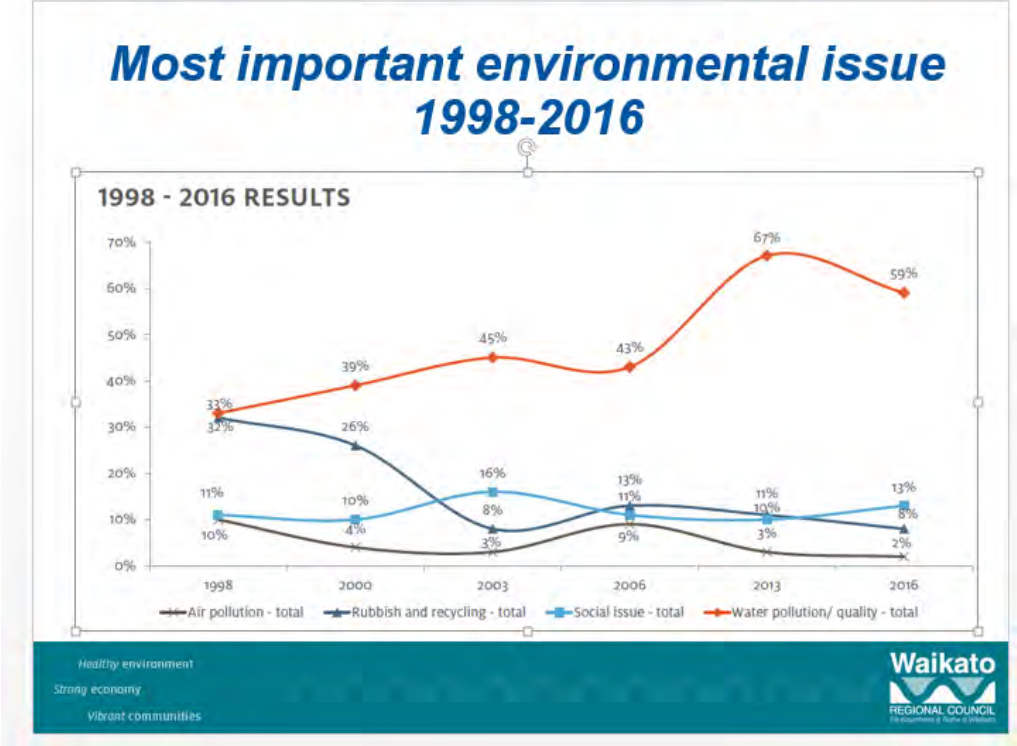
[10] *GHD independent review, 2011, (Doc#2016418).*

authorities to assist in their own planning to understand community views about the environment and enables them to respond to community concerns specific to their local areas.

50. The survey results are reported via the Council website and have contributed to the evaluation of a wide range of policy areas such as water, waste, pests, natural hazards and coasts.

51. Water quality consistently rates in excess of other environmental issues.[11] In 1998 water quality was only 1% more important than rubbish and recycling. In 2000 water quality was 13% more important than the next most important issue, again rubbish and recycling. In 2003 water quality was 29% more important than "social issues" which included pollution, global warming and congestion. In 2006 water quality was 30% more important than rubbish and recycling, in 2013 water quality jumped to 56% more important than rubbish and recycling and in 2016 water quality was 46% more important than "social issues". This can be seen in more detail in the graph below.

52. The survey results can be accessed via the Council website.



[11] Waikato Regional Council Technical Report TR# 2016/14, Your Environment – What Matters? July 2016

Water quality monitoring trends

53. Council has an extensive regional freshwater monitoring network that has been in operation since 1993. A total of 100 regional sites and 10 Waikato River main stem sites are sampled monthly for a suite of water quality parameters. Within the area of Proposed PC1 there are 64 monitoring sites within rivers and streams and 28 sites, 20 being state and 8 being trend, within the lakes of the catchment.[12] Post the notification of Proposed PC1, and in accordance with a Long Term Plan Business Case placed before Council for additional funding, a further 10 sites have been added to the network to ensure that there is monitoring undertaken in each of the 74 sub-catchments of the Waikato and Waipā catchment.

54. There are a range of effects that increased levels of the contaminants can have on rivers. High levels of microbes can make it unsafe to swim, drink or eat food taken from the river. Increased levels of nitrogen and phosphorus can promote excessive plant growth, including toxic blue green algae. Increased sediment decreases visibility, which can be a safety hazard for swimming as well as affecting aquatic species and their habitat.

55. An overview of water quality monitoring trends in the Waikato and Waipā Rivers is appended to this evidence.[13] This information was sourced from a report placed before the collaborative stakeholder group in May 2014. The following summarises key monitoring findings that were influential in plan change initiation.

56. Monitoring showed that Nitrogen levels in both the Waikato and Waipā Rivers have been slowly but steadily rising over the last 20 plus years. Nitrogen in groundwater can take decades to emerge into surface water, and it was acknowledged that this would be a complicated issue to address. Sediment levels in the lower reaches of both Rivers are high, and have risen over the last 20 plus years. Bacteria levels are high in the Waipā, and moderate from below Karāpiro to the mouth of the Waikato River. From 2008 to 2012 85% of Waipā River and 84% of lower Waikato River water samples were unsatisfactory for swimming (based on bacteria and sediment levels for the five sites on each stretch).

[12] Source: *E. coli*, nitrogen, phosphorus and sediment in the Waikato and Waipa rivers Report for Collaborative Stakeholder Group Healthy Rivers: Plan for Change/ Wai Ora: He Rautaki Whakapaipai, March 2014

[13] Appendix 5

57. In the Waikato River, biochemical oxygen demand and dissolved colour have improved due to improvements in industrial discharges, such as those from dairy factories and meat works, and sewage plants. *Chlorophyll a* contamination has also decreased. Dissolved oxygen concentrations are mostly excellent, and levels of toxicants such as ammonia, heavy metals and pesticides are low.

58. In order to ensure that submitters and the Hearings Panel have the most recent information in relation to water quality Council has made available to all submitters to Proposed PC1 a recently completed Technical Report that discusses the trends in river water quality in the Waikato Region from 1993 to 2017.[14] The following is an excerpt:

"Records of temperature and dissolved oxygen at Waikato River sites showed only slight trends. Records of visual clarity and E. coli showed only a small number of important trends, both improvements and deteriorations. A small number of important trends occurred in turbidity (three records), and all were deteriorations. Conversely, four important trends occurred in ammonia concentrations, but all were improvements. Four improvements and one deterioration occurred in concentrations of arsenic. Important improvements were more common in records of chlorophyll a (six) and total phosphorus (six; but note that the reliability of some of the underlying TP data is currently unclear). However, important deteriorations occurred in records of total nitrogen at nine of the ten sites. Intensification of pastoral farming in the Waikato catchment probably caused this general deterioration in total nitrogen concentrations.

Records of temperature and dissolved oxygen at these other river and stream sites showed only slight trends. Important improvements appeared to occur in records of total phosphorus at about half of the sites, and slight improvements at a further quarter of the sites; deteriorations occurred at only four sites. Important improvements were also common in records of ammonia (35%) and E. coli (27%), with only small numbers of deteriorations in each case. Important deteriorations in turbidity were about twice as common (35 sites) as important improvements (16 sites); similar results were found for visual clarity (22 sites and 12 sites, respectively). Important deteriorations in total nitrogen occurred at 41 of the sites (40%), while important improvements occurred at 10 sites; slight deteriorations (26% of sites) were also more common than slight improvements (11%).

The reductions in concentrations of ammonia were more than offset by increases in concentrations of nitrate. The net result of this was for concentrations of total nitrogen to increase at two-thirds of sites across the region. Runoff and leaching of nitrogen from areas of pastoral

[14] Waikato Regional Council TR18/30 - Trends in river water quality in the Waikato Region, 1993-2017, December 2018

farming probably accounts for much of this deterioration. In the south-eastern part of the region where large groundwater aquifers are present in the freely-draining volcanic soils, older water that fell as rain prior to the development of the area has been progressively replaced with newer water that is more-contaminated with development-based nitrogen. As a result, increasing nitrogen concentrations have been common in streams in this area in recent decades."

PLAN DEVELOPMENT PROCESS FOR PROPOSED PC1

Co-governance and the Stakeholder Engagement Strategy

59. Having received a joint recommendation from River Settlement Iwi partners, and in accordance with the provisions of the Joint Management Agreements with each of the River Settlement Iwi, in August 2012 Council resolved to commence a change to the Operative Regional Plan. This change was to focus on the Waikato and Waipā River catchments and focus on the management of non-point discharges namely the four contaminants nitrogen, phosphorus, *E.coli* (microbial pathogens), and sediment in order to assist in improving water quality to give effect to the Vision and Strategy and the NPSFM. The Partnership Charter[15] that accompanied the recommendation cemented Council's commitment to co-governance and co-management between Council and the River Settlement Iwi.

60. In confirming the partnership Council and River Settlement Iwi agreed to the following principles:
    - *"commit to the vision*
    - *respect mana whakahaere rights and responsibilities*
    - *promote the principle of co-management*
    - *work together in good faith and a spirit of co-operation*
    - *be open, honest and transparent in communications*
    - *recognise statutory frameworks and timeframes*
    - *pursue consensus decision-making."*

Non-traditional plan development approach in excess of statutory requirements

61. The RMA has traditionally seen councils undertake a consultative approach to plan development; that is the plan is predominantly developed by in-house council staff, workshopped with elected members, direction agreed, and once in draft form is then distributed to various stakeholders for feedback. The feedback is analysed, either

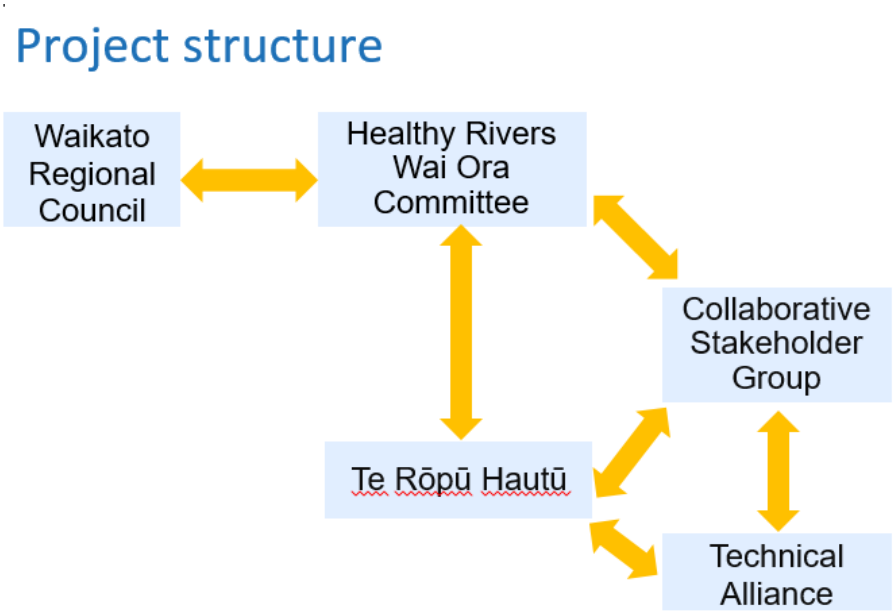
[15] Partnership Charter between Waikato Regional Council and Waikato and Waipa River Iwi, August 2012

incorporated or not often without further engagement with stakeholders. The draft is then submitted to elected members, as council, for approval to publicly notify.

62. Development of Proposed PC1 was markedly different, it was based on a sector and community based collaborative approach to plan development. This collaborative approach is far in excess of the process required by statute, or any other plan development that I have experienced in my 25 years of planning experience.

63. In March 2013[16] the Stakeholder Engagement Strategy for development of Proposed PC1 was approved by full Council. The stakeholder strategy outlined an approach to plan development that was focussed on Council and River Settlement Iwi working alongside stakeholders and the community in developing the Proposed PC1. As stated above this approach is over and above what was required by statute.

64. River Settlement Iwi worked alongside Council and CSG and Technical Leaders Group (TLG) members in both governance and management of the project. The following diagram provides an overview of the project structure.



Council investment in collaborative process

65. Following the August 2012 approval to commence the plan change a report was placed before Council in January 2014 that outlined the differences between a traditional

[16] Healthy Rivers Wai Ora, Stakeholder Engagement Strategy, March 2013

planning approach and the collaborative approach. The report provided an impact assessment for Council, addressing matters such as efficiency and effectiveness, it highlighted the difference in approach related to incorporating community views, statutory responsibility, legal and policy implications, and identified the additional ratepayer funding that would be required to embark on the collaborative approach. In supporting a collaborative approach Council was made aware of the anticipated project costs increasing to at least twice the $8million estimated for a traditional plan development process.

66. From 2017 on, in recognition of scale and significance to the Region's ratepayers, the budget is reported publicly at each quarterly Finance Committee of Council. The total estimated project investment to 30 June 2019 are projected to be $20.9million. The costs of the project have remained within each budget as determined by Council in its annual budgeting setting process.

Collaborative Stakeholder Group (CSG)

67. The stakeholder strategy incorporated sector and community interests, and outlined the approach to form the Collaborative Stakeholder Group. The Collaborative Stakeholder Group ("CSG"), was a cross-sector group of 24 representatives who would bring their sector and community experience to the development of the plan change. Sector representation on the CSG was determined from a workshop of 128 attendees. A list of those sectors represented at this workshop is appended to this evidence[17].

68. The CSG was made up of sector representatives, Māori interest seats, and community representatives[18]. For the sector seats each sector was asked to run its own process to determine an appointee and then to advise Council who that appointee was. For the Māori Interest seats and the community seats, expressions of interest were called for, and a selection process was conducted by Te Rōpū Hautū.

69. The community representative seats provided opportunity to get geographic representation across the catchment, to address demographic imbalance, and to source representatives who had community networks not otherwise present in traditional plan development.

[17] Appendix 6

[18] Appendix 7

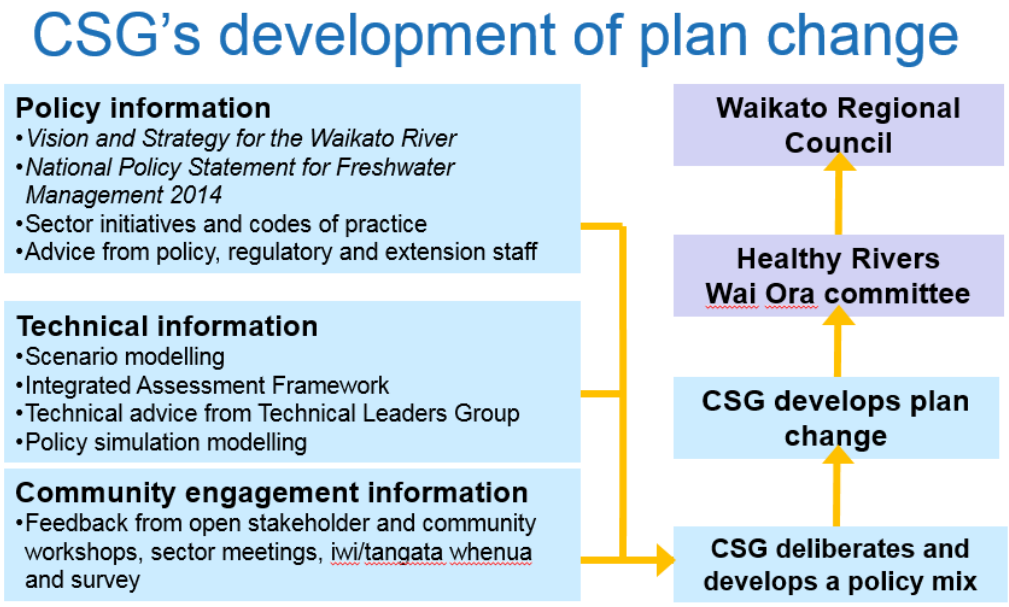
70. The CSG was supported by a Technical Leadership Group who were independent of Council. Both the CSG and the TLG were chaired by independent chairs, with the CSG also assisted by an independent facilitator.

71. Council officers supported both the CSG and the TLG as requested, but the critical distinction between the collaborative approach and the traditional plan making approach was that Council officers did not develop Proposed PC1 it was developed by the multi-sector and community represented CSG.

72. Throughout the two and a half year plan development period the CSG met for 30 workshops held over 59 full days. Total time spent at the CSG workshops was approximately 600 hours, this was in conjunction with approximately 250 additional hours reading time. This gives the panel an appreciation of the hours invested by the sector and community representatives. The full meetings of the group were complemented with additional sub-group meetings that focussed on particular policy work streams.

73. Four large stakeholder fora were hosted throughout the development process. Each focussed on a particular stage of policy development, and each was attended by more than 170 people. In addition, two rounds of intensive community engagement were held. These community engagement sessions were hosted throughout the catchment and were attended by CSG members, TLG and Council officers. The meetings enabled the provision of updates on key decisions, were an opportunity to talk face to face with community members, and provided opportunities for CSG members to gather further input from the community via a series of set questions.

74. The diagram over provides a summary of the plan development process:



Technical Leadership Group (TLG), collectively shared public evidence base

75. A significant cache of scientific and technical information was developed to support the CSG, all of which was made publicly available as soon as was possible. This substantial evidence base was overseen by the Technical Leadership Group (TLG), independently chaired by Dr Bryce Cooper of NIWA. The TLG and the wider technical alliance comprising a wider technical support group is described in section 3 of Dr Cooper's evidence.

76. The independence of the technical evidence, how it was sourced and from whom, was a key factor in the development of a technical alliance. There existed a concern by some sectors and community members that science would be manufactured to suit a pre-determined policy outcome, or to manage a specific legacy issue. Importantly for council and River Settlement iwi the independence that had been embedded in the CSG process also needed to be replicated through the technical alliance.

77. In undertaking the plan change development process it was acknowledged that, whilst the subject matter was likely to evoke a strong response from landowners on an individual level, the project was also tackling a technically complex matter. At the time of plan development a number of similar projects were occurring throughout New Zealand. There was considerable criticism levelled at other plan change proponents about the lack of a sound evidential basis for many proposed interventions. Given the scale of the catchment, and the potential impact that any policy framework was likely to

have on landowners, it was necessary for the information gathered and science developed to be extensive, robust and able to withstand deep technical scrutiny.

78. It was further acknowledged that natural and physical science, although significant to understand the land and water interface, needed to be supplemented by other information that would enable an integrated assessment of the impacts of the policy framework. The technical alliance was headed by the TLG who had expertise in freshwater management, mātauranga Māori, social science and impacts on rural communities, and who had advanced knowledge of natural resource and market economic impacts.

79. Collectively the Technical Alliance had expertise in:
    - water quality
    - soil stability and land management
    - catchment and water quality modelling
    - aquatic ecosystems (invertebrates, fisheries)
    - riparian (land and water interface)
    - mātauranga Māori
    - farm systems
    - land management systems (across main land use types)
    - economic outcomes (including at property and catchment level)
    - social outcomes
    - health issues associated with water quality.

80. The TLG was established using a Request for Proposal process, which sought a chair and six members:
    - with recognised expertise relevant to the project
    - able to work in a cross-disciplinary manner, integrate mātauranga Māori into the outcomes and identify and prioritise research required
    - who understand the role of the Technical Alliance in informing policy development.

81. The Technical Alliance was established using an Expression of Interest process, which sought to establish a panel of available specialists with relevant skills, knowledge and experience and the ability to communicate information clearly and deliver reports in a timely manner. The TLG made recommendations to Te Rōpū Hautū (project steering group) on use of the Technical Alliance to best meet the information needs of the CSG

and the project. In August 2015 a document was published on the Council website that was titled 'Summary of Technical Reports' and this is appended to this evidence[19].

82. The TLG undertook an extensive exercise in the formative stages of their work that focussed on making sure that there was a sound evidence base from which to build. This base level of information was added to constantly through assessing the information and evidence needs of the CSG. The TLG sourced and developed the science to answer the questions that were posed from sector and community representatives, as represented by the CSG.

83. This approach to an independent collective evidence base is another significant departure from a traditional plan making process whereby Council staff would be relied upon to develop science which would then inform a Council staff policy direction. The collaborative approach to plan development meant that there was also an independent collaborative approach taken to determining the questions to be asked of technical experts, and therefore influencing the development of a cross-sector evidence base. An evidence base that is publicly available that can be used by any sector or community member to inform their submission and ongoing participation in the process, rather than being relied upon solely by Council in order to defend a singular position.

84. The following table provides a summary of the technical evidence base that supported the CSG plan development:

Topic	**Number of reports**
Groundwater	7
Surface water, including attributes	8
N, P and chlorophyll a relationships	6
Scenario modelling	18
Mātauranga Māori and Integrated Assessment	8

85. The investment in the evidence base for Proposed PC1 was in excess of $1.2 million.

[19] Appendix 8

86. The ultimate responsibility of the CSG, assisted by the TLG, was to recommend a draft plan for consideration by the Healthy Rivers Wai Ora Committee for recommendation to Council.

Plan change as recommended by CSG

87. The CSG established a meeting protocol and decision making framework that was tightly implemented by the independent facilitator and independent chair. This disciplined approach to discussions ensured that everyone had equal opportunity to have a say, and also to have an equal say in decision making. The final decisions from the CSG on the draft plan were made at a meeting where each provision of the plan was discussed separately and then put to the vote. The CSG strived for consensus and not majority decision making. Whilst some sector and community representatives disagreed with component parts of the plan, only the sector representative of the Beef and Lamb sector opposed the recommending of the draft plan to the Healthy Rivers Wai Ora Committee, and then on to Council for public notification.

88. Another key component of the collaborative process was an independently conducted evaluation process. In parallel with the operation of the CSG and TLG Council engaged independent social scientists to undertake an evaluation of participants from across the CSG. The evaluation was undertaken at key project junctures with the outputs reported back to the CSG and to project partners through the Co-Governance Committee and Council. This evaluation process enabled the collaborative process to be agile and responsive to concerns raised, and the collaborative process to be one of iterative refinement. In traditional plan development process this evaluation is commonly undertaken at the end of the project by way of a lessons learnt or project debrief thereby not addressing issues as they occur.

89. It is important for the Hearings Panel to note that whilst Council is the proposed plan proponent, neither Council staff nor elected members authored the plan. In holding to the collaborative process, and as previously mentioned in this evidence, Council passed a resolution to notify the plan change as drafted by the CSG. Proposed PC1 is, of course, a Council instrument.

90. The Waikato Regional Council submission on the plan change very much focusses on the ability of Proposed PC1 to be implemented.

Approval process for Proposed PC1

91. The Healthy Rivers Wai Ora Co-governance Committee formally received the draft Proposed PC1 from the CSG on 5 September 2016 and passed a resolution to recommend the draft Proposed PC1 to Council for public notification to enable public submissions on the Proposed PC1. The Healthy Rivers Wai Ora Committee also recommended an extended submission period rather than the minimum 20 working day submission period under the RMA.

92. Council considered the recommendation of the Co-governance Committee, and on 15 September 2016 passed a resolution to notify Proposed PC1. Proposed PC1 was subsequently publicly notified on 22 October 2016. In passing a resolution to notify Proposed PC1, and upon recommendation from the co-governance Committee, Council also resolved to have an extended period of time for submissions, four times the minimum required by the RMA, enabling 80 working days for submissions to be lodged.

NOTIFICATION OF PLAN CHANGE 1

93. Proposed PC1 has been available on Council's website since 31 August 2016, a total of 38 working days leading up to public notification on 22 October 2016. The 80 day submission period closed on 8 March 2017. During this period two applications for interim injunctions were filed in the High Court, one by Horticulture NZ and Others, and one by a Pare Hauraki consortium of hapu and iwi. The Horticulture NZ matter was heard and dismissed by the High Court on 7 March 2017. The concerns in the Pare Hauraki application were addressed by Council withdrawing the plan change from a defined area on 3 December 2016, undertaking a period of consultation with Pare Hauraki, and re-notifying the withdrawn portion of the plan change (as Variation 1) on 10 April 2018 with submissions closing 23 May 2018. After the instruments had merged under clause 16B of Schedule 1 of the RMA, further submissions were called for on the merged plan change from 20 August to 17 September 2018.

94. With both the initial submissions and further submissions to Proposed PC1 Council went beyond the legal requirements of the RMA to ensure all potentially affected ratepayers had the opportunity to submit. Notification was preceded by extensive public communications to alert affected parties, including a mail out to all 96,000 ratepayers with an interest in the Waikato and Waipā catchments.

EXPLANATION OF PC1 FRAMEWORK AND CONTENT

95. The Proposed PC1 covers the Waikato and Waipā River catchments, a total area of 1,100,000ha, and gives effect to the requirements of the Vision and Strategy, the requirements of the River Settlement Acts, responds to the requirements of the NPSFM, and includes the robust scientific evidence and community direction provided to Council.

96. The objectives that Proposed PC1 seeks to achieve are:
    - Long term restoration and protection of water quality for each sub-catchment and freshwater management unit.
    - Social, economic and cultural wellbeing is maintained in the long term.
    - 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.
    - People and community resilience.
    - Mana tangata – protecting and restoring tangata whenua values.
    - Whangamarino wetland contaminant loads are reduced in the short term.

97. The six objectives of Proposed PC1 are supported by a suite of policies, implementation methods, and rules. The proposed rules establish the framework that will govern changes in land use practices in order to manage the effects of diffuse contaminant discharges, and in order to assist in improving the water quality of the Waikato and Waipā Rivers and their catchments.

98. The rules provide for a continuum of interventions. The rules:
    - require registration of properties used for small and low intensity farming activities
    - through to the requirement for medium risk diffuse discharge properties to lodge Farm Environment Plans
    - include specific rules for the management of existing commercial vegetable production, and
    - require resource consents to farm and operate activities in rural areas, including a rule requiring the most stringent resource consent application type under the RMA for activities that intensify and therefore increase their discharges of contaminants above existing levels of discharge.

99. As the rules of Proposed PC1 relate to water, in accordance with s86B of the RMA, the rules had immediate effect upon the date of notification. In taking a practical approach

to enable land use transition in the catchments, Proposed PC1 provides for existing activities to continue for at least a two year, and in some areas six year, period. This transitioning applies to all rules except the land use intensification rule which had immediate effect on notification.

CONSTANTLY EVOLVING NATIONAL DIRECTION IN REGARD TO FRESHWATER MANAGEMENT

100. Managing freshwater quality continues to be a priority for central government. The current government, as with the previous government, has embarked on a package of reform for freshwater management. The previous government's reform package culminated in amendments to the NPSFM 2014 and led to the revised NPSFM 2017.

101. In the development of Proposed PC1 the changes in national direction were discussed and highlighted. An assessment of the direction of travel of national direction and the plan change was also undertaken to ensure that there was a degree of alignment, to reduce the risk that further modifications would be required.

102. The regional council sector has conveyed to the Minister for the Environment the challenge of constantly changing national direction. It is difficult to be as responsive as the government and communities require when the goal post are ever changing. The evidence base that has been used to inform the Proposed PC1 has placed Council in a strong position to inform many of the work streams of central government[20].

103. The present government is progressing a further package of reform that is likely to result in changes to both the RMA and the NPSFM. Central government has also signalled the potential for new National Environmental Standards that may have a bearing on water quality management.

<u>Essential Freshwater – Healthy Water, Fairly Allocated, October 2018</u>

104. On 8 October 2018 the Ministers for the Environment, Agriculture and Māori Crown Relations launched Essential Freshwater – Healthy Water, Fairly Allocated. The document provides the work programme that the government will follow to "set New Zealanders on the path to turning around water quality trends and long-term improvements in freshwater health". The three objectives of Essential Freshwater are:
    - Stopping further degradation and loss

[20]Appendix 9

- Reversing past damage
- Addressing water allocation issues.

105. In order to deliver on these objectives the work programme that has been set relates to:
    - Targeted action and investment in at-risk catchments (occurring now)
    - Amendments to the Resource Management Act (to be introduced to the House later this year)
    - New National Policy Statement for Freshwater Management (anticipated to be in force by 2020)
    - New National Environmental Standard for Freshwater Management (anticipated to be in force by 2020)
    - Government engagement in developing options for allocating water resources, starting with allocation of discharges to water (in the first quarter of 2019)
    - Future policy framework development (Ongoing work programme)

CONCLUSION

106. The NPSFM sets water quality outcomes for regional councils. Proposed PC1, in giving effect to the Vision and Strategy, sets water quality outcomes for the Waikato and Waipa catchment in exceedance of NPSFM requirements. In no other catchment in the country is there the requirement to go beyond the NPSFM.

107. A collaborative approach was endorsed by Council and River Settlement Iwi to develop Proposed PC1. The collaborative approach undertaken has been comprehensive in all facets and has been characterised by extensive sector and community participation. The sector and community representatives shaped and defined the substantial technical evidence base and collectively co-authored a plan change. 24 representatives over a 2 and a half year period spent in excess of 800 hours debating, discussing, and developing a policy framework that would affect every resident of the Waikato and Waipa catchments. The plan change as recommended by CSG was notified by Council, without alteration.

108. Council made a leadership decision to support the collaborative process and to have faith in sector and community representatives to author the plan change. The collaborative process was founded on openness and transparency, ensuring that information provided to the CSG was available for all to access. A number of

opportunities were provided for wider community and sector engagement, and these were taken up by many.

109. In proposing Proposed PC1 Council has met statutory responsibilities, has built on 25 years of environmental monitoring, has responded to community concerns about declining water quality, and has addressed matters raised in independent reviews of existing planning tools. The challenge of improving water quality in the Waikato and Waipa catchments will only be achieved if regulatory and non-regulatory responses are undertaken in an integrated manner, and with involvement from all affected sectors and communities. Proposed PC1 is the policy foundation upon which an inter-generational response that improves water quality can be built.

APPENDICES

Appendix 1	Decision to commence Healthy Rivers Wai Ora project, Waikato Regional Council, Council resolution, August 2012
Appendix 2	Waikato Regional Council Variation 1 to Proposed Waikato Regional Plan, Plan Change 1, Map 3.11-1: Map of the Waikato and Waipā River catchments, showing Freshwater Management Units, Waikato Regional Council, April 2018
Appendix 3	Te Ture Whaimana o Te Awa o Waikato, Vision and Strategy for the Waikato River
Appendix 4	Waikato Regional Policy Statement relevant objectives, excerpt from the Section 32 Evaluation Report Proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments, October 2016
Appendix 5	Overview of water quality monitoring trends in Waikato and Waipā Rivers, Excerpt taken from *E. coli*, nitrogen, phosphorus and sediment in the Waikato and Waipā rivers Report for Collaborative Stakeholder Group, Healthy Rivers: Plan for Change/ Wai Ora: He Rautaki Whakapaipai, Waikato Regional Council, March 2014
Appendix 6	Excerpt taken from Presentation made to Healthy Rivers Wai Ora Committee - Membership of the Collaborative Stakeholder Group, Waikato Regional Council, September 2013.
Appendix 7	Collaborative Stakeholder Group Members, excerpt taken from Section 32 Evaluation Report Proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments, October 2016
Appendix 8	Summary of Technical Projects, Waikato Regional Council, August 2015, https://www.waikatoregion.govt.nz/assets/PageFiles/29739/Summary%20of%20technical%20projects%20Aug%202015.pdf
Appendix 9	Work Programme, Essential Freshwater, Ministry for the Environment, October 2018 http://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/essential-freshwater-daigram.pdf

APPENDIX 1

Decision to commence Healthy Rivers Wai Ora project, Waikato Regional Council, Council resolution, August 2012

Commencement of the Waikato Regional Plan Change 1 – Waikato and Waipā River catchments File: 03 04 15 (Agenda Item #3) Docs#2227460

Cr Kneebone moved/Cr Livingston seconded.

THAT:

1. *The Waikato Regional Council commences the development of a Plan Change to the Waikato Regional Plan to address the priority issue of effects of discharges to land and water in the Waikato and Waipā River catchments, and*

2. *THAT the amendment be referred to as the draft Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments, and*

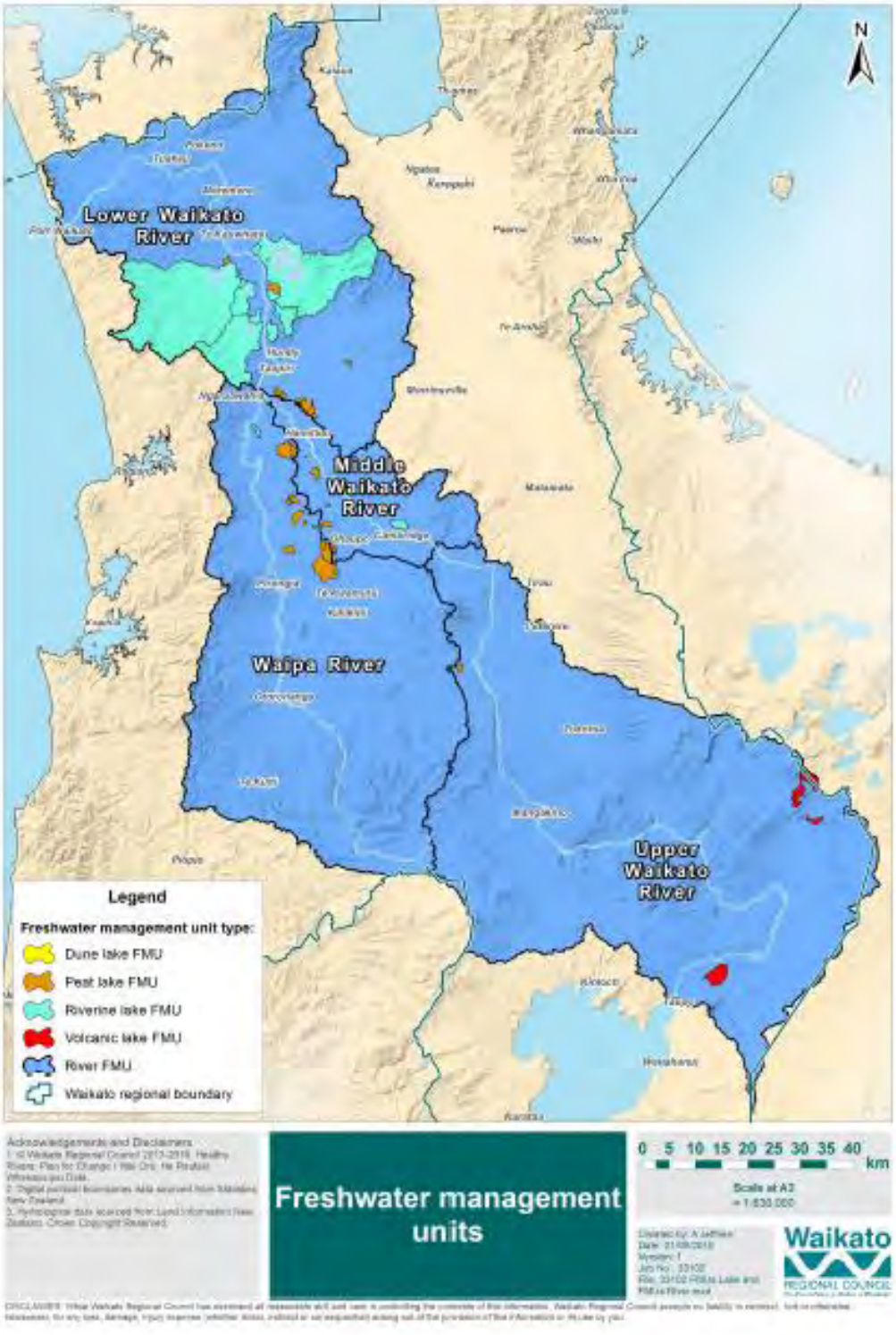
3. *THAT the Partnership Charter (Doc#2146626) be endorsed to guide development of the draft Plan Change, and*

4. *THAT in developing this plan change in accordance with the Partnership Charter between WRC and the Waikato and Waipā river iwi (doc#2146626), WRC confirms its commitment to, and the importance of working closely with, all interested and potentially affected stakeholders, so that the issue can be understood from all sides and solutions found that are sensible and practical, which help sustain the environment and the economy.*

The motion was put and carried (WRC12/198)
Crs Rimmington and Hennebry voted against the motion

APPENDIX 2

Waikato Regional Council Variation 1 to Proposed Waikato Regional Plan, Plan Change 1, Map 3.11-1: Map of the Waikato and Waipā River catchments, showing Freshwater Management Units, Waikato Regional Council, April 2018



APPENDIX 3

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

*"**Vision for the Waikato River***
Tooku awa koiora me oona pikonga he kura tangihia o te maataamuri - "The river of life, each curve more beautiful than the last"

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.

Objectives for the Waikato River
In order to realise the vision, the following objectives will be pursued:

a) The restoration and protection of the health and wellbeing of the Waikato River.
b) The restoration and protection of the relationships of Waikato-Tainui with the Waikato River, including their economic, social, cultural, and spiritual relationships.
c) The restoration and protection of the relationships of Waikato River Iwi according to their tikanga and kawa with the Waikato River, including their economic, social, cultural and spiritual relationships.
d) The restoration and protection of the relationships of the Waikato Region's communities, with the Waikato River, including their economic, social, cultural and spiritual relationships.
e) The integrated, holistic and co-ordinated approach to management of the natural, physical, cultural, and historic resources of the Waikato River.
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.
g) The recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within the catchment on the health and wellbeing of the Waikato River.
h) The recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities.
i) The protection and enhancement of significant sites, fisheries, flora and fauna.
j) The recognition that the strategic importance of the Waikato River to New Zealand's social, cultural, environmental and economic wellbeing, requires the restoration and protection of the health and wellbeing of the Waikato River.
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.
l) The promotion of improved access to the Waikato River to better enable sporting, recreational, and cultural opportunities.
m) The application to the above of both maatauranga Maaori and the latest available scientific methods.

Strategies for the Waikato River
To achieve the vision, the following strategies will be followed:

a) Ensure that the highest level of recognition is given to the restoration and protection of the Waikato River.
b) Establish what the current health status of the Waikato River is by utilising maatauranga Maaori and latest available scientific methods.
c) Develop targets for improving the health and wellbeing of the Waikato River by utilising maatauranga Maaori and latest available scientific methods.
d) Develop and implement a programme of action to achieve the targets for improving the health and wellbeing of the Waikato River.
e) Develop and share local, national and international expertise, including indigenous expertise, on rivers and activities within their catchments that may be applied to the restoration and protection of the health and wellbeing of the Waikato River.
f) Recognise and protect waahi tapu and sites of significance to Waikato-Tainui and other Waikato River iwi (where they do decide) to promote their cultural, spiritual and historic relationship with the Waikato River.

g) Recognise and protect appropriate sites associated with the Waikato River that are of significance to the Waikato regional community.

h) Actively promote and foster public knowledge and understanding of the health and wellbeing of the Waikato River among all sectors of the Waikato community.

i) Encourage and foster a 'whole of river' approach to the restoration and protection of the Waikato River, including the development, recognition and promotion of best practice methods for restoring and protecting the health and wellbeing of the Waikato River.

j) Establish new, and enhance existing, relationships between Waikato-Tainui, other Waikato River iwi (where they so decide), and stakeholders with an interest in advancing, restoring and protecting the health and wellbeing of the Waikato River.

k) Ensure that cumulative adverse effects on the Waikato River of activities are appropriately managed in statutory planning documents at the time of their review.

l) Ensure appropriate public access to the Waikato River while protecting and enhancing health and wellbeing of the Waikato River."

APPENDIX 4

Waikato Regional Policy Statement relevant objectives, excerpt from the Section 32 Evaluation Report Proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments, October 2016

"A2.3.3 Waikato Regional Policy Statement

The Waikato Regional Policy Statement (2016) (RPS) contains issues, objectives, policies and methods that are relevant to managing water quality and associated land use activities that may impact on water quality.

Under s62(3) of the RMA, the regional council must "give effect to" a national policy statement or New Zealand coastal policy statement in its RPS. Likewise, under the Waikato and Waipa River legislation (as discussed above) the Vision and Strategy is deemed in its entirety to be part of the RPS and the RPS cannot be inconsistent with the Vision and Strategy.

RPS objectives that are of particular relevance to Plan Change 1 include:

- *3.1 Integrated Management: which emphasises the need to recognise (among other matters), the inter-relationships between water body catchments, riparian areas, wetlands and coastal environments, as well as the relationships between environmental, social, economic and cultural wellbeing.*
- *3.3 Decision making: which sets out underlying principles for decision making including the adoption of appropriate planning timeframes, adaptive management, mātauranga Māori, and flexible solutions for local variations.*
- *3.4 Health and wellbeing of the Waikato River: which recognises the Vision and Strategy.*
- *3.5 Energy: which recognises (among other matters) the national significance and regional benefits of electricity generation.*
- *3.8 Ecosystem services: which recognises the need to maintain and enhance these services, and their importance to regional wellbeing.*
- *3.9 Relationship of tangata whenua with the environment: which recognises the need to provide for this relationship.*
- *3.10 Sustainable and efficient use of resources: which requires that use and development of resources is sustainable and efficient.*
- *3.14 Mauri and values of freshwater bodies: which requires that the mauri and identified values of freshwater bodies are maintained or enhanced.*
- *3.16 Riparian areas and wetlands: which requires (among other matters) that water quality and wetland quality and extent is maintained or enhanced.*
- *3.25 Values of soil: which recognises the importance of safeguarding the life supporting capacity of soils.*

Policies specific to freshwater management are set out in Part B, chapter 8 and include:

- *Policy 8.1: Approach to identifying fresh water body values and managing freshwater bodies: which addresses the development of freshwater objectives, limits and targets.*
- *Policy 8.2: Outstanding fresh water bodies and significant values of wetlands: which requires protection or where appropriate enhancement of outstanding water bodies.*
- *Policy 8.3: All fresh water bodies: which requires the maintenance or enhancement of freshwater bodies by (among other matters) reducing sediment and contaminants entering water bodies and protecting and enhancing riparian and wetland habitat.*
- *Policy 8.4: Catchment-based intervention: which establishes criteria for catchments, including the Waikato River, for managing the adverse effects of activities and land use change.*
- *Policy 8.5: Waikato River catchment: which recognises the Vision and Strategy as the primary direction-setting document for the Waikato River."*

APPENDIX 5

Overview of water quality monitoring trends in Waikato and Waipā Rivers, Excerpt taken from *E. coli*, nitrogen, phosphorus and sediment in the Waikato and Waipā rivers Report for Collaborative Stakeholder Group, Healthy Rivers: Plan for Change/ Wai Ora: He Rautaki Whakapaipai, Waikato Regional Council, March 2014

"Executive summary
This document gives an overview of the current water quality state, trends and contributions of contaminants in the Waikato and Waipā rivers. The focus is on the four main contaminants impacting the rivers: E. coli, nitrogen, phosphorus and sediment.

Diagrams are used to illustrate the range of effects increased levels of the contaminants can have on rivers. High levels of microbes can make it unsafe to swim, drink or eat food taken from the river. Increased levels of nitrogen and phosphorus can promote excessive plant growth, including toxic blue green algae. Increased sediment decreases visibility, which can be a safety hazard for swimming as well as affecting aquatic species and their habitat.

A summary of Waikato Regional Council water quality monitoring data is presented for six reaches: Upper Waikato River and tributaries, Lower Waikato River and tributaries, and Waipā River and tributaries. Both state and trend is reported. Data for shallow lakes is report where it is available.

The estimated contribution from a variety of sources is given for each contaminant. This is reported for the Upper Waikato catchment, the Lower Waikato catchment and the Waipā catchment. The sources are described as the inflow from upstream catchments, natural background, point sources and additional contribution from development. The additional contribution from development is only what is produced over and above the natural background level i.e. it is the amount contributed by land use other than trees.

There is a standard in the Waikato Regional Plan for E. coli levels for contact recreation. This standard is based on a Department of Health guideline which has since been updated by the Ministry for the Environment/Ministry of Health. Both threshold values are reported in the body of the report.

E. coli levels are excellent in the Upper Waikato River and satisfactory in the Lower Waikato River. The Waipā River and tributaries of the entire catchment have unsatisfactory levels. There is no trend for E. coli. The main source of E. coli in the Upper Waikato and Waipā catchments is additional contributions from development. The major contribution in the Lower Waikato catchment is from upstream.

Currently there are no thresholds in the Waikato Regional Plan or national guidelines for nitrogen or phosphorus. Waikato Regional Council has developed a reporting threshold based on preventing the excessive growth of nuisance plants.

Nitrogen levels are excellent to satisfactory in the Upper Waikato River and satisfactory to unsatisfactory in the Lower Waikato River. The Waipā River and tributaries for the entire catchment have unsatisfactory levels, as do the shallow lakes. The trend for nitrogen is a general deterioration for every reach of both rivers in the catchment. The main contribution of nitrogen in the Upper Waikato catchment is from natural background, for the Waipā catchment is additional contributions from development, whilst for the Lower Waikato catchment it is from upstream.

Phosphorus levels are excellent to satisfactory in the Upper Waikato River and satisfactory to unsatisfactory in the Waipā River and the Lower Waikato River. The tributaries for the entire catchment have unsatisfactory levels, as do the shallow lakes. The trend for phosphorus shows some improvement for the Upper Waikato River and the shallow lakes and is mixed for the Waipā River and the Lower Waikato tributaries. There is no trend for the Upper Waikato tributaries, the Waipā tributaries, and the Lower Waikato River. The main contribution of phosphorus in the Upper Waikato catchment is from natural background, for the Waipā catchment it is from additional contributions from development, whilst for the Lower Waikato catchment it is from upstream.

Sediment can be measured in a number of ways. There is a standard in the Waikato Regional Plan for clarity for recreation, and turbidity is a related measure to clarity. Waikato Regional Council has also developed a reporting threshold based on an adequate amount of light for aquatic plants and animals.

Sediment levels are excellent in the Upper Waikato River and satisfactory to unsatisfactory in the Upper Waikato tributaries and the shallow lakes. The Waipā River, the Lower Waikato River and their tributaries have unsatisfactory levels. The trend for sediment is mixed in the Waipā River and the shallow lakes, and is deteriorating to some degree everywhere else. The main contribution of sediment for the entire catchment is additional contributions from development. The Lower Waikato catchment also has a large sediment contribution from upstream.

APPENDIX 6

Excerpt taken from Presentation made to Healthy Rivers Wai Ora Committee - Membership of the Collaborative Stakeholder Group, September 2013.

Attendees at the initial Collaborative Stakeholder design workshop August 2013

SECTOR	ATTENDED	Not able to attend
Central Govt	5	
Catchment Liaison	4	2
Crown Research Institute	2	1
Community	1	
Energy	7	
Environmental	15	4
Farming - Dairy	6	1
Farming - Dry stock	2	
Farming - Dairy companies	12	
Farming - Consultant	8	1
Farming - Processing (Nutrients, Fertiliser, Meat)	9	2
Farming - Industry Forums (Federated Farmers, Dairy NZ)	6	1
Farming - Support Network (Dairy Women)	1	
Poultry Processor	1	
Finance (Banking)	2	1
Forestry	4	1
Health	1	
Horticulture	4	5
Recreation	3	1
Research	4	1
Tangata Whenua	14	8
Territorial Authority/Local Govt	15	7
Water User	1	1
Freelance Media	1	
	128	**37**

APPENDIX 7

Collaborative Stakeholder Group Members, excerpt taken from Section 32 Evaluation Report Proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments, October 2016

Sector	Representative	Delegate
Dairy	George Moss, Dr Rick Pridmore	Charlotte Rutherford
Horticulture	Chris Keenan	Garth Wilcox
Rural advocacy	James Houghton	Sally Millar
Energy	Stephen Colson	Tim Mckenzie
Industry	Dr Ruth Bartlett	Elizabeth Aveyard
Sheep and beef	James Bailey	Graeme Gleeson
Environment/NGOs	Al Fleming Michelle Archer	Jim Crawford /Dr David Campbell
Local government	Sally Davis	Tim Harty
Tourism and recreation	Alastair Calder	Don Scarlet
Forestry	Patricia Fordyce	Sally Strang/ Kelvin Meredith
Māori interests	Alamoti Te Pou Weo Maag Gina Rangi	- Clinton Hemana -
Water supply takes	Garry Maskill	Mark Bourne
Rural professionals	Phil Journeaux	-
Community representatives *People living in the Waikato and Waipā river catchments*	Jason Sebastian Brian Hanna Gayle Leaf Evelyn Forrest Dr Gwyneth Verkerk Liz Stolwyk Matt Makgill	No delegates

APPENDIX 8

Summary of Technical Projects, Waikato Regional Council, August 2015

Summary of technical projects

August 2015

Healthy Rivers PLAN FOR CHANGE | Wai Ora HE RAUTAKI WHAKAPAIPA

Maniapoto Māori Trust Board
Raukawa Charitable Trust
Te Arawa River Iwi Trust
Tūwharetoa Māori Trust Board
Waikato Raupatu River Trust
Waikato Regional Council

Listed below are some of the technical projects that will be used to provide technical information to the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai project's Collaborative Stakeholder Group.

Technical project	Description	Why it's needed
1. Groundwater summer fieldwork programme	• Fieldwork investigations across the Waikato and Waipā river catchments to provide new data and information on groundwater flow, pathways, travel times (age and age distribution), nitrogen levels and links between groundwater and surface water. • Requires sampling of surface waters under summer low flow conditions when dominated by groundwater sources. • The technique for measuring groundwater age has a 12 week analytical step. **Status:** Complete	• Knowledge of groundwater is varied across the region, with significant gaps in our understanding in places like the Waipā, Hamilton Basin and Lower Waikato. • Will contribute to or improve understanding of basic hydrology, hydrogeology, regional groundwater levels, water chemistry (especially nitrogen), and groundwater/surface water age and age distribution across the catchment. • The resulting data will provide the core information required for developing hydrogeological models of how the groundwater behaves across the catchment.

Technical project	Description	Why it's needed
2. Conceptual hydrogeological models	• Utilizing existing information and that gathered in the groundwater summer fieldwork programme (project 1), develop 'models' of how the groundwater systems operate in different parts of the catchment (Upper, Middle, Lower Waikato and Waipā). • These conceptual models will provide macro-level information on recharge distribution and rates, lithological units and aquifer delineation, hydraulic characteristics, head distribution, flow paths and travel times. **Status:** Complete	• This work will essentially 'translate' existing data and the data obtained in the groundwater summer fieldwork programme into a consistent understanding across all subcatchments as to how the groundwater behaves. • This understanding informs water quality modelling, particularly in relation to attenuation and lag (nitrogen load to come). It also addresses previous Collaborative Stakeholder Group questions about wanting to understand more about the groundwater resources across the Waikato and Waipā river catchments.
3. Estimate historic land use and nitrogen leaching across the catchment	Across the Waikato and Waipā river catchments: • analyse samples of historic aerial photos to estimate changes in land use through time (1940s to present) • estimate historic nitrogen leaching rates through the application of assumed historic farm system practice. **Status:** Near completion	• To estimate the relative importance of nitrogen 'load to come' and nitrogen attenuation on both observed and predicted surface water quality there is a need to understand the history of nitrogen leaching over a period similar to that of the groundwater age. • This requires a historic record of changes in land use (and intensity) across the catchment.
4. Estimate flow in the vadose (unsaturated) zone	• Using existing data and that obtained from the groundwater summer fieldwork programme (project no. 1), estimate the time for water and nutrients to travel through the vadose (unsaturated) zone to the water table and how this varies across the catchment. **Status:** Complete	• This further informs our understanding of land use-groundwater-surface water linkages. • The importance of the unsaturated zone as a 'store' for water and nitrogen is not well known.

Technical project	Description	Why it's needed
5. Catchment model	• Improve the current surface water quality modelling tool so that it is better able to represent the effects of groundwater processes (flow paths, lags and attenuation) and how these vary across the catchment. • Also, integrates all four Healthy Rivers/Wai Ora contaminants (nitrogen, phosphorus, *E. coli* and sediment) along with clarity as a basic function of nutrients, chlorophyll (algae) and sediment. **Status:** Complete	• The importance (or otherwise) of 'nitrogen load to come' and nitrogen attenuation to future nitrogen concentrations in the river network is not well understood. • This tool will be a simple yet significant way of linking the improved knowledge of the groundwater system derived from the other groundwater projects to surface water concentrations. • This enhancement will not only provide a better explanation of current river nitrogen concentrations and their trends but also the timeframes over which improvements may occur due to the various mitigation methods. This will integrate with economic modelling to inform the Collaborative Stakeholder Group of implications of policy options.
6. Developing a relevant water quality attribute table: expert workshop	• Based upon current knowledge, an experts' workshop to develop a Waikato Objectives Framework (WOF) containing appropriate attributes and attribute bands for the four contaminants as they relate to the values described by the *Vision and Strategy for the Waikato River* and the Collaborative Stakeholder Group's focus statement, and that are not inconsistent with the National Policy Statement for Freshwater Management. **Status:** In progress	• Developing a set of attributes and attribute bands is a key step in developing the plan change to manage the four contaminants (nitrogen, phosphorus, sediment and *E.coli*). • These attribute bands will be used to describe current state, assist with definition of change scenarios to aid Collaborative Stakeholder Group deliberations, and provide a framework for the Collaborative Stakeholder Group's eventual recommendations to the Healthy Rivers Wai Ora Committee on limits and targets relating to the four contaminants for each of the Freshwater Management Units it decides upon.

Technical project	Description	Why it's needed
7. Efficacy of different mitigations on land and their costs	• Determine the effectiveness and cost of a wider suite of mitigation practices, especially for phosphorus, *E.coli*, and sediment losses so they can be added to the Farm costs economic model (project 9). This will involve both a technical experts' panel and review/input by sector experts. The technical experts have held a workshop and the next steps are to engage with sector experts, write up the mitigations and obtain review. **Status**: Complete	• Comprehensive analysis of the various scenarios for meeting attribute limits will require that all possible mitigations for all four contaminants be represented. Currently the Farm Costs model has a focus on in-paddock nitrogen mitigations and therefore needs to be extended.
8. Review and update point source information	Revisit the previous Opus report on point source discharges and the costs of treatment upgrades to reduce contaminant loadings. This will involve: • providing the Opus report to all point source dischargers, seeking their comments in relation to the accuracy of data for their current operation and the accuracy of the estimates for treatment plant enhancement • identify and where possible resolve any issues regarding availability of information • draft a report on updated estimates • peer review of the report by an engineer independent of the dischargers. **Status:** Complete	Mitigation options to help meet water quality limits include the possibility of reducing point source inputs through enhanced treatment. As with land mitigations, it is important to have robust information on the efficacy and the cost of point source mitigations (treatment plant upgrades) to provide into the economic modelling. While point sources are estimated to be a small contributor to the total contaminant load, point sources may be important contributors in localised situations.

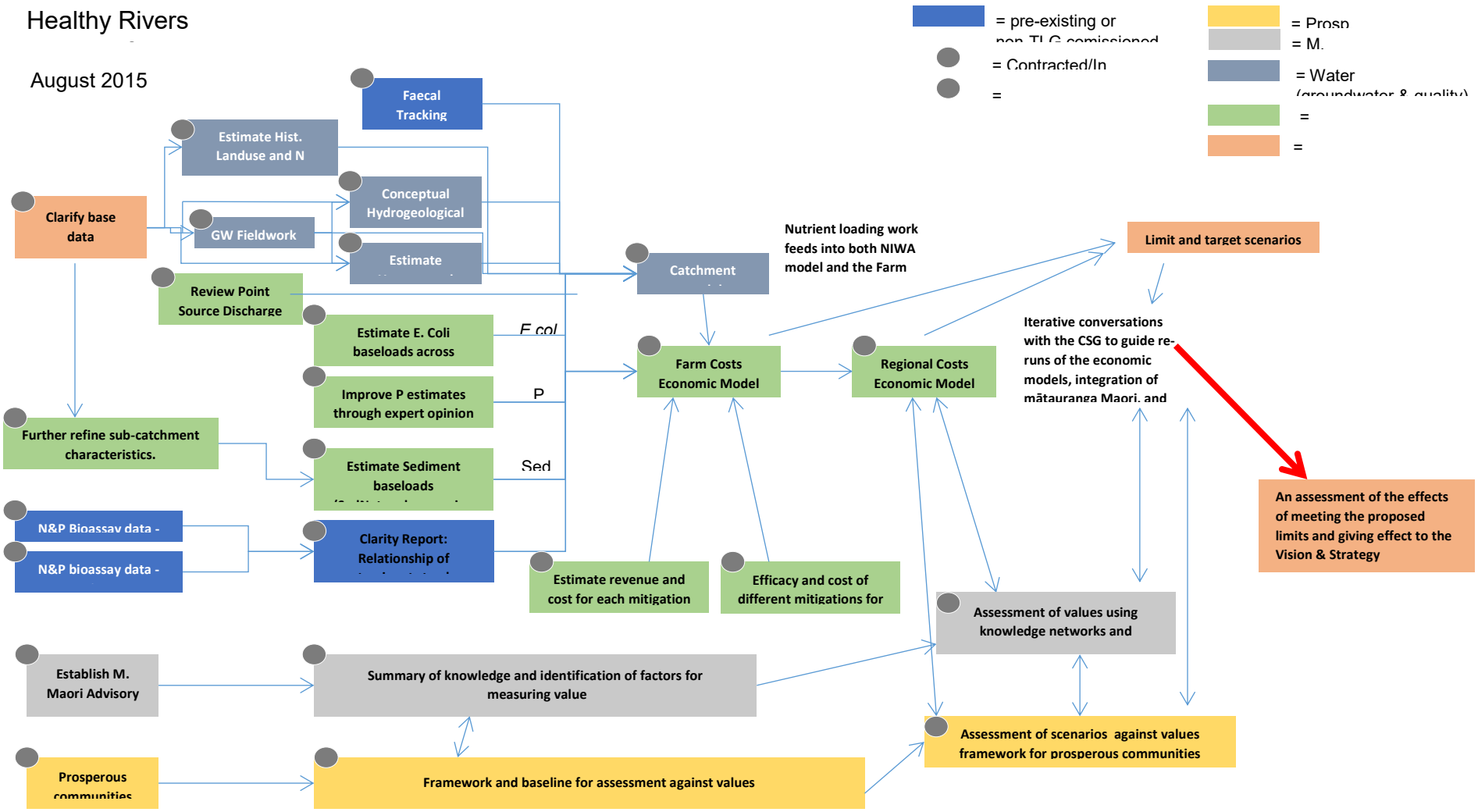
Technical project	Description	Why it's needed
9. Farm costs economic model	• Using the Economic Impact Joint Venture model as a foundation, this initiative aims to project the optimal pathway to achieve desired future states for each of the four key contaminants (nitrogen, phosphorus, *E. coli*, sediment) along with clarity. **Status**: Complete	• The key tool for the Collaborative Stakeholder Group to conceptualise how the various policy options will result in improvements across all five Freshwater Management Units, along with better describing the associated real world costs. This model will integrate directly with the *Regional costs economic model* (see project 10).
10. Regional costs economic model	• Update a comprehensive input-output model of the Waikato regional economy and link it to the *Farm costs economic model* (see project 9). • Building from (and integrated within) the *Farm costs economic model* (see project 9), this model aims to estimate cumulative net economic impact of achieving future desired water quality states at the catchment, regional and national levels. • The regional impacts of policy options will be defined through various key economic indicators across all sectors. **Status:** Complete	• Full analysis of future scenarios requires (amongst other things) an estimate of the regional-level economic effects of meeting contaminant limits.

Technical project	Description	Why it's needed
11. Faecal source tracking	• This work will use forensic DNA and chemical fingerprinting techniques to trace the origins of faecal contamination in river water (faecal source tracking). • Water samples will be collected from five sites in each of the four subcatchments during low and high flow conditions to identify the dominant sources of faecal contamination (i.e. bovine, other ruminants, humans, waterfowl, dogs). • Depending on findings, this work may need to be extended. **Status:** Complete	• The *Vision and Strategy for the Waikato River* and the Collaborative Stakeholder Group's focus statement highlight swimming water quality as an important value for the Waikato River. • However, many tributary streams and significant stretches of the Waipā and the lower Waikato currently exceed *E.coli* levels deemed suitable for swimming. • Inputs from farming, urban stormwater, wastewater discharges, and waterfowl are all plausible sources of faecal contamination, but knowing the actual sources and their relative contributions is important so that mitigation actions can be better targeted.
12. Determinants of visual clarity in the Waikato and Waipā Rivers	• Provide an expert analysis of the drivers of water clarity in different parts of the Waikato and Waipā river catchments, in particular, the relative influence of planktonic algae and inorganic sediments derived from erosion. • Key findings were summarised as part of the introduction to the clarity attribute session at Collaborative Stakeholder Group workshop 9. **Status:** Report complete, available at www.waikatoregion.govt.nz/tr201513/	• Water clarity is a key attribute that influences swimmability, fishability, ecosystem health, and people's perception of, and connection with, the water. • Management of water clarity to meet states that support these values requires understanding of the drivers of clarity so that the relevant actions can be prioritized (e.g. focusing on nutrient controls where algae are strongly dominant vs sediment controls where inorganic particulates are most important).

Technical project	Description	Why it's needed
13. Controls on algae in the Waikato River	• Two studies conducted by NIWA shed new light on the factors controlling algal growth in the river. • The study reports, and the interpretations made from them, have been released to the Technical Leaders Group by the clients for each study (DairyNZ and Waikato Regional Council). • The Technical Leaders Group is now seeking peer review of the studies and their interpretation, prior to presenting a summary to the Collaborative Stakeholder Group as part of its deliberations on the chlorophyll, nitrogen and phosphorus attributes. **Status**: Complete	• Algae (as measured by the green pigment, chlorophyll) is an attribute in the proposed Waikato Objectives Framework (WOF). • When the Collaborative Stakeholder Group are determining an appropriate attribute band for chlorophyll and developing mitigations to achieve/maintain that band, there needs to be a clear understanding of the factors controlling algal growth in the river. This, of course, has a flow on effect to clarity (see project 12).
14. Mātauranga Māori Knowledge Networks	• Develop knowledge networks from a Mātauranga Māori perspective drawing on literature available, values articulated at Collaborative Stakeholder Group workshop 5, and workshops with iwi representatives, pūkenga and relevant practitioners. • The knowledge networks will likely include both physical and non-physical values (e.g. mahinga kai species, swimmability, sense of place, identity and relationships, and wai tapu) and the positive and negative influencers of these values. • While the knowledge network will be holistic in its approach, the relevance of the four contaminants and their relative influence on these values will be described in an accompanying narrative. **Status:** In progress	• The National Objectives Framework in the National Policy Statement for Freshwater Management provides a framework for defining values, attributes and states. • Māori values and attributes are in their formative stage at the national level and do not provide a way forward that can be immediately picked up and incorporated into the Healthy Rivers/Wai Ora process. • To give effect to the *Vision and Strategy for the Waikato River* and the draft values they have developed, the Collaborative Stakeholder Group will need information on the connections (and the strength of connection) between the four contaminants and the values held by River iwi.

Technical project	Description	Why it's needed
15. Social and cultural impact assessment methodologies: expert workshop and Collaborative Stakeholder Group input	An experts workshop to: • identify social and cultural indicators related to prosperous communities • identify relevant methods and data sets available to undertake an impact assessment of future scenarios • develop a framework to undertake social and cultural impact assessment related to the future scenarios chosen by the Collaborative Stakeholder Group and modelled by the economic workstream • obtain input to the draft framework at Collaborative Stakeholder Group workshop 9. **Status:** In progress	• The Collaborative Stakeholder Group has developed a working list of values for water that are cognisant of both the *Vision and Strategy for the Waikato River* and the National Objectives Framework (NOF) in the amended *National Policy Statement for Freshwater Management*. • Water quality limits that reflect these values are being developed for the four contaminants. • A process will be required to identify other social, cultural, environmental, and economic values the community holds, against which they may wish to test the impacts of implementing mitigation actions and policy options that are required to achieve the water objectives. These considerations will provide the framework for integrated impact assessments.
16. Developing a baseline of social, cultural, economic and environmental indicators	Engage the expertise of Dr Beat Huser of Waikato Regional Council to: • examine the values currently proposed by the Collaborative Stakeholder Group and the draft framework developed by the group of experts (see above), to identify baseline indicator information that is available • prepare the information in a format that can be presented to the Collaborative Stakeholder Group and be used in a workshop setting for them to decide on their relevance and use. **Status:** In progress	• The Collaborative Stakeholder Group will be considering all four wellbeings (social, cultural, economic and environmental) when it deliberates on its recommendations to the Healthy Rivers Wai Ora Committee. • The Technical Leaders Group needs to be able to provide advice on the impacts of various future scenarios on social, cultural, economic and environmental indicators. • To do that requires establishing the current baseline against which future scenarios can be compared.

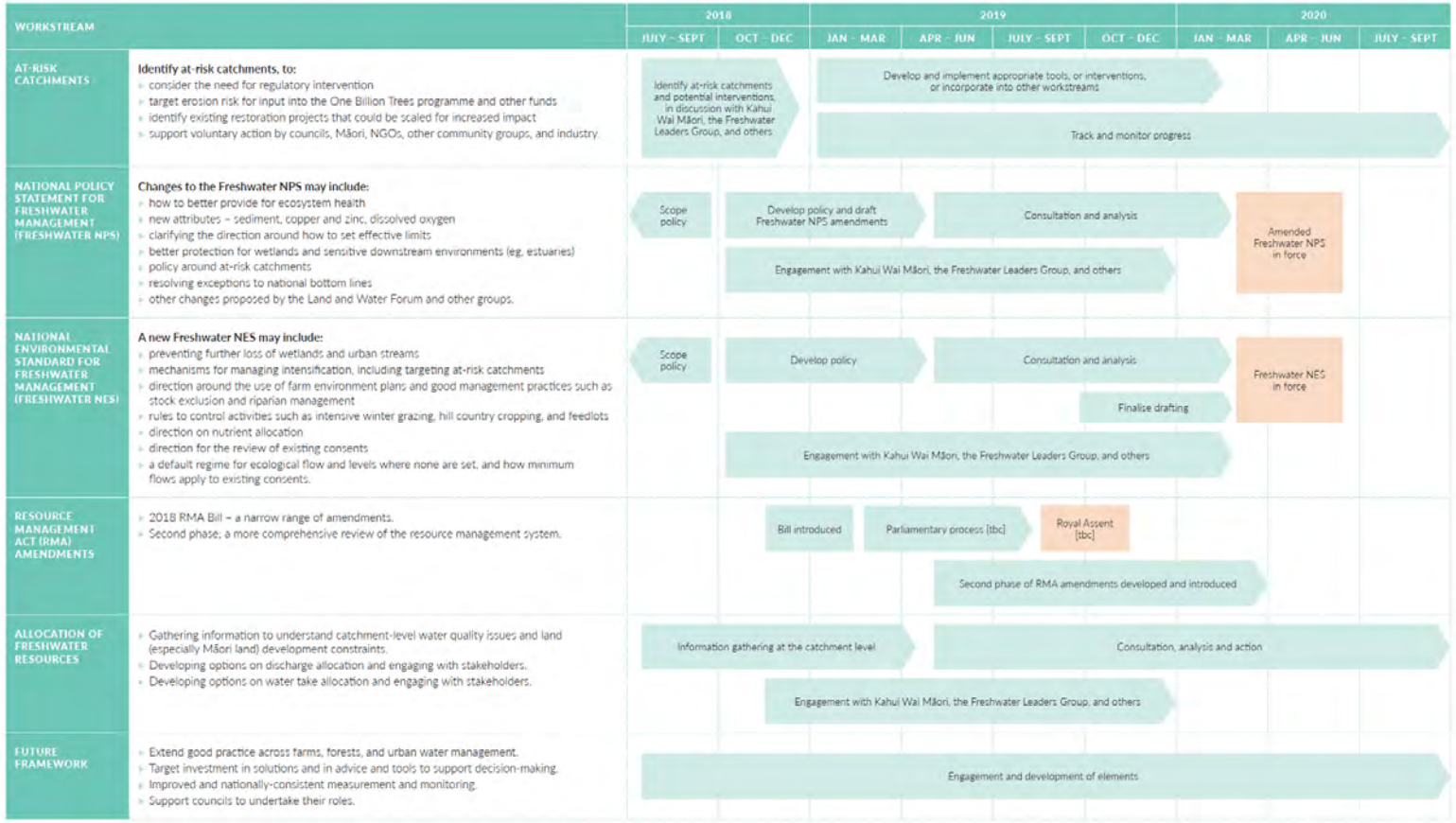
Technical project	Description	Why it's needed
17. Integrated assessment	Using the assessment framework (see project 15) and the baseline indicators developed in the two projects above, conduct integrated assessments of the wider impacts on communities associated with meeting water quality limits and targets. The type of analysis will be dependent on the indicators chosen as many will be qualitative and different means of gathering the data will be required e.g. interviews, surveys, modelling etc. **Status:** In progress	• The Collaborative Stakeholder Group will require integrated assessments to inform its recommendations to the Healthy Rivers Wai Ora Committee. • Consideration of the flow on impacts of choices of targets and policy instruments will inform choice and also allow for iterations until an acceptable solution is found. • The integrated assessment is strongly dependent on information from workstreams related to Mātauranga Māori, farm costs modelling and regional input/output modelling.


Healthy Rivers
August 2015
= pre-existing or
= Contracted/In
= Water
Faecal Tracking
Estimate Hist. Landuse and N
Conceptual Hydrogeological
Clarify base data
GW Fieldwork
Estimate
Review Point Source Discharge
Catchment
Nutrient loading work feeds into both NIWA model and the Farm
Limit and target scenarios
Estimate E. Coli baseloads across
E.col
Improve P estimates through expert opinion
P
Farm Costs Economic Model
Regional Costs Economic Model
Iterative conversations with the CSG to guide re-runs of the economic models, integration of
Further refine sub-catchment characteristics.
Estimate Sediment baseloads
Sed
An assessment of the effects of meeting the proposed limits and giving effect to the Vision & Strategy
N&P Bioassay data -
N&P bioassay data -
Clarity Report: Relationship of
Estimate revenue and cost for each mitigation
Efficacy and cost of different mitigations for
Assessment of values using knowledge networks and
Establish M. Maori Advisory
Summary of knowledge and identification of factors for measuring value
Assessment of scenarios against values framework for prosperous communities
Prosperous communities
Framework and baseline for assessment against values

APPENDIX 9
Work Programme, Essential Freshwater, Ministry for the Environment, October 2018

WORK PROGRAMME
Essential Freshwater

The Essential Freshwater work programme will deliver important long-term improvements to our freshwater. While changes to the National Policy Statement for Freshwater Management are needed, it will take time before these fully take effect as councils need to incorporate any changes into their planning processes. So more immediate impacts are achieved, we propose identifying at-risk catchments where immediate action can be targeted and developing a national environmental standard, which can take effect as soon as it is complete.



Find out more: More information on the Government's Essential Freshwater work programme is available on the Ministry for the Environment's website. | Published October 2018. INFO 848

New Zealand Government