BEFORE THE HEARING PANEL
AT HAMILTON

IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	of the Proposed Waikato Regional Plan Change 1 Waikato and Waipā River Catchments
AND	
IN THE MATTER	of Variation 1 to the Proposed Waikato Regional Plan Change 1 Waikato and Waipā River Catchments

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

BLOCK 3 TOPIC C

5 July 2019

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ABBREVIATIONS USED

The primary abbreviations I have used in my evidence are:

CFEP	Certified Farm Environment Planner
CSG	Collaborative Stakeholder Group
DOC	The Department of Conservation
FEP	Farm Environment Plan
FMU	Freshwater management unit
JWS	Joint Witness Statement
NPSFM	The National Policy Statement for Freshwater Management 2017
NRP	Nitrogen Reference Point
NZCPS	The New Zealand Coastal Policy Statement 2010
River Iwi	Trust boards for River Iwi being Maniapoto Māori Trust Board, Tūwharetoa Māori Trust Board, Raukawa Settlement Trust, Te Arawa River Iwi Trust, Waikato Raupatu River Trust
RPS	The Regional Policy Statement for the Waikato Region
The RMA	The Resource Management Act 1991
The CA	The Conservation Act 1987
The Council	The Waikato Regional Council
The Director-General	The Director-General of Conservation
The Plan Change/PC1	The Proposed Plan Change 1 to the Waikato Regional Plan (including Variation 1)
WRP	The operative Waikato Regional Plan
TLG	Technical Leaders Group

INTRODUCTION

1. My name is Deborah Helen Kissick.

2. I have been engaged by the Director-General of Conservation (DOC) to provide planning evidence for the Block 3 hearing on proposed Plan Change 1 (PC1 or the Plan Change) for the Waikato and Waipā River catchments.

3. I am currently employed as a Planner with Perception Planning, a resource management consultancy based in Taupō, that I joined in 2015.

QUALIFICATIONS AND EXPERIENCE

4. I provided details of my qualifications and experience in my evidence in chief I prepared for Block one, Topics A & B of this proceeding and will not repeat that here.

CODE OF CONDUCT FOR EXPERT WITNESSES

5. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. While this is not an Environment Court hearing, I have prepared this evidence in accordance with, and I agree to comply with, that code for this hearing. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have specified where my opinion is based on limited or partial information and identified any assumptions I have made in forming my opinions. I have also identified where I have relied on the expertise of others.

SCOPE OF EVIDENCE

6. I have been asked by the Director-General to prepare evidence in relation to his submission on PC1. Any references to the Plan Change in my brief of evidence relate to Plan Change 1 as originally notified (22 October 2016) and include the changes recommended by the Waikato

Regional Council (the Council) as a result of Variation 1 to Plan Change 1 (notified 10 April 2018). The focus of my evidence for this hearing is as follows:

Part C – Introduction and context including topics relating to:

i. Commercial Vegetable Production;

ii. Sub-catchment planning;

iii. Non-regulatory Implementation Methods;

iv. Farm Environment Plans – Schedule 1;

v. Miscellaneous matters relating to wetlands, lakes and other miscellaneous or consequential changes; and

vi. Brief comments on the Joint Witness Statement from technical experts

7. In preparing my evidence I have read:

a. The s32 reports that relate to matters addressed in Hearing Block 3;

b. The submissions and further submissions on PC1 including Variation 1 made by the Director-General of Conservation;

c. The s42A officer report for Hearing Block 3 entitled 'Section 42A Report Proposed Waikato Regional Plan Change 1 – Waikato and Waipā River Catchments. Block 3 Parts C7-C9'. I refer to this as the s42A officer's report or the officer's report in my evidence;

d. The evidence of Kathryn McArthur in relation to diffuse discharge management, sub-catchment mitigation planning, implementation methods and Schedule 1 Farm Environment Plan requirements;

e. The evidence of Dr Simon Stewart in relation to contaminant delivery to lakes;

f. The evidence of Dr Hugh Robertson in relation to the protection of wetlands and in particular, the content of Policy 15 and implementation methods relating to wetlands.

EXECUTIVE SUMMARY

8. This statement of evidence is the final of three statements I have prepared on the Proposed Plan Change 1 to the Waikato Regional Plan (including Variation 1). The focus of this evidence is on:

   i. the use of non-regulatory implementation methods;

   ii. the policy framework relating to commercial vegetation production;

   iii. the content of Farm Environment Plan in Schedule 1;

   iv. policies specifically relating to the Whangamarino Wetland and the wider context of the Vision and Strategy for the Waikato Rivers; and

   v. brief comments on the Joint Witness Statement – Expert Conferencing on Table 3.11-1.

9. The Director General's submission sought amendment to Policy 3 relating to the reduction of diffuse discharges associated with commercial vegetation production systems to provide greater certainty to plan users about the need to reduce diffuse discharges from these activities. I am concerned with the amendments recommended by officers and consider that they weaken the direction in the policy and provide plan users with less certainty. I have recommended amendments to ensure that the direction provided in the Plan Change regarding commercial vegetable production are clearly directed toward the achievement of the water quality limits and targets in Tables 3.11-1, 3.11-1a. 3.11-3 and 3.11-4.

10. I consider it is critical to understand what the freshwater objectives for each FMU are, given that they are defined in the NPSFM as being 'an intended environmental outcome in a freshwater management unit'. The monitoring of water quality in the sub-catchments of an FMU in my

view is essentially undertaken in isolation of any FMU-wide freshwater objectives where these objectives are not clear.

11. Monitoring of the water quality within an FMU is a critical component in understanding improvement or degradation in water quality and to understand whether the management approaches in the FMU are achieving the changes necessary to provide for the FMU values.

12. I am not clear from the policy as notified, or as a result of officers amendments, how sub-catchment monitoring data will be used to measure progress toward freshwater objectives across an FMU and further clarification on this is required.

13. I disagree with the recommendation by officers that the non-regulatory implementation methods contained in the Plan Change be deleted in their entirety. I consider that the inclusion of non-regulatory methods can provide useful guidance on how plan objectives and policies are to be achieved. It is also useful for plan users and the wider community to understand the commitments signalled by the council to progress the outcomes of the plan change.

14. In my view, the significant scale of changes to water quality required, and the lengthy timeframe over which this is intended to be achieved mean that the role of non-regulatory methods in signalling future work that the council will undertake to prepare for future plan changes and future water quality improvements is very important.

15. As a result, I have reviewed the implementation methods and recommended amendments where appropriate to ensure that they are providing useful direction and certainty to the community about the future work needed including to identify what information is still required. Wholesale deletion of the non-regulatory implementation methods, as proposed by officers is unhelpful and unnecessary in my view.

16. Officers have made significant changes to the content of Schedule 1 which identifies the requirements of Farm Environment Plans. The approach recommended by officers is a principle-based approach with the introduction of objectives and principles into Schedule 1 that guide farming activities rather than the more prescriptive nature of the

requirements of Schedule 1 as notified. I recognise that this approach provides greater flexibility for compliance for each individual farm, and I am comfortable with the approach in principle.

17. I have made comments on the objectives and principles suggested by officers to ensure that these are the best tools for achieving the outcomes of the plan change through a Farm Environment Plan. While I consider that the objectives and principles approach being recommended by officers does go some way to clarifying the intent of FEPs, I still consider that an overall outcomes statement is important to ensure the success of any FEP is measurable.

18. I consider clarification is required around when changes to an FEP need to be considered by a Certified Farm Environment Planner and recommend that further detail be provided to assist plan users. I also consider that the online tool for FEPs proposed by officers needs to come with clear guidance for its use, which needs to be developed before this plan change is operative.

19. Policy 15 relates to the need for specific restoration and protection of the Whangamarino Wetland. I have recommended amendments to the policy to ensure that the policy provides clear and specific direction around the need to manage the reduction of contaminants, both point source and diffuse, entering the wetland system.

20. I provide some comments on my brief review of the Joint Witness Statement of Table 3.11-1 prepared by technical experts representing various parties involved in this Plan Change. There are a number of matters raised by the Director-General that have still not been suitably considered through this process. I also have concerns with the process itself and as a result, recommend that the evidence prepared by the Director-General's technical experts be relied on over and above the outcome of the JWS.

COMMERCIAL VEGETABLE PRODUCTION

Policy 3 - Tailored approach to reducing diffuse discharges from commercial vegetable production systems

21. The Director General's submission [PC1-10653] sought amendment to Policy 3 to directly reference the reduction of diffuse discharges rather than the wording as notified which seeks to "Manage and require reductions…". This relief is similar to that sought in relation to other policies such as Policy 1 and 2 which contained similar wording as notified and which I recommended be amended in Block 2 evidence.

22. The s42A officers have recommended that the wording of the policy be amended to reflect that commercial vegetable production be 'provided for…' 'while reducing diffuse discharge…'. In my view, the emphasis of the policy as amended is now on enabling commercial vegetable production rather than managing the effects of the discharge of contaminants from these land use activities. I consider this change in focus moves away from the focus of PC1 on water quality and achievement of the outcomes sought by the Vision and Strategy. As a result, I recommend that revision of the policy wording is needed to ensure that the need to reduce contaminant discharge from commercial vegetable production activities is the priority direction of the policy.

23. At clause d of the policy, officers make recommendations which remove the requirement for a '10% decrease in the diffuse discharge of nitrogen, phosphorus, sediment and microbial pathogens…' as notified. In my view this weakens the policy by reducing the specificity and stating that a clear demonstration of a tailored reduction, of an unspecified amount is all that is required. I therefore recommend that this aspect of the policy be reinstated.

24. The Director-General's submission also sought that clarity on the intent of the wording, as notified, '…reducing average contaminant discharges over time…' in clause a. Officers have recommended that the wording of clause a be amended to now refer to remove the above wording requirements for initiatives and measures which will see losses of nitrogen, phosphorus, sediment and microbial pathogens 'progressively reduce' losses of the four contaminants.

25. I am not clear from this amendment what scale of reductions the officers consider are sufficient to show progressive reductions. This is in addition to the recommended removal of the requirement for a 10% reduction in diffuse discharges requirements currently contained in clause d. It is my view that the policy is considerably weakened by these recommended amendments. As a result, I am concerned that achievement of the objectives of the plan change, and the overarching direction provided by the Vision and Strategy is less certain. I consider that the link for clause d to require that commercial vegetable production activities to achieving the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 is missing and I have amended clause d to correctly reflect this link and provides the certainty of direction for plan users needed to achieve the objectives of the plan change.

SUB-CATCHMENT PLANNING

Policy 9 – Sub-catchment (including edge of field) mitigation planning, co-ordination and funding

26. The Director-General sought a number of points of clarification and amendment in relation to Policy 9 as notified [PC1-10671including:

    i. Clarification around the support the policy intends to provide for water quality improvements and what ‘early’ means;

    ii. Clarification around the form and timing of engagement for each priority area;

    iii. Amendment of the policy to refer to mitigation measures rather than ‘mitigations’;

    iv. Amendment of clause d to provide certainty around how the section will be achieved.

27. Officers have not provided any clarification around what support is intended to be provided by the policy, nor has there been any clarification around the form and timing of any engagement, other than to include local authorities into any future engagement.

28. In my view, it would benefit plan users and decision makers if the content of the policy was more specific around when engagement will occur. I agree that it is appropriate that engagement be prioritised to reflect the priority areas in Table 3.11-2 as well as the catchments of lakes and the Whangamarino Wetland (to align with the amendments I have recommended to Policy 8). I have recommended amendments in Appendix 1 to reflect this.

29. Officers have recommended an amendment to clause d, which they have indicated is in response to the relief sought by the Director-General. The amendment requires that any mitigation to be achieved by multiple farming enterprises be allowed where reductions in diffuse discharges can be 'confidently secured for the duration of a resource consent'.

30. This amendment does not, in my view, provide the clarification sought by the Director-General on the method of apportioning the reduction in diffuse discharges. I also consider that clause d, as amended by officers, could enable properties contributing to combined mitigation to rely on this approach and not also undertake contaminant reductions at an individual farm level. The need for both is addressed at paragraph 15 of Ms MacArthur's evidence. I have therefore recommended wording to amend clause d in Appendix 1 to clarify this requirement.

31. Officers recommend an additional clause e which refers to the use of sub-catchment monitoring information to measure progress toward freshwater objectives across the whole of each FMU. In order for this to be an effective mechanism for determining progress towards the desired water quality outcomes, there needs to be a clear understanding of the freshwater objectives the plan change is seeking to achieve. I discussed the importance of this in my Block 1 evidence and the lack of clarity around freshwater objectives in the plan change as notified or amended by officers.

32. Officers have commented, at paragraph 163-164 of the s42A report that they consider one aspect of sub-catchment planning that is not clear in PC1 is how progress toward the achievement of freshwater objectives for each FMU will be measured. They have outlined their understanding of how the monitoring results for each sub-catchment will be used,

stating ‘all sub-catchments within an FMU being used to establish whether the FMU is meeting or making progress towards the freshwater objectives’. They have recommended an amendment to the policy which requires the use of ‘sub-catchment monitoring information to measure progress toward the freshwater objectives across the whole of each FMU’.

33. I refer back to my evidence for Block 1 where I have highlighted the lack of certainty around what the freshwater objectives of the plan change are intended to be. I consider it is critical to understand what the freshwater objectives for each FMU are, given that they are defined in the NPSFM as being ‘an intended environmental outcome in a freshwater management unit’. The monitoring of water quality in the sub-catchments of an FMU in my view is essentially undertaken in isolation of any FMU-wide freshwater objectives where these objectives are not clear.

34. I am not clear from the policy as notified, or as a result of officers amendments, how sub-catchment monitoring data will be used to measure progress toward freshwater objectives across an FMU.

35. I consider it is entirely likely that monitoring data will show some sub-catchments achieving their water quality attribute limits or better and while some sub-catchments are not yet complying with the limits. It is not clear whether the approach will be to average this data over the whole FMU to determine whether the overall FMU is meeting its freshwater objectives, or whether any single sub-catchment that does not meet its water quality limits means the whole FMU is considered to not be achieving its freshwater objective(s), or some other method. Neither the s42A report, nor the amendment proposed by officers to the policy clarify the intended approach. I consider that this needs to be clarified so that it is clear to plan users and decision makers how success in terms of achievement of freshwater objectives will be measured using sub-catchment monitoring data.

36. I have raised what I considered were challenges with the broad FMU approach in my Block 1 evidence. An FMU, as defined in the NPSFM, is ‘the water body, multiple water bodies or any part of a water body determined by the regional council as the appropriate spatial scale for

setting freshwater objectives and limits and for freshwater accounting and management purposes'. The scale of an FMU is critical to ensuring that any monitoring undertaken is an appropriate reflection of any water quality changes in the FMU.

37. Monitoring of the water quality within an FMU is a critical component in understanding improvement or degradation in water quality and to understand whether the management approaches in the FMU are achieving the changes necessary to provide for the FMU values. The NPSFM outlines, in Section CB, the requirements for the monitoring of progress towards the achievement of freshwater objectives and values and recognises, through Policy CB1(c) the 'importance of long-term trends in monitoring results and the relationship between results and the overall state of fresh water…'. The NPSFM requires, at Policy CB1(b), that a representative site or sites be identified for each FMU for the purpose of monitoring.

38. I agree with Ms McArthur at paragraph 16 where she states that reference to freshwater objectives is confusing and as a result, I agree that referencing the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 in clause e is appropriate.

IMPLEMENTATION METHODS

39. Officers have recommended, at paragraphs 330-333 of the s42A report, that the non-regulatory implementation methods contained in the Plan Change be deleted in their entirety. They have questioned the relevance and usefulness of these methods over the life of the Plan Change and consider that many of the methods reflect the regional council's 'business as usual'.

40. I acknowledge that under s67 of the RMA, the only mandatory requirements for a regional plan are objectives, policies to implement those objectives and rules to implement the policies. Methods, other than rules, for implementing policies are an optional addition to a regional plan.

41. I consider however that the inclusion of non-regulatory methods can provide useful guidance on how plan objectives and policies are to be

achieved. It is also useful for plan users and the wider community to understand the commitments signalled by the council to progress the outcomes of the plan change.

42. I note that the wider operative Waikato Regional Plan uses implementation methods in each of its other chapters to provide direction on how the policy framework will be achieved. It is therefore consistent that PC1 also include implementation methods.

43. I also note that the changes needed to achieve the water quality outcomes in the Waikato and Waipā River catchments as directed by the Vision and Strategy are to be implemented using a staged approach. PC1 is the first step in this approach, with the ultimate water quality limits being achieved in up to 80 years' time. I consider that the significant scale of changes required, and the lengthy timeframe over which this is intended to be achieved mean that the role of non-regulatory methods in signalling future work that the council will undertake to prepare for future plan changes and future water quality improvements is very important.

44. I see non-regulatory methods are a useful way of demonstrating that future work is needed, to identify what information is still required and making this clear for all plan users. Wholesale deletion of the non-regulatory implementation methods, as proposed by officers is unhelpful and unnecessary in my view.

3.11.4.1 Working with Others

45. This implementation method, as notified was supported by the Director-General [PC1-10750]. While I agree with officers that the method reflects statutory requirements and good practice of implementation of the plan, I feel that the method signals the intention of the council to apply a collaborative approach to implementing PC1.

46. It would therefore be my preference that implementation method 3.11.4.1 be retained as notified.

3.11.4.3 Farm Environment Plans

47. The Director-General is supportive of the use of Farm Environment Plans, but sought through his submission, that a clear goal of these

plans be in place to ensure that their success is measurable [PC1-10752].

48. I consider that the implementation method largely describes the process for developing and monitoring a FEP, which has now been specified in greater detail through Schedule 1 to the plan change. As a result of the direction for FEPs, including their review and the role of Certified Farm Environment Planners, being included in Schedule 1, there is now little need in my view for the implementation method as currently worded. I therefore consider the suggestion by officers to delete this implementation method from the Plan is appropriate.

3.11.4.4 Lakes and Whangamarino Wetland

49. Officers have acknowledged that despite their recommendation to delete all implementation methods, this method supports the implementation of Policy 14 and FEPs and that 'if it is to be kept, it needs to be updated to reflect the final positioning on those provisions'.

50. I have recommended amendments to Policy 14 as a result of the Director-General's submission which seeks [PC1-10753, V1PC1-406] that existing data and information, including any existing lake catchment plans be used to support the improvement of lakes water quality through better management of land use activities.

51. As I have stated in previous evidence, PC1 as notified, overlooks the significance of lakes and wetlands in the Waikato and Waipā River catchments. It also appears to overlook the difference in response to contaminant discharge between different freshwater bodies through the application of a river-centric approach to the management of water quality.

52. I consider that implementation method 3.11.4.4 plays an important role in highlighting the significance of lakes and the Whangamarino Wetland for plan users and the wider community. The Director-General's submission [PC110753, V1PC1-406] sought to retain the method with amendments including to:

    i. To ensure existing lake management plans and strategies are actioned as a priority;

ii. To provide greater certainty regarding the management of shallow lakes;

iii. Ensure that existing farm plans are enforced, and that expansion of work on private properties be undertaken as a priority (outside of the work already undertaken by Council and in the public conservation estate);

iv. Use an evidence-based description of the problem where this is available to implement lake catchment plans; and

v. Ensure a new method that ensures the Whangamarino Catchment plan is developed within 2 years from the date of Chapter 3.11 being operative.

53. I consider that amendments are required to the implementation methods to ensure that the above relief is appropriately reflected.

54. I have recommended amendments, similar to those I have recommended to Policy 14 with regard to utilising existing data, information and lake catchment plans as well as developing new plans for those sub-catchment where such plans do not exist, is an appropriate way to prioritise lake catchment management.

55. I acknowledge the direction from the Shallow Lakes Management Plan[1], through its first objective that seeks 'Appropriate objectives, targets and limits are established for the future management and enhancement of shallow lakes'. I consider that the amendments recommended to PC1, through the evidence of Dr Phillips, Dr Stewart and myself, to objectives, policies and through the recommendation to reconsider the distribution of lake FMUs and their associated limits/targets, are directed at helping to achieve this objective through the Plan Change and to ensuring that there are clear outcomes sought for shallow lakes.

56. In particular I note the recommendation of Dr Phillips in her Block 1 evidence, that short-term targets for lakes be set through Table 3.11-1 and that more aspirational long-term targets be set for lakes. I note that

[1] http://www.waikatoregion.govt.nz/assets/PageFiles/37519/tr201458.pdf

Attachment 12 of the JWS provides short-term 20% improvement targets for lakes, based on current FMUs and revised long-term targets for lakes. There is no author outlined on this report attachment, but I note that Dr Phillips has agreed to the table for lakes per Table 2 of the JWS.

57. As a result, I consider that there is a need for short-term targets for lakes to be implemented through the Plan Change now, per the recommendation of Dr Phillips. As a result, I have deleted clause g from the implementation method requiring that this occur in future.

58. I acknowledge that since the plan change was notified, the Lake Waikare and Whangamarino Catchment Management Plan (the CMP) has been developed (September 2018). It is therefore appropriate to require the implementation of this catchment management plan rather than the relief sought by the Director-General to develop a catchment management plan within 2 years of the date of notification of the plan change. I recommend an amendment to clause c to reflect this.

59. I note however that the CMP does not include any specific water quality targets for wetlands or a statutory framework for implementation which I consider needs to be addressed through PC1. In his Block 1 evidence, Dr Robertson identifies the need for Tables 3.11-3 and 3.11-4 (as numbered in my Appendix 1) to be included which provide limits/targets in narrative form for all wetlands, and numeric targets specifically for the Whangamarino Wetland. I also note that the CMP does not put in place a policy or rule framework to achieve its objectives. In my view, this places additional importance on the role of PC1 in implementing the CMP and providing a suitable policy and rule framework including through FEPs and stock exclusion requirements.

60. I also consider that PC1 is the appropriate opportunity to ensure that implementation of the CMP is tied to a statutory process.

3.11.4.5 Sub-catchment scale planning

61. The Director-General's submission seeks greater clarity for plan users from the wording of the implementation method, about when a sub-catchment plan will be required. [PC1-10759].

62. Officers have not provided any clarity through the s42A report about when a sub-catchment scale plan would be required. I consider clarification in the plan change is required so that plan users, decision makers and the wider community are clear about when sub-catchment planning will be used.

63. If it is intended that sub-catchment planning be developed for all sub-catchments, in order of priority, then I consider an amendment to both Policy 9 and this method is necessary to clarify this.

3.11.4.6 Funding and implementation

64. The Director-General sought [PC1-10763] to retain this implementation method as notified. The method guides how the implementation of the plan change will be funded, which is the responsibility of Council. I consider it is useful for the method to be retained, as notified, as it signals the commitment of the Council to resourcing the implementation of the plan change.

65. In my experience, without a link to a statutory document such as a regional or district plan, it can be difficult for councils to justify expenditure in an annual or long-term plan. It is therefore important, in my view, to create this linkage such as the one created through this implementation method. I therefore recommended it be retained as notified.

Policy 7 and 3.11.4.7 Information needs to support any future allocation

66. Throughout the submission from the Director-General, a change to a land-based allocation framework in the plan change is sought. This includes through the implementation method 3.11.4.7 which seeks to direct information gathering and research to inform any future framework. [PC1-10764]

67. Officers have analysed the submissions on Policy 7 at Paragraphs 476-483 of the s42A report. They have recommended that Policy 7 be deleted in its entirety.

68. Officers do however, correctly identify in my view, at paragraph 481, that any allocation to a property level will need to be robustly reviewed.

69. The Director-General's submission [PC1-10667] on Policy 7 seeks that generally, the current 'grand-parented' approach to allocation in Plan Change 1 be replaced with a land-based approach to allocation. This type of approach to future allocation allocates nutrients based on the natural capital or physical characteristics of the land and often uses the Land Use Capability (LUC) of the land as a proxy for determining natural capital.

70. Under a land based approach to allocation, all land in a sub-catchment with the same physical characteristics has the same allocation of nutrients. This approach disregards the current use of land and any existing discharge. I consider this is a more fair and equitable way to enable flexibility of land use for all landowners, while working towards achieving the desired water quality outcomes sought. I have discussed this in more detail in my evidence for the Block 2 hearing.

71. A land based allocation approach would ensure that all landowners with the same land use type have the same 'rights to discharge' regardless of current land use and would reduce the disadvantage of those properties who may be under developed, either by choice or as a result of recent ownership in the case of tangata whenua ancestral lands.

72. Ms McArthur identifies, at paragraph 8 of her evidence, that in her view, 'there is inadequate development of water quality data (e.g. calculation of sub-catchment loads) and insufficient information on contaminant losses from land to fully inform a long term allocation regime at this time, in order to move beyond the 'interim' PC1 approach and work towards achieving the 80 year targets'.

73. Further, at paragraph 9 of Ms McArthur's evidence, she identifies the following steps need to occur 'in order to implement an allocation regime to achieve 80-year targets'.

    i. 'Identify the target concentrations of N and P in Table 3.11-1 for each sub-catchment to ensure the sub-catchment effects of nutrients are managed and the N and P targets for the Waikato River mainstem will also be met;

    ii. Calculate sub-catchment loads to meet the instream N and P target concentrations;

iii. Allocate N and P loads (losses) to land users in each sub-catchment to achieve sub-catchment loads and thereby the instream sub-catchment and mainstem targets'.

74. Ms McArthur goes further to identify that sub-catchment nutrient targets are required to enable the nutrient load for each sub-catchment to be determined in order to meet those targets, and to allow the allocation of the sub-catchment load to land to occur. I agree with Ms McArthur that the information associated with these steps is necessary in order for a nutrient allocation regime to be successfully implemented. I consider that the work towards the development of a fair, equitable and flexible allocation regime is already overdue and that it is vital that steps be taken now to ensure this can occur as soon as possible in the future.

75. As a result, I consider it is vital that the implementation methods of the Plan Change direct work towards filling the information gaps to ensure that an appropriate allocation framework can be developed at least in time for any review of this plan change.

76. At Paragraph 327 of the officers s42A report, a new method, sought by Fish and Game is outlined. This method seeks to ensure there is a framework for the allocation of diffuse discharges developed within a specified timeframe for sub-catchments. The method outlines the actions required of the regional council to ensure the following is clear:

i. The total allowable load of a contaminant for each sub-catchment that will meet the water quality objectives of the plan;

ii. Implementation of diffuse discharge leaching rates from properties by allocating limits, targets and timeframes;

iii. Define nitrogen load requirements for sub-catchments;

iv. Define timeframes for sub-catchment nitrogen load reductions to be made.

77. Officers appear not to have considered the importance of this suggested method given their position that implementation methods reflect 'business as usual' for the council and are not required. In my view, if this new method is not adopted, there is a real missed

opportunity through this relief to ensure that the information gaps to provide a fair, equitable and robust future allocation framework is available for future management of water quality in the Waikato and Waipā River catchments.

78. This is particularly important given that officers and the CSG[2] are also of the view that there is inadequate information and certainty to incorporate a land-based allocation framework in the plan change. Without a method that seeks to bridge these information gaps, the council will be no better off when it is time to evaluate the effectiveness and efficiency of the current approach or to implement a fairer allocation framework that takes account of natural capitals of land when allocating diffuse discharges.

79. As a result, I am supportive of the relief sought by Fish and Game to add a new implementation method which will provide a framework for a necessary future nutrient allocation regime. I also recommend that the notified method 3.11.4.7 be retained as notified.

80. The Director-General's submission outlined his concern around the onus on future generations implied by Policy 7 and the general lack of certainty about what allocation could require of landowners in the future.

81. Unfortunately, based on current levels of data and information there appears to be no option to implement a land-based allocation regime as preferred by the Director-General at the current time. As a result, and to ensure that these information gaps are filled as soon as possible, the plan change must provide direction around the information necessary as I have discussed above. Policy 7, as notified, includes a large section of 'how' future allocation should be evaluated in future which is more a method than a policy. The Director-General has sought that this section be removed and included as a non-regulatory implementation method under section 3.11.4.

82. It is my view that, as recommended in the Director-General's submission, these principles are appropriate to be reflected, with amendments, in an implementation method with some amendments to ensure a future land-based approach to allocation can be implemented.

[2] As outlined at paragraph 476 of the s42A report.

In my view, it is appropriate to incorporate this direction within existing method 3.11.4.7. I have provided amending wording to this effect in Appendix 1.

3.11.4.8 Reviewing Chapter 3.11 and developing an allocation framework

83. On review of the content of method 3.11.4.8, I consider that this method provides useful direction on the action required to inform future changes to the regional plan focussed at a property/enterprise level based on information gathered through method 3.11.4.7 and through the new method recommended by Fish and Game (discussed above at para 64).

84. I therefore recommend this method be retained with amendments to reflect the need to manage the diffuse discharge of all contaminants. [PC1-10764]

3.11.4.9 Managing the effects of urban development

85. The Director-General seeks [PC1-10766] that the implementation method be retained as notified as it recognises the importance of understanding the cumulative effects from urban development.

86. I consider that the method is a useful signal of the intention of council to engage with territorial authorities and urban communities to highlight and raise water quality issues and in identifying and implementing solutions. It is my preference that the method is retained.

3.11.4.10 Accounting system and monitoring

87. The Director-General's submission [PC1-10767] seeks to amend the implementation method to recognise the need for co-ordinated monitoring and reporting of wetlands and the coastal environment, with urgent accounting and monitoring being required for:

    i. Wetlands

        i. Wetland extent/buffer extent

        ii. Soil mineral/organic content (sediment)

        iii. Soil phosphorus

iv. Soil nitrogen

v. Vegetation – as an indicator of ecosystem health

ii. Freshwater species – as an indicator of ecosystem health

iii. MCI – rivers

iv. Waikato river delta being the estuarine receiving environment of the entire Waikato and Waipā catchments.

88. Ms Kettles, in her Block 1 evidence, highlighted the decline in seagrass habitat in the Waikato River Delta and the importance of appropriate monitoring as 'The monitoring carried out at the Waikato River Estuary is currently inadequate to measure any sediment related impacts on the values present. A monitoring programme (Robertson et al. 2002) for seagrass extent, sedimentation (settlement of suspected sediment) and turbidity will allow adaptive management to be applied to the freshwater targets[3]. Ms Kettles also notes that currently freshwater and estuarine monitoring in the Waikato Region are reported on separately. She considers that reporting 'needs to be integrated to be more meaningful for adaptive management'[4].

89. As a result, I consider it is appropriate to include the requirement for integrated freshwater and estuarine monitoring in the implementation method. I have suggested wording to this effect within method 3.11.4.10 in Appendix 1.

90. Dr Robertson has identified, at paragraph 106 of his Block 1 evidence that from site assessment, photographs, monitoring data and catchment modelling it is clear that the Whangamarino wetland is over-allocated in term of its water quality (nutrients, sediment and clarity). He identifies that there is currently surface water quality monitoring for the main Whangamarino tributaries in place (as part of the State of the Environment monitoring) and that monitoring of sediment concentrations and loads in the Pungarehu Canal has also been undertaken by WRC. I consider it is appropriate that this implementation method requiring monitoring include reporting on this

[3] Paragraph 24 of Block 1 evidence of Ms Helen Kettles for Director-General of Conservation
[4] Paragraph 27

information, as well as ensuring that there is monitoring of all wetland extents/buffers, their sediment/nutrient content and of their vegetation as a measure of ecosystem health.

91. I acknowledge that the inclusion of revised lake FMUs as recommended by Dr Phillips and a Whangamarino Wetland FMU as recommended by Dr Robertson would go some way to achieving the outcomes sought by the Director-General in relation to this method.

92. The importance of ecosystem health has been raised by experts on behalf of the Director-General throughout evidence on this plan change. As a result, in my view, it is important that mechanisms for monitoring and reporting on ecosystem health be incorporated into this implementation method. As such, a requirement to collect information on freshwater fish species and MCI (macroinvertebrate community index) as important indicators of ecosystem health is critical.

3.11.4.11 Monitoring and evaluation of the implementation of Chapter 3.11

93. The Director-General is generally supportive of the implementation method regarding monitoring and evaluation of the implementation of the plan change chapter. I recognise that there is a requirement under s35 of the RMA to gather information, monitor and keep records of the efficiency and effectiveness of policies, rules or other methods. I consider that the implementation method as notified provides guidance to plan users and the wider community about how the council intends to achieve this for PC1.

94. I therefore recommend that it be retained, with amendments that link this method to the accounting and monitoring information gathered under method 3.11.4.10, and that it provides greater specificity around the frequency of reporting, as requested in the Director-General's submission [PC1-11052].

3.11.4.12 Support research and dissemination of best practice guidance to reduce diffuse discharges

95. The Director-General supports the intent signalled by Council through this method to provide information on best practice for reducing diffuse discharges and supports further research into this also. I also consider this is a method that should be retained in the plan as notified, as I feel

shows the Council's commitment to helping landowners achieve the outcomes sought by PC1. It is my preference that it be retained.

New implementation method

96. In addition to the implementation methods included in the plan change as notified, and sought to be amended by the Director-General, an additional implementation method is sought which recognises the need to understand the current state of wetlands across the Waikato and Waipā River catchments. The benchmarking of existing wetland factors including soil nutrients, surface water quality, sediment and nutrient inputs and wetland vegetation (as an indicator of ecosystem health) is a critical step to understanding the performance of the provisions of PC1 and monitoring their efficiency and effectiveness in achieving the purpose of the Act and the outcomes sought by the Vision and Strategy.

97. As a result, I consider that a new non-regulatory implementation method 3.11.4.4a is required which directs the Council to undertake this work, for all natural wetlands within the Waikato and Waipā River catchments.

FARM ENVIRONMENT PLANS

98. I discussed the content of Schedule 1 in my evidence on Block 2 given that the content of this schedule are, in my view, a critical element to understanding whether the policy framework supporting the FEP implementation are appropriate.

99. I note that officers have only addressed the contents of schedule 1 as part of their Block 3 s42A report. They have recommended wholesale changes to the content of Schedule 1. The approach recommended by officers is a principle-based approach with the introduction of objectives and principles into Schedule 1 that guide farming activities rather than the more prescriptive nature of the requirements of Schedule 1 as notified. I recognise that this approach provides greater flexibility for compliance for each individual farm, and I am comfortable with the approach in principle.

100. I do consider however that there needs to be greater specificity in some of the principles and objectives to ensure that a minimum standard is

achieved and that the FEP requirements clearly link to achieving the broader water quality outcomes of the plan change.

101. The Director-General seeks a range of requirements in relation to the content of Schedule 1 which outlines the requirements for the content of FEPs. In the following paragraphs I have considered the revised Schedule against the relief sought by the Director-General.

Goal of FEPs

102. The Director-General sought that a clear goal for Farm Environment Plans (FEPs) be established to ensure that the success of any plan is measurable [PC1-10752, PC1-10647]. As outlined in my evidence for Block 2, Officers have agreed that 'PC1 should contain clear outcome statements to guide the use of FEPs'[5] however I am not clear what amendment officers consider are needed to achieve this.

103. While I consider that the objectives and principles approach being recommended by officers does go someway to clarifying the intent of FEPs, I still consider that an overall outcomes statement is important.

104. I have reflected on the outcome statement I recommended in Block 2 and consider that a further addition that would be beneficial. I recommend that the outcomes statement make specific reference to the requirements to achieve the water quality limits/targets in Tables 3.11.1, 3.11-1a, 3.11-3 and 3.11-4 in the Plan Change, including those additional tables recommended by the Director-General's technical experts. I have included my suggested outcomes statement, with amendments in Appendix 1 to this evidence and note that this recommendation supersedes my recommendations on Schedule 1 made in my Block 2 evidence.

Critical source areas of nitrogen and phosphorus

105. The Director-General seeks that FEPs be required to identify critical nitrogen and phosphorus sources for lakes, and to identify on farm methods to reduce nitrogen, phosphorus and sediment discharges to lakes. [PC1-10647]

[5] At Paragraph 359 of the Block 2 s42A report

106. I note that Part B - FEP Content of the officer recommended changes to Schedule 1 requires that the location of critical source areas or hotspots be mapped, however there is no guidance in the plan change now to outline how these things are defined.

107. I note that Section 2(c) of Schedule 1 as notified requires that 'critical sources areas from which sediment, nitrogen, phosphorus and microbial pathogens are lost are 'described' including identification of the following:

i. Intermittent waterways, overland flow paths and areas prone to flooding and ponding;

ii. Actively eroding areas, erosion prone areas and areas of bare soil;

iii. Assessment of the risk of diffuse discharge from tracks and races and livestock crossing structures;

iv. Areas where effluent accumulates;

v. Other 'hotspots' such as fertiliser, silage, compost or effluent storage facilities, wash-water facilities, offal or refuse disposal pits and feeding or stock holding areas

108. I consider that this list provides greater certainty to plan users, decision makers and Certified Farm Environment Planners about what features on a farm are likely to be critical sources of contaminants. I consider it is essential to either include a list such as the one above, or include a definition in the plan change which provides this information.

Existing drain restoration or interception

109. The Director-General seeks that FEPs be required to identify where existing drains can be restored or intercepted to reduce nutrient and sediment runoff into lakes. [PC1-10647]

110. As outlined in my evidence for Block 2, I consider that when developing a Farm Environment Plan, the retirement and restoration of existing drainage areas should be considered. I consider that this will ensure that any drains that are no longer required are removed from being

connected to the wider catchment network of waterways and therefore, no longer affect water quality. I have recommended an amendment to the principles associated with Objective 6 to achieve this, in Appendix 1.

111. I also note that the officers revised version of Schedule 1 removes all references to the management of cultivation. It is my understanding that cultivation practices can have impacts on the resulting water quality. Therefore, I consider that cultivation setbacks are an important component toward achieving water quality outcomes. I recommend that cultivation management, including necessary setbacks, be included in Schedule 1 as I have amended. I have provided further consideration of the costs and benefits of these setbacks at Appendix 2 of this evidence.

Wetlands in FEPs

112. The Director-General seeks that FEPs recognise the potential role for wetlands to assist in the management of water quality and to recognise their significant values by ensuring that:

i. All wetlands, permanent and ephemeral, are identified in FEPs;

ii. Management of nutrients and sediments ensure that adverse effects on wetland systems and their values are avoided or mitigated; and

iii. Existing drainage of wetlands is stopped and any future drainage of wetlands is avoided. [PC1-12394]

iv. Setbacks for grazing and cultivation on sloping land be evaluated in relation to soil type to ensure an appropriate setback distance is achieved.

113. As notified, Schedule 1 required at 3(e) that 'the location of continually flowing rivers, stream, and drains and permanent lakes, ponds and wetlands' be identified on a spatial risk map of the property. The Director-General has sought that all wetlands, including permanent and ephemeral, be identified in order to protect their significant values. I note that in the schedule as revised, there is no requirement for mapping of any waterbodies, other than those where stock cross or

have direct access, as part of an FEP and I recommend an amendment to Part B, clause c to ensure this occurs.

114. I consider that it is an important exercise as part of developing a FEP is for landowners to recognise and identify the location of waterbodies on their properties in order for their farm management techniques to appropriately address the potential for contaminants to enter these waterbodies.

115. The Director-General also sought that the adverse effects of nutrients and sediment on wetland systems and their values be avoided or mitigated. I note that Section 2 of Schedule 1 as notified, requires that an assessment of the risk of diffuse discharge be undertaken and that those risks be prioritised against the sub-catchment targets in Table 3.11-1. This section requires the consideration of:

i. Stock exclusion from water bodies;

ii. Setbacks and riparian management;

iii. Description of critical source areas;

iv. Assessment of land use and grazing management;

v. Nutrient management practices; and

vi. Cultivation management

116. It appears that these risk assessment elements are no longer listed in Schedule 1 as amended by officers. Instead, a series of objectives and principles have been applied which seeks to address the risks associated with farming activities on water quality.

117. I have previously recommended amendments to Objective 6 and its associated principles which I feel are appropriate and address the relief sought by the Director-General. This is by ensuring that minimisation of contaminant losses from farming activities resulting in soil disturbance and erosion are directly linked to the water quality limits/targets specified in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 and other amendments to Schedule 1, referenced in this evidence, where

necessary to recognise the importance of these factors in contributing to water quality.

Īnanga spawning habitat

118. My Block 2 evidence, together with the evidence of Dr Stewart and Ms McArthur, raised the need for the specific values of water bodies in the Waikato and Waipā catchment to be identified, including those relating to īnanga spawning habitat.

119. Officers response to this relief was to require that īnanga spawning habitat be identified through the FEP process. On review of Schedule 1 as revised by officers, it does not appear that there is any requirement to undertake identification of spawning habitat as part of the FEP process.

120. I stated in my Block 2 evidence that I consider that it was more appropriate if the council took responsibility for this habitat identification and mapping and then make this information available for landowners. I consider this is still a more appropriate and cost effective option rather than requiring each landowner to get a separate ecological assessment to identify whether īnanga spawning habitat is present.

121. Based on the recommendation of Dr Stewart and Ms McArthur, I have recommended cultivation setbacks apply to īnanga spawning habitat and provide analysis of the costs and benefits of this in Appendix 2.

Forestry harvesting setbacks

122. Dr Stewart recommends additional setbacks from forestry activities be included to manage the adverse effects on water quality that can arise from harvesting activities. Dr Stewart is concerned that the requirements of the National Environmental Standard for Plantation Forestry (NESPF) do not provide adequate protection for lakes, particularly in relation to sediment generated by harvesting activities.

123. As a result, he recommends that 20m riparian setbacks be created for forestry activities from all lakes and their catchment inflow streams which is consistent with his recommendation for setbacks from lakes in his Block 2 evidence.

124. Dr Stewart also recommends that 20m setbacks be applied, to waterbodies in the Upper Waikato River and Middle Waikato River FMUs due to these receiving environments being reservoir lakes that are susceptible to being depleted of oxygen as a result of excess sediment smothering habitat.

125. The Director-General did not make a submission specifically requiring setbacks from forestry activities. Fish and Game did make a submission [PC1-11007] which sought to:

i. Remove the forestry exclusion in the existing Regional Plan Rule 5.1.4.14.6 and 7 and require a 10metre buffer for ephemeral streams, perennial streams, wetlands and lakes; and

ii. Amend to ensure that no more than 50 per cent of a catchment or sub-catchment is harvested in a 10-year period unless 20 metre buffers are used on perennial streams, wetlands, and lakes to protect the downstream environment during harvest.

126. The Director-General is relying on the relief sought by Fish and Game to include the setbacks recommended by Dr Stewart. Based on Dr Stewart's recommendations, I have included an additional setback requirement into Schedule 1 Requirements for Farm Environment Plans as a further principle to Objective 6 which seeks to minimise contaminant losses to waterways from soil disturbance and erosion to ensure water quality limits/targets are achieved.

Revised Schedule 1 - general

127. Given that Schedule 1 as recommended by officers, has been completely rewritten from what was notified, I have some comments on the new version of the Schedule.

128. Firstly, I note that officers have recommended the use of a 'digital FEP tool' as the method for submitting a FEP to council. I consider that an online tool is likely to be a useful mechanism for FEPs to be submitted. I consider however that both the detail of this tool and a user guide for its application are important to ensure that landowners are fully equipped to implement the use of such a tool, particularly given it is the

only mechanism for submitting an FEP proposed. I consider that it is important for such guidance to be in place prior to the Plan Change being made operative to ensure it is available to landowners as soon as possible.

129. I consider that the process of submitting a FEP is not as clear as it could be. I have interpreted that a Farm Environment Plan can be prepared by the landowner, but must be reviewed by a Certified Farm Environment Planner before being lodged as part of a land use consent application. This is outlined under Part C of the revised schedule being 'review requirements'. In my view, this section could be clearer that it is both the FEP approval and review section. I consider this is appropriate as the section includes the process for initially certifying a FEP and the process for reviewing an FEP after a 12-month period and as specified in a resource consent.

130. I consider that a better name for this section 'FEP Approval and Review Requirements' to reflect more clearly what is contained in this section and have made this recommended amendment in Appendix 1.

131. I have a number of comments in relation to the map required under Part B. Firstly, clause 2b requires that the boundary of the land management units or land uses of the property be shown. I consider that clarification is required that this needs to be at least the 'effective farmed area' to ensure that this is the area subject to management in term of contaminant discharge.

132. Clause 2c states that the location of any 'Schedule C waterbodies' be identified. I assume that officers have intended that this refers to the waterbodies listed in clause 6 of schedule C being 'any river (including any stream or modified river or stream) or artificial watercourse that is permanently or intermittently flowing', 'the bed of any lake' and' any wetland, including a constructed wetland'. If this is what officers intend, I consider it would be more clear for users of Schedule 1 if these waterbodies were listed. I have recommended this amendment to Appendix 1 to this evidence. This aligns with my recommendations at paragraph 100.

133. Clause 2g requires that the location of the actions to achieve the objectives and principles of the schedule are required to be mapped. In my view, it is important that the focus of any action also takes account of the direction provided in the wider Chapter 3.11 of the plan change and the outcome statement of the schedule which outlines the outcomes FEPs are intended to achieve and the water quality limits/targets contained in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4. I have amended clause g in Appendix 1 to reflect this.

134. I consider that Section 4 of the schedule, which describes the action required to address each objective and principle is a little lost and would be better located with Section 3 near the beginning.

Objective 1

135. This objective requires that farming activities be managed according to good farming practice and to minimise the loss of contaminants from the farm. I agree with the intent of objective 1 but consider that the objective needs to provide a clear link to achieving the short term water quality limits/targets that are specified in Table 3.11-1 and the tables of additional attributes for rivers/streams and tables for wetlands recommended by the Director-General's experts being Table 3.11-1a, 3.11-3 and 3.11-4.

136. I consider this linkage is critical to ensure that the water quality limits/targets of this Plan Change are achieved, given that FEPs are the key mechanism the plan change is using for these outcomes to be achieved.

137. Dr Stewart discusses the need to adopt the best management practices outlined in 'For Peat's Sake' produced by the Waikato Regional Council[6] at paragraph 30 of his evidence. This document provides valuable guidance around drainage, water quality, cultivation, pasture management and fertiliser needs for peat land and is an important reference resource for those farming within the Peat Lakes FMUs. As a result, I consider it is appropriate to include reference to this document as a new principle under Objective 1.

[6] https://www.waikatoregion.govt.nz/Environment/Natural-resources/Land-and-soil/Managing-Land-and-Soil/Managing-peat/

138. I note that the wording used by officers in the objectives of Schedule 1 is a requirement to 'minimise' diffuse discharges of contaminants. I have considered the use of 'minimise' compared to the use of the word 'reduce' as my initial response is that the term 'reduce' would be more appropriate.

139. Minimise, as defined in the Oxford English Dictionary, means:

> *Reduce (something, especially something undesirable) to the smallest possible amount or degree.*

140. Reduce, as defined in the Oxford English Dictionary, means

> *Make smaller or less in amount, degree, or size.*

141. It would therefore appear to me that a requirement to 'minimise' requires a greater reduction in diffuse contaminant discharge than 'reduce' does. I also note that s70 of the RMA refers to a requirement to 'prevent or minimise' any adverse effect on the environment from the discharge of a contaminant when including a regional plan rule requiring that a best practical option be adopted. I therefore consider that the retention of the term 'minimise' throughout the objectives in Schedule 1 is appropriate terminology.

Objective 2

142. Objective 2 seeks to minimise nutrient losses to water while maximising efficient use of nutrients. I consider that again, this objective needs to provide a clear link to the achievement of the water quality limits/targets outlined in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 for the reasons I have given above for Objective 1.

Objective 3

143. Objective 3 requires farming to be in accordance with the nitrogen management requirements of PC1. Again, I consider that a link to the requirements in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 in addition to the 75th percentile nitrogen leaching value is necessary. I also recommend that an amendment to this objective is needed to reflect the recommendation from Dr Stewart regarding the application of a 60th percentile nitrogen leaching value for lake sub-catchments.

Objective 4

144. The intent of objective 4 is to minimise the losses of sediment, microbial pathogens, phosphorus and nitrogen to waterways is important. However, as I have reflected throughout my evidence, I consider that all contaminants should be managed and that the wording of this objective needs to be amended to also reflect this.

145. I also consider that a reference in Objective 4 to achieving the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 is needed to again ensure this critical linkage to ensuring water quality limits/targets is recognised.

146. I also consider my consistent amendment to remove reference to phosphorus, sediment and microbial pathogens and replace it with 'contaminants' is needed in the first principle under Objective 4. I consider that second principle would benefit from reference to the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 also.

147. I also recommend an additional principle which seeks to ensure that fertiliser application, and drain construction or enhancement activities near natural wetlands are appropriately setback, as recommended by Dr Robertson in his Block 2 evidence. I have therefore recommended a 10m setback for these activities be required.

Objective 5

148. I consider it is important for Objective 5 to reflect the wording amendments recommended in Schedule C by referring to cattle, horses, deer, pigs, sheep and goats in place of 'stock'. In my view it is also important to ensure that the objective refers to the waterbodies as well as their margins due to the damage that can result from cattle, horses, deer, pigs, sheep and goats in this respect. I have made amendments to the objective to reflect this (contained in Appendix 1).

149. I am concerned that the direction in the first principle under Objective 5 does not provide adequate guidance to plan users or decision makers over how and when compatibility with 'land form, stock class and stock intensity' will be determined. In my view, the wording of this principle departs from the direction in Schedule C and I consider needs to be

revised to ensure it aligns with the direction in that Schedule, to achieve this, I recommend removing the first principle entirely.

Objective 6

150. Objective 6 relates to minimising contaminant losses to waterways from soil disturbance and erosion. I consider that this objective could be used to reference to managing the effects of cultivation which appears to have been excluded from this version of the Schedule. I have recommended amendments to include two new principles relating to cultivation above and below 15˚ slope.

151. I also recommend including the specific minimum cultivation setbacks determined by the Director-General's technical experts in Block 2 as follows:

i. 20m from the edge of the bed for all lakes;

ii. 10 metres from the edge of the bed for all permanent rivers and streams

iii. 5 metres from the edge of the bed for all intermittent/ephemeral rivers and streams

iv. 20 metres from the edge of the bed for all waterbodies where large galaxiids including īnanga are known or predicted to spawn for all lakes;

v. 10m from the edge of the bed of all natural wetlands for all lakes

152. I am not clear on the direction provided from the principle which describes achieving the management or retirement of erosion-prone land to minimise soil losses through 'appropriate measures and practices'. I am not clear whether the appropriateness of any measures and practices utilised is subject to the approval of the FEP by the CFEP or by some other mechanism. I consider that there should be specific criteria for landowners and plan users to follow which helps them to understand the measures and practices that are deemed appropriate as management for erosion-prone land.

153. I have similar concerns about the use of the term 'appropriate' in relation to the principle regarding the selection of crop and intensive grazing areas. The trigger for appropriateness here seems to be linked to the ability to mitigate contaminant losses, but I am not clear what criteria the officers intend to use in order to determine appropriateness and who will do this determination. I consider that as a minimum, Principle 6 should refer back to achieving the short term water quality limits/targets outlined in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 as direction for whether cropping and intensive grazing is appropriate.

154. Again, I consider also it is important that the objective references the requirements to comply with the water quality limits/targets in the Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4.

Objective 7

155. Objective 7 recognises the importance of minimising contaminant losses to waterways from farm animal effluent. Again, the objective is missing a critical link to achieving the short term water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 for consistency in achieving the outcomes of the Plan Change and the Vision and Strategy.

156. I also consider that the direction, in the principle relating to the application of effluent, also needs to specifically ensure that any effluent discharge is undertaken in a manner that achieves the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4. I have made this amendment in Appendix 1.

157. I also recommend an additional principle to ensure that effluent discharge activities near natural wetlands are appropriately setback, as recommended by Dr Robertson. I have recommended that a principle which demonstrates the application of minimum setbacks of 10m from the edge of bed of natural wetlands for effluent discharge is needed.

158. I also recommend additional principles that ensure that effluent storage facilities are sealed to prevent seepage of effluent. I have provided a recommended permeability standard to provide specificity to plan users around the standard that is expected. I have adopted this from the rule framework in the Horizons One Plan, Rule 14-11 in particular which

relates to ‘Farm animal effluent including effluent from dairy sheds, poultry farms and piggeries’. In addition to a principle requiring that effluent storage facilities be sealed, I consider it is important to also ensure that the scale of the storage of the facility is such that it can accommodate effluent that cannot be irrigated onto pasture during wet periods. In addition, a requirement that no ponding occur as a result of application of effluent at inappropriate rates and times. I have therefore amended the principle around storage to reflect this requirement.

Objective 8

159. Objective 8 relates to the operation of irrigation systems and seeks to ensure that actual water use is monitored and efficient which I am supportive of. I consider however that Principle 14 needs to be amended in order to reference the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4.

160. Having read the second principle, I am not clear what is intended by production objectives and consider that other plan users may have a similar question. As a result, I consider that the use of the term production objectives needs to be explained more clearly either by way of a definition, or description in the principle itself.

Part C – FEP Review Requirements.

161. In addition to the comments at paragraphs 116-117 above, I consider that this part of the Schedule should provide greater specificity around the intended review intervals of an FEP that is authorised as a result of a resource consent application.

162. I consider that the plan change could provide useful guidance to plan users and decision makers around standard review intervals for FEPs through this section. I acknowledge that there are some FEPs that may require more frequent review and monitoring than others, especially in the instances where significant actions are required to ensure that the farming activities aligns with the requirements of the plan change. However, I consider that a standard 3-yearly review of FEPs should be mandatory to ensure that FEP implementation is closely monitored. This is particularly important given that FEPs are the key tool to be

utilised to achieve the water quality outcomes sought by the Plan Change.

Part D - FEP changes.

163. This section of the Schedule outlines when changes to FEPs may be required but that do not trigger the need for the FEP to be reviewed under Part C. I am not clear from this section as written, what changes to an FEP are envisaged by officers as being appropriate without the need for a CFEP review. I consider that any change to an FEP, that has the potential to increase the risk of contaminants entering waterbodies and the potential for the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 to not be met must be reviewed through an appropriate process by a CFEP.

164. The section states that the farming activity needs to remain consistent with Part B of the schedule, however it is not clear how much interpretation could be applied to what is considered 'consistent with'.

165. It would be useful if there was greater clarification provided in this section to ensure that landowners are clear about what changes to an FEP are allowed without it triggering the need for review.

166. I identified, at paragraph 103 of my Block 2 evidence, some of the situations where I feel that a change/review of an FEP is likely to be needed. This included:

i. when all or part of the land use activity on the farm changes;

ii. when the land is subdivided or amalgamated;

iii. when farming practices change;

iv. where ownership changes and the land use and or farming practices also change.

167. The above list could be a useful addition to the Plan Change to provide greater certainty for plan users and decision makers.

MISCELLANEOUS

Policy 15 – Whangamarino Wetland

168. The Director General's submission [V1PC1-405] sought to retain Policy 15 with amendments that ensure the policy recognises all important values of wetlands and the complex nature of the Whangamarino Wetland. The submission also seeks that reference be included to both short and long term restoration within the policy.

169. In addition, the Director-General seeks that the wording of the policy be amended to ensure the protection and restoration of the Whangamarino Wetland and to avoid further loss of bog ecosystem.

170. Officers consider, at paragraph 512, that clause c of the policy 'provides for the important values and the complex nature of Whangamarino Wetland'. They acknowledge the significant issue of the management of the Lower Waikato/Waipā Flood Control Scheme and its role in the degradation of the Whangamarino Wetland through 'poor water quality, modified hydrological regimes and invasion of pest plants and animals'. Officers state that 'Policy 15 identifies the need for integrated management to ensure the wetland is protected as a matter of national importance, whilst taking into account its role as part of the Lower Waikato-Waipā flood control scheme'. I am not clear how the officers have reached the conclusion that the policy, as worded, achieves this outcome.

171. Officers consider, at paragraph 516, that the reductions of nitrogen, phosphorus, sediment and microbial pathogens that flow into the wetland are a 'specific reference to the long term and short-term restoration…' of the wetland. Again, I am not clear how officers have come to the conclusion that the wording of the policy achieves this outcome.

172. Objective 6, as I have recommended it be amended, is as follows:

> *To achieve the restoration and protection of the Whangamarino Wetland, an integrated approach to the reduction of contaminant discharge in the catchment is required and shall be consistent with achieving the water quality attribute limits/targets in Tables 3-11.1, 3.11.1a and 3.11-4*

173. This objective recognises the need for an integrated management approach to restoration and protection of the Whangamarino Wetland. This objective, together with a new objective which I have recommended, which seeks to ensure that policies and methods in the Plan Change are implemented which safeguard ecosystem health of all wetlands, signals the need for a policy framework which acknowledges the importance of the Whangamarino Wetland, and wetlands in the Waikato and Waipā catchments generally and provides a pathway for the achievement of these objectives.

174. I have reflected on the amendments I have recommended to the suite of policies in the Plan Change. Many of these amendments have been made to ensure that the values of **all** freshwater bodies, including wetlands, and the coastal marine area within the Waikato and Waipā River catchments are appropriately recognised and provided for.

i. Policy 1 requires that diffuse discharges are reduced and that Good Farming Practice or better is achieved, which includes in those sub-catchments which affect the Whangamarino Wetland while Policy 2 outlines that this will be achieved through FEPs;

ii. Policy 5 identifies that immediate changes are needed to achieve the water quality targets are needed although there is no specific reference to Tables 3.11-3 or 3.11-4 which are specific to wetlands (an amendment could be made here to include this additional reference);

iii. Policy 8 requires that the management of diffuse discharges in Whangamarino Wetland are prioritised;

iv. Policies 10, 11, 12 and 13 require that the values of FMUs (including the proposed Whangamarino FMU) are provided for when considering regional significant point source discharges, that BPO be applied to avoiding or mitigating adverse effects from point source discharges and that effects of point source discharges on water quality attribute targets although there is no specific reference to Tables 3.11-3 or 3.11-4 which are specific to wetlands (an amendment could be made here to include this additional reference).

175. I have also recommended that the Whangamarino Wetland be recognised for its unique and significant values by identifying it as its own Freshwater Management Unit and have specified, on the advice of Dr Robertson, a set of water quality attribute limits/targets to be achieved at 10, 20 and 80 year timeframes. Narrative targets are also set for each wetland type, with Objective 3 directing that numeric targets for all wetlands be set by 2026.

176. While I acknowledge that the suite of policies in the Plan Change need to be read together, alongside other policies already contained within the regional plan, I consider that there are amendments required to Policy 15 to ensure that the outcomes sought from the plan change in relation to wetlands and in particular the Whangamarino Wetland, are clearly outlined to ensure they can be achieved.

177. I also acknowledge that Policy 14 specifically relates to the Lakes Freshwater Management Units and their restoration and protection.

178. Dr Robertson in his evidence for the Block 1 hearing[7], stated that the reasons for establishing a Whangamarino Wetland FMU as being 'reasonable and necessary' because

i. Whangamarino is of international significance; and

ii. There is a high risk of irreversible degradation of significant wetland values' (including shifts in species composition, loss of representative wetland types) if water quality is not improved[8]; and

iii. A different suite of water quality attributes is required to protect the significant values of Whangamarino, over and above those in Table 3.11-1 (as notified); and

iv. Technical understanding and monitoring data is sufficient to define the current state of the Whangamarino FMU

v. Sub-catchment targets in Table 3.11-1 (as notified) will not achieve the intent and purpose of PC1.

[7] Paragraph 27
[8] Paragraph 25

179. I consider that these reasons can also be used to justify why it is important to ensure that the significance and vulnerability of the Whangamarino Wetland is emphasised in the policy framework. I also note, as stated earlier, that since the notification of the Plan Change, the "Lake Waikare and Whangamarino Wetland Catchment Management Plan" has been developed (September 2018). I consider it is appropriate to directly reference this catchment management plan in the policy framework for Plan Change 1.

180. Dr Robertson recommends amendments to Policy 15, at paragraphs 15 - 20 of his evidence, which address the need for greater protection of the important of the complex Whangamarino Wetland system.

181. As a result, based on the advice of Dr Robertson, I have made recommended amendments to the wording of Policy 15 in Appendix 1 which I feel better represent the actions needed to ensure that the Whangamarino Wetland is restored and protected to achieve the outcomes sought in the Vision and Strategy.

182. I also note that the Director-General's submission also seeks that targets to be set to achieve the following:

i. Reduce high rates of sediment deposition in the wetland

ii. Reduce the load of phosphorus transported into the wetland

iii. Ensure water levels are ecologically appropriate i.e. that they do not exacerbate water quality effects, and also protect critical habitats

iv. Ensure any impacts of the Lower Waikato/Waipā Flood Control Scheme are appropriately avoided, remedied or mitigated to ensure that they do not affect the sustainable management of the Whangamarino Wetland

v. Promote the natural succession of the wetland system, allowing for natural peat-land (bog) development and no further loss of bog wetlands.

183. Discussion around the targets for wetlands have been addressed in the evidence of myself and Dr Robertson for the Block 1 hearing on this

plan change. In this evidence, Dr Robertson reiterates the relief sought in the Director-General's submission to include narrative targets for all wetlands in the Waikato and Waipā River catchments based on wetland type. He also recommends the development of a Whangamarino Wetland Freshwater Management Unit and numeric targets for the FMU for the long-term (80 years) as well as a recommendation to achieve proportions of these 80-year targets of 10% reduction (of the 80 year target) in the first 10 years and 20% reduction (of the 80 year target) in the next 20 years.

184. As a result of these recommendations by Dr Robertson, I have recommended amendments to Objective 6 in my Block 2 evidence which relates specifically to wetlands as well as a new objective which seeks to ensure the ecosystem health of wetlands is safeguarded. In addition, I have recommended the inclusion of the attribute tables and associated targets into the Plan Change.

Policy 17 – Considering the wider context of the Vision and Strategy

185. The Director-General, in his submission [PC1-10746], opposed the implication through Policy 17 that opportunities to enhance biodiversity, wetland values, the functioning of ecosystems as well as access to and recreational values associated with rivers as 'secondary benefits' resulting from the implementation of the Plan Change. As a result, the Director-General sought that this section of the policy be deleted.

186. Officers have agreed with the Director-General's submission that the wording of the policy implies that the listed matters are not of primary concern and have recommended deleting this portion of the policy which I am supportive of.

Further amendments following Block 2 recommendations

187. In preparing this evidence, I have realised my oversight in not providing mark-up changes to reflect the recommended inclusion of a 60th percentile nitrogen leaching value for lake sub-catchments as I recommended following the advice of Dr Stewart in his Block 2 evidence.

188. As a result, I have included amendments to the following provisions in Appendix 1 to this evidence to reflect this recommendation:

i. Policy 1

ii. Policy 8

iii. Rule 3.11.5.1a

iv. Rule 3.11.5.4c

v. Schedule 1 – Farm Environment Plans Objective 3, Principles 9 & 10

vi. New definition of 60th percentile nitrogen leaching value and amendment to definition of 75th percentile nitrogen leaching value.

189. I have also realised that in specifying the measurement of percentiles for rivers and lakes, there is no specified percentile for the Whangamarino Wetland FMU which is recommended by Dr Robertson to be included in his Block 1 evidence. On the advice of Dr Robertson, I understand that the 75th percentile nitrogen leaching value is appropriate for the Whangamarino Wetland FMU due to the monitoring sites for the FMU being located at the Whangamarino at Island Block Road site.

Policy 16 – Flexibility for development of land returned under Te Tiriti o Waitangi settlements and multiple owned Māori land

190. In my Block 2 evidence in chief, I provided recommendations to amend the wording of Policy 16 which relates to flexibility for development of tangata whenua ancestral land. On review of my recommendations, I consider that there should also be reference within the Policy, to ensure that any flexibility in land use change bear in mind the water quality limits/targets provided through Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4.

191. I consider that without this linkage, there is the potential for the link to the water quality limits/targets to be overlooked when this policy is applied. It is therefore my recommendation that reference to the Tables above be included with Policy 16.

JOINT WITNESS STATEMENT

192. I have briefly reviewed the content of the Joint Witness Statement (the JWS) on expert conferencing – Table 3.11-1 dated 17 June 2019.

193. I note that there are still matters that were not addressed by the experts, or where the experts agree that further discussion is still needed. These are discussed at the bottom of page 4 and top of page 5 of the JWS.

194. In particular I note:

i. Outstanding issues (classification, short and long term targets) for lakes were not addressed;

ii. Whether TSS load should be added as a key attribute for Whangamarino Wetland;

iii. How current state baseline values are to be presented in PC1 Table 3.11-1 including whether separate tables are advisable;

iv. Experts did not consider effects of E.coli on the estuarine environment (Waikato River mouth) due to a lack of information;

v. Also, effects of sediment and nutrients on the estuary were also not comprehensively considered and have not been comprehensively considered in PC1;

vi. Concern that lakes are so far off the clarity target that its relevance is questioned;

vii. The experts reiterate the inconsistent use of the terms objectives, limits and targets and their meaning which requires further clarification but was not discussed further by the experts.

195. It therefore appears that there are still significant matters relating to the Director-General's submission that were not resolved through the expert caucusing process.

Attribute statements

196. I note however, that in relation to the attribute statements, at the top of page 6 of the JWS, that the experts agreed that 'a general consensus reached on Day 4 that each of the now 76 sub-catchments should have a target and limit based on the short term PC1 objectives'. Although it appears that the experts are referring to TN and TP it is not entirely clear from this statement which objectives the experts are referring to. This position of the experts supports the position outlined in my Block 1 evidence, which relies on the Block 1 evidence of Ms McArthur, where she identifies at paragraphs 113-134 the need for additional attributes for management of the water quality in the Waikato and Waipā River catchments.

197. There are a number of areas within the JWS where the experts state they agree that PC1 should contain 'methods' for monitoring or further attribute development. These additional methods are listed in the Block 3 evidence of Ms McArthur at paragraph 22. I note that Ms McArthur references the fact that many of these requirements were signalled by the TLG but have yet to be implemented and notes that the JWS has gone 'some way towards further developing many of the recommendations of the TLG'.

198. I also note Ms McArthur's precautionary approach at paragraph 24 of her evidence which provides a list of monitoring and attribute development methods if attributes are not included in PC1 decisions. I agree with Ms McArthur that methods of this nature should only be included in the plan change where inclusion of the additional attributes is not progressed. I do note however that the recommendation of additional methods by the technical experts supports my position that methods do have a useful role in preparing for future plan changes.

199. I am concerned to read the comments of Adam Canning, expert for Fish and Game, in Attachment 17 that in his view, the process for developing the JWS 'has been inappropriate and misleading'. Mr Canning mentions that there was 'little group discussion' or 'no discussion at all' on the attributes being recommended by the sub-groups.

200. As a result, I would be concerned if the content of the JWS is relied on in preference of the evidence provided by the Director-General's experts through their evidence in chief.

Table 1 – summary of importance of each attribute and whether to include it as a narrative or numeric objective.

201. From my reading of Table 1, it appears that all the experts agreed that the proposed attributes considered were important as a measure of value, with the exception of the riparian attribute where more experts thought that this attribute was not important as a measure of value.

202. I note that when responding to whether an attribute should be reflected in a narrative or numeric way, there was a mixed result, with some experts answering yes to both narrative and numeric options which I understand that this response could allow for a specific numeric target to be set at sub-catchment level, in addition to a narrative target for improvement which might apply across the whole Waikato and Waipā River catchments.

Table 2 - Summary of agreement and disagreement of the options in the discussion papers

203. Table 2 outlines whether each expert agrees to the option proposed in the discussion paper for each attribute. The table allows an expert to answer that they agree, agree in part, disagree or N/A. It is not clear from this table whether those who have stated that they agree in part which aspects they do agree with, and whether in answering this, they consider they agree with more than they disagree with in terms of the attribute statement.

204. In my view, it is not clear from the JWS what the consensus views of the necessary attributes to be included in Plan Change 1 are. The technical experts for the Director-General of Conservation have provided comprehensive evidence throughout the hearings for plan change 1 on the need for additional attributes for rivers/streams/tributaries, lakes and wetlands and have gone to significant effort to provide comprehensive short, medium and long term

water quality limits/targets for each attribute. Additionally, I understand that experts for other parties have provided limited, if any, evidence on lakes or wetlands and the evidence on behalf of the Director-General is the only expert evidence the panel have before them on these matters.

205. I am concerned to read that there are statements contained within the attribute statements that reflect the authors' view 'that were not fully discussed due to limitations in time'.

206. As a result of the above, I am concerned that further planning evidence at this stage, on a JWS that to me appears incomplete and lacks certainty, would be unhelpful to the Hearings Panel in terms of any discussion on what implications the JWS would have for the PC1 framework and provisions. .

DATED this 5th day of July 2019

APPENDIX 1 – TRACKED CHANGES TO PC1

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

~~Notified version (October 2016)~~

Officer's "Tracked Changes" Recommendations

Red tracked changes are insertions or deletions due to Variation 1

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

Blue tracked changes are insertions or deletions recommended by experts for the Director-General of Conservation – Hearing Blocks 1,2 &3
Numbers in square brackets identify the reference number given to the Director-General's submission

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Disclaimer

The te reo Māori version is a translation of the original in English. The translation is provided for information purposes only and is not a substitute for the English version. In case of any discrepancy between the te reo Māori and English versions, the English version will prevail. While Waikato Regional Council has made all reasonable efforts to provide an accurate te reo Māori translation, parts may be incorrect. Waikato Regional Council makes no warranties or representations express or implied, as to the completeness, correctness, currency or fitness for any particular purpose of the translation. While Waikato Regional Council has exercised all reasonable skill and care in providing the translation, Waikato Regional Council accepts no liability in contract, tort or otherwise, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of the translation or its use by your or any other party.

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

From the Healthy Rivers Wai Ora committee co-chairs

Tuia te rangi e tū nei

Tuia te papa e takoto nei

Tuia te muka tangata e whiria nei i te mata o te whenua

Kīngi Tuheitia - te mauri o te motu

Tuia ngā manako o ngā iwi kia whakaorangia, kia tiakina hoki te mauri o ngā wai

Paimārire

We are honoured to introduce the Waikato Regional Plan Change 1 - Waikato and Waipa River Catchments (Proposed).

This document represents the start of the regional community's journey in restoring and protecting the health and wellbeing of the Waikato and Waipa rivers for the benefit of current and future generations, as set out in the Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato.

The proposed plan change sets out an 80 year timeframe for the Waikato and Waipa rivers and their tributaries to be swimmable and safe for food collection along their entire lengths, and in doing so, achieving the requirements of the Vision and Strategy/Te Ture Whaimana, the primary direction setting document for the rivers. In achieving this outcome, it sets a higher bar than the National Policy Statement for Freshwater Management 2014's requirement of wadeable water bodies.

The proposed plan change has been developed under a unique set of circumstances.
What sets this proposed plan change apart is that six organisations – Maniapoto Māori Trust Board, Raukawa Charitable Trust, Tūwharetoa Māori Trust Board, Te Arawa River Iwi Trust and Waikato Raupatu River Trust representing Waikato and Waipa River iwi – and Waikato Regional Council partnered on the project to develop this proposed plan change, Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai. The partnership gives effect to the co-management arrangements between the five River iwi and Waikato Regional Council for the Waikato and Waipa Rivers. The guardians of the Vision and Strategy/Te Ture Whaimana, the Waikato River Authority, have also been closely involved.

The policies outlined in the following pages have been principally developed by a group of exceptional individuals as part of the Healthy Rivers/Wai Ora project. Over two and a half years, the 24-strong Collaborative Stakeholder Group, led by an independent chair and assisted by a very capable facilitator, stepped up to represent stakeholders – a diverse range of sectors and the community – in developing the proposed plan change. To ensure they had the right information to make justifiable and achievable decisions, they received technical information, including Mātauranga Māori (Māori knowledge) from a highly qualified Technical Leaders Group. The Collaborative Stakeholder Group's task has not been easy, and we would like to express our gratitude for their commitment to the process and for what they've collectively achieved.

As co-chairs of the Healthy Rivers Wai Ora committee, a joint decision making body of River iwi governors and regional councillors, we have been privileged to attend many of the Collaborative Stakeholder Group's workshops. It has been inspiring to witness the diverse range of interests represented in the room working together for solutions to restore and protect our precious fresh water, and putting in place a long term plan for bringing the Vision and Strategy/Te Ture Whaimana to life.

Every person who has come forward and shared their ideas with the Collaborative Stakeholder Group deserves acknowledgement for contributing to the solutions for the rivers. Whether a member of the public or part of an organisation, thank you for being part of the process that has produced this document.

Councillor Alan Livingston

Co-chair, Healthy Rivers Wai Ora Committee

Waikato Regional Council

Kataraina Hodge

Co-chair, Healthy Rivers Wai Ora Committee

Raukawa Charitable Trust

From the Waikato Regional Council chair

Waikato Regional Council is proud to have been one of the partners in the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai project that developed this proposed plan change.

This document is important, not just for the people of the Waikato region but for all of New Zealand, given the Waikato River's national importance and its contribution to our country's cultural, social and environmental wellbeing. The plan proposes to reduce key contaminants entering water bodies in the Waipa and Waikato river catchments, which cover 1.1 million hectares.

For Waikato Regional Council, the collaborative approach taken to develop this plan change marks a new way of producing this type of policy.

Addressing water quality issues is complex. Progress can only be made through seeking sensible, practical solutions and working with others.

Everyone in the Waikato and Waipa river catchments holds a stake in the rivers, as do many beyond. The rivers' stakeholders are diverse, as reflected in the composition of the Collaborative Stakeholder Group (CSG) instrumental in developing this plan change. People and sectors hold a wide range of values for the rivers. The CSG travelled far and wide in the catchments to hear different perspectives and to experience and understand the diversity.

Initially there was little agreement on causes of the problem, no direct cause and effect relationship and, in addition, technically complex issues. The Vision and Strategy/Te Ture Whaimana also required the group to develop a plan for the rivers to be swimmable and safe for food collection. To address this an impartial group of specialists was specially formed to provide the CSG and others involved with technical information. As a result, this plan change is based on scientific evidence and also incorporates Mātauranga Māori, or traditional and contemporary Māori knowledge.

On behalf of Waikato Regional Council I thank the Collaborative Stakeholder Group, the Technical Leaders Group and the wider community for their involvement and commitment to the collaborative process and the desired outcomes for our waterways. The conversations do not stop here. Waikato Regional Council staff are available at any stage to address your questions and information needs. We want to get this plan right so I encourage you to submit your feedback. Water quality is a shared problem and we need shared solutions.

Chairperson Paula Southgate

Waikato Regional Council

Nā ngā hoa-kaihautū o te komiti o Wai Ora

Tuia te rangi e tū nei

Tuia te papa e takoto nei

Tuia te muka tangata e whiria nei i te mata o te whenua

Kīngi Tuheitia - te mauri o te motu

Tuia ngā manako o ngā iwi kia whakaorangia, kia tiakina hoki te mauri o ngā wai

Paimārire

Nō māua te hōnore ki te tāpae i te Panonitanga 1 i te Mahere ā-Rohe a Waikato - ngā Riu o ngā Awa o Waikato me Waipā (e marohitia nei).

Ko tā tēnei pukapuka, he kōkiri i te haerenga o te hapori ā-rohe ki te whakaora, ki te tiaki hoki i te ora me te mauri o ngā awa o Waikato me Waipā, hei painga mō ngā whakatupuranga o nāianei me ngā whakatupuranga o anamata, e takoto ana i roto i Te Ture Whaimana o Te Awa o Waikato.

E takoto ana i te panonitanga ā-mahere e marohitia nei, tētehi pae wā e 80 tau te roa, kia ora ngā wai o Waikato me Waipā me ngā kautawa hei kauranga, hei wāhi kohi kai, i ngā wāhi katoa o aua awa, mai i ngā mātāpuna ki ngā pūaha, ā, mā reira e tutuki ai ngā herenga o Te Ture Whaimana, o te pukapuka matua e whakatau ana i te ahunga whakamuatanga mō aua awa. Ki te tutuki taua putanga, ka teitei ake te paerewa i tērā o te herenga o te Tauākī Kaupapa Here ā-Motu mō te Whakahaeretanga o te Wai Māori, o te tau 2014, kia wātea ngā wai hei kautūtanga.

Kua whakaritea te panonitanga ā-mahere e marohitia nei i runga i ētehi tūāhuatanga ahureinga.
Ko te mea e motuhake ai tēnei panonitanga ā-mahere e marohitia nei, e ono ngā whakahaere i mahi ngātahi i tēnei kaupapa - arā, ko te Poari o Maniapoto rātou ko te Poari Manaaki o Raukawa, ko te Poari Māori o Tūwharetoa, ko te Tarahati o ngā Iwi o ngā Awa o Te Arawa, ko te Tarahati o te Awa o Waikato Raupatu hei māngai mō ngā iwi o ngā awa o Waikato me Waipā - me te Kaunihera ā-Rohe o Waikato, ki te whakarite i tēnei panonitanga ā-mahere, i a Wai Ora: He Rautaki Whakapaipai. Mā tēnei mahi ngātahitanga e whakatinana ngā whakaritenga mō te whakahaere ngātahitanga i waenga i ngā iwi e rima o te awa me te Kaunihera ā-Rohe o Waikato mō ngā awa o Waikato me Waipā. Kua āta whai wāhi mai hoki ngā kaitiaki o te Mana Whakahaere o te Awa o Waikato, o Te Ture Whaimana.

Kua whakaritea te nuinga o ngā kaupapa here e takoto ana i ngā whārangi e whai ake nei e tētehi rōpū tuatangata i roto i te kaupapa o Wai Ora. I roto i ngā tau e rua me te hāwhe, i tū ake te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga, i raro i te ārahitanga o tētehi kaihautū motuhake, i āwhinatia ai hoki e tētehi kaiwhakahaere tino mātau, hei māngai mō ngā hunga whai pānga - mō ngā momo rāngai rerekē me te hapori, ki te whakarite i te panonitanga ā-mahere e marohitia nei. E tika ai ngā pārongo i a rātou, e whaitake ai, e tutuki ai hoki ā rātou whakatau, i whiwhi pārongo whāiti rātou, whērā i te Mātauranga Māori i ahu mai i tētehi Rōpū Kaiārahi Whāiti. Kāore i māmā noa iho te mahi a te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga, nā konei e rere nei ā māua whakamānawa ki tō rātou ū ki te tukanga, ki ngā mahi hoki i whakatutukihia petapetahia e rātou.

I ō māua tūnga hei hoa-kaihautū mō te komiti o Wai Ora, mō te rangapū whakatau tukutahi o ngā kaihautū o ngā iwi o ngā awa me ngā kaikaunihera ā-rohe, māringanui ana māua i te taenga ki ngā hui maha a te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga. Kua whakaawehia māua i te rongotanga i ngā momo tūmanako rerekē e whakakanohihia ana i te rūma, e te hunga e mahi ngātahi ana ki te kimi rongoā hei whakaora, hei tiaki hoki i ō tātou wai Māori matahīapo, e whakarite ana hoki i tētehi mahere tauroa e puta ai Te Ture Whaimana ki te ao mārama.

Me mihi ka tika ia tangata i haere mai ki te tuku whakaaro ki te aroaro o te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga, mō rātou i whakatakoto rongoā mō ngā awa. Ahakoa nō te marea, ahakoa nō tētehi whakahaere rānei, tēnā koutou i whai wāhi mai ki te tukanga i puta ai tēnei pukapuka.

Councillor Alan Livingston

Co-chair, Healthy Rivers Wai Ora Committee

Waikato Regional Council

Kataraina Hodge

Co-chair, Healthy Rivers Wai Ora Committee

Raukawa Charitable Trust

Nā te kaihautū o te Kaunihera ā-Rohe o Waikato

E ngākau whakapuke nei te Kaunihera ā-Rohe o Waikato kia noho hei hoa mahi i te kaupapa o Wai Ora: He Rautaki Whakapaipai, i whakarite ai i tēnei panonitanga ā-mahere e marohitia nei.

He whakahirahira tēnei pukapuka, kaua noa iho ki ngā tāngata o te rohe o Waikato, engari ki ngā tāngata katoa o Aotearoa, inā hoki, e hiranga ana te awa o Waikato ki te motu, e whai wāhi ana hoki te awa ki te oranga ā-ahurea, ā-pāpori, ā-taiao hoki o tō tātou whenua. E marohi ana te mahere kia whakaitihia te urunga o ētehi matū tāhawahawa matua ki ngā wai i roto i ngā riu o ngā awa o Waipā me Waikato, 1.1 miriona heketea nei te whānui.

Ki te Kaunihera ā-Rohe o Waikato, e tohu ana te kaupapa mahi ngātahi i whāia ai ki te whakarite i tēnei panonitanga ā-mahere i tētehi huarahi hou hei whakaputa i tēnei momo kaupapa here.
He uaua te whakatau i ngā take e pā ana ki te kounga o te wai. Mā te rapu rongoā whai take, e taea ana te whakatutuki, mā te mahi ngātahi hoki me ētehi atu, mā reira rawa e neke whakamua ai te kaupapa.

He pānga tō ngā tāngata katoa kei ngā riu o ngā awa o Waikato me Waipā ki ngā awa, tae atu hoki ki te tokomaha kei tua atu. He rerekē ngā hunga whai pānga ki te awa, e whakaatahia ana i te tōpū o te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga nāna tonu tēnei panonitanga ā-mahere i whakarite. He whānui ngā momo uara o ngā tāngata me ngā rāngai e pā ana ki ngā awa. I puta te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga ki ngā tōpito o ngā riu ki te whakarongo ki ngā whakaaro rerekē, ki te kite ā-kanohi i ngā rerekētanga, ki te whai māramatanga hoki ki ngā rerekētanga.

I te tīmatanga, kāore i nui ngā whakaaetanga e pā ana ki ngā pūtake o te raruraru, karekau he hononga hāngai e kitea ai te pūtake me te pānga, ā, hei āpiti atu, he maha ngā take whāiti i uaua. I herea hoki te rōpū e Te Ture Whaimana kia whakaritea he mahere e kauria ai ngā awa, e ora ai hoki te wai hei wāhi kohi kai. Hei whakatau i tēnei, i āta whakatūria tētehi rōpū mātanga e noho motuhake ana, hei tuku mai i ngā pārongo whāiti ki te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga me ētehi atu i whai wāhi mai. Nā konā, ka noho ngā taunakitanga ā-pūtaiao hei pūtake mō tēnei mahere, ka whai wāhi mai hoki te Mātauranga Māori.

Hei māngai mō te Kaunihera ā-Rohe o Waikato, tēnei au e mihi nei ki te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga, ki te Rōpū Kaiārahi Whāiti, ki te hapori whānui hoki, mō rātou i whai wāhi mai, mō rātou hoki i ū ki te tukanga mahi ngātahi, ki ngā hua hoki mō ō tātou arawai e manakohia ana. Kāore ngā kōrero e mutu i konei. E wātea ana ngā kaimahi o te Kaunihera ā-Rohe o Waikato i ngā wā katoa, ki te whai kia ea ā koutou pātai me ō koutou hiahia ki ngā pārongo. E hiahia ana mātou kia tika tēnei mahere, nō reira e akiaki nei au i a koutou kia tukuna mai ō koutou whakaaro. Ka pā te raruraru o te kounga o te wai ki a tātou katoa, ā, me puta ngā rongoā i a tātou katoa.

Chairperson Paula Southgate

Waikato Regional Council

Explanatory Statement/He Tauākī Whakamārama

(This statement does not form part of the Plan Change and is for explanatory purposes only).

Proposed Waikato Regional Plan Change 1 - Waikato and Waipa River Catchments to the Waikato Regional Plan pursuant to Schedule 1 of the Resource Management Act 1991.

This document is a change to the Operative Waikato Regional Plan (WRP), to restore and protect water quality in the Waikato and Waipa Rivers by managing discharges of nitrogen, phosphorus, sediment and microbial pathogens to land in the catchment, where it may enter surface water or ground water and subsequently enter the rivers, or directly into a water body.

This plan change document is divided into five parts:

Part A inserts a new Chapter 3.11 as text to be added after Chapter 3.10 but before Module 4.

Part B inserts a new condition to section 5.1.5 as text to be added after 5.1.5 (p) iii. but before the Advisory Note.

Part C inserts new items into the Glossary of Terms in the Regional Plan, in alphabetical order.

Part D inserts amendments to existing text of the Regional Plan. Text to be deleted are shown as ~~strikethrough~~ and additional text to be added shown as underline.

Terms in the Objectives, Policies and Implementation methods of Chapter 3.11 which are bolded can be found in the Glossary. Note also, that as a convention of the Waikato Regional Plan:

- Terms marked * are defined by the Resource Management Act 1991
- Terms marked ^ are defined by the National Policy Statement for Freshwater Management 2014.
- Terms marked ´are defined by the Waikato Regional Policy Statement 2016.
- Unless a direct source is specified in a footnote, all other terms have been developed specifically for the purpose of this plan change.

The Rules in Part A - Rules 3.11.5.1 to 3.11.5.7 of Chapter 3.11 have immediate legal effect from the date of notification (22 October 2016) in accordance with section 86B(3)(a) of the Resource Management Act 1991. The new condition (q) to section 5.1.5 in Part B, and the consequential amendments to the text in Part D have immediate legal effect from the date of notification.

PART A

Insert the following Section as a new chapter after Chapter 3.10 and before Chapter 4 of the Waikato Regional Plan

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

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

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

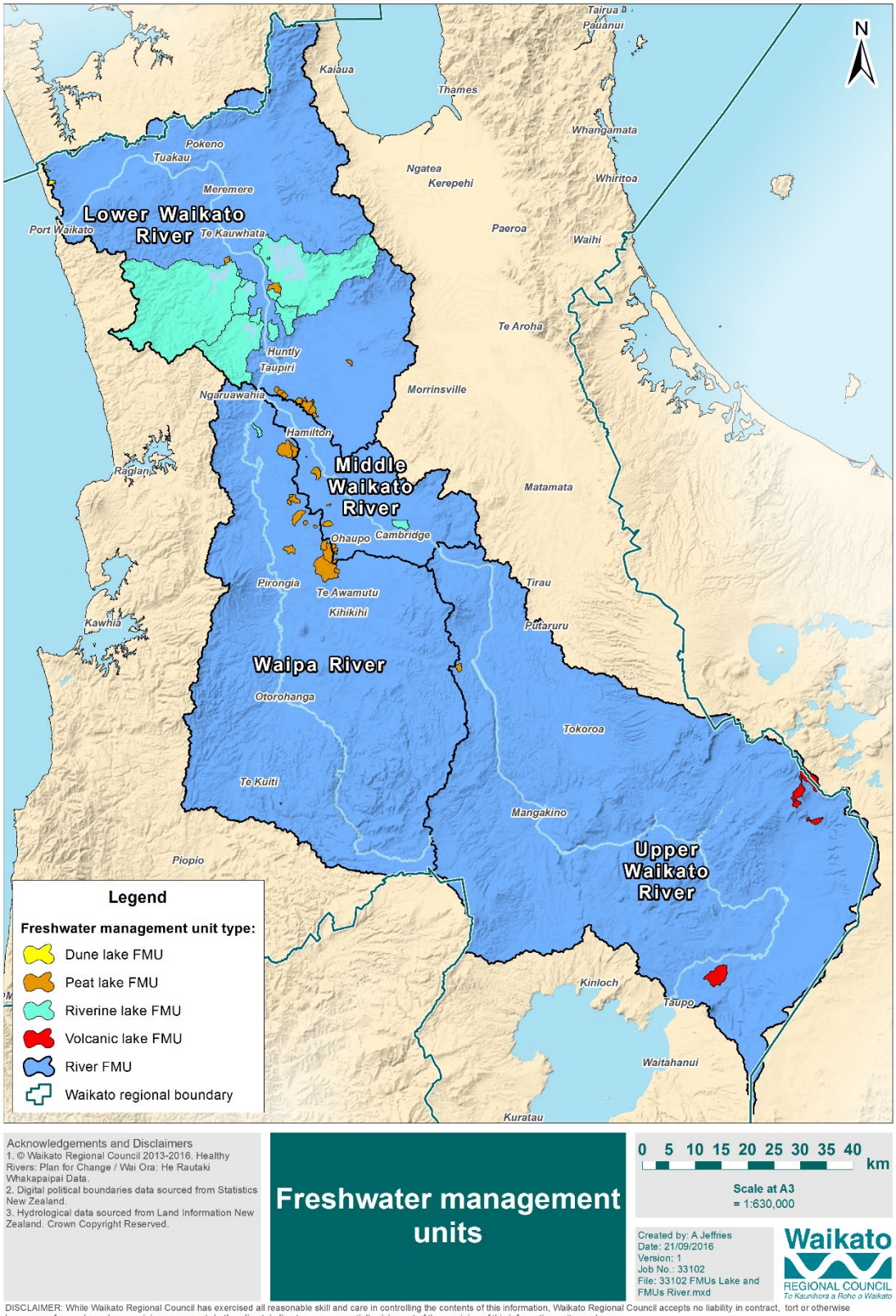
Map 3.11-1 shows the general catchment boundary and includes the boundaries of each Freshwater Management Unit^ (FMU): The FMUs are:

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

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

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

[1] Waikato Regional Council PC1-2976



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

Updated map showing corrected boundaries to be inserted

Scale of this map to be revised to provide greater certainty to plan users and decision makers on FMU boundaries [PC1-10504]
Also revise map and key to include Whangamarino Wetland FMU extent boundary [PC1-10504] [V1PC1-1139]

Background and explanation

Co-management of the Waikato and Waipa Rivers

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

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

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

The Vision and Strategy states that the Waikato and Waipa Rivers are degraded and require, amongst other things, restoration and protection. One objective[2] has been given particular focus for this chapter: The restoration of water quality within the Waikato River so that it is safe for people to swim in and take food from over its entire length. The Vision and Strategy is being given effect to in Chapter 3.11 by:

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

Collaborative approach

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

A key feature of the collaborative approach was the Collaborative Stakeholder Group (CSG), which represented stakeholders and the wider community in Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai. The CSG was the central channel for stakeholder and broader community collaboration in the project. It intensively reviewed and deliberated on technical material from a group of external technical experts from a range of disciplines. For Proposed Plan Change 1, t~~T~~he CSG also sought input from their sectors and from the community, and ultimately proposed the contents of Chapter 3.11 to decision makers.

Consultation

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

[2] *Te Ture Whaimana o te Awa o Waikato, Objective K*

Water quality and National Policy Statement for Freshwater Management

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

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

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

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

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

Full achievement of the Vision and Strategy will be intergenerational

The CSG has chosen an 80-year timeframe to achieve the water quality objectives of the Vision and Strategy. The timeframe is intergenerational and more aspirational than the national bottom lines set out in the NPS FM because it seeks to meet the higher standards of being safe to swim in and take food from over the entire length of the Waikato and Waipa Rivers and catchment. Based on the information currently available, the CSG has concluded full achievement of the Vision and Strategy by 2096 is likely to be costly and difficult. The 80-year timeframe recognises the 'innovation gap' that means full achievement of water quality requires technologies or practices that are not yet available or economically feasible. In addition, the current understanding is that achieving water quality restoration requires a considerable amount of land to be changed from land uses with moderate and high intensity of discharges to land use with lower discharges (e.g. through reforestation).

Because of the extent of change required to restore and protect water quality in the 80-year timeframe, the CSG has adopted a staged approach. This approach breaks the required improvements into a number of steps, the first of which is to put in place and implement the range of actions in a 10 year period that will be required to achieve 10 percent of the required change between current water quality and the long term water quality in 2096. The staged approach recognises that immediate large scale land use change may be socially disruptive, and there is considerable effort and cost for resource users, industry and Waikato Regional Council to set up the change process in the first stage. New implementation processes, expertise and engagement are needed to support the first stage. The staged approach also allows time for the innovation in technology and practices that will need to be developed to meet the targets^ and limits^ in subsequent regional plans to be developed.

Because of the extent of change required to meet the 80-year limits^, achieving even the first step towards the long-term freshwater objectives in this Plan is an ambitious target. This means the effects of actions and changes on the land may not be seen as water quality improvements in the water bodies in the short term. This is partly due to the time required for the concentration of contaminants in the water to reduce, following mitigation actions being put in place, and specifically, the time it takes for nitrogen to move through the soil profile to groundwater, and then to surface water. This means that the effect of actions put in place to reduce nitrogen now may not be seen in the water for some time (the length of time lag varies across the catchment). It also means there is a nitrogen 'load to come' from historic land use that is yet to be seen in the water.

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

- stock exclusion from water bodies as a priority mitigation action

- Farm Environment Plans (including those for commercial vegetable producers) that ensure industry-specific good management practice, and identify additional mitigation actions to reduce diffuse discharges by specified dates, which can then be monitored
- a property scale nitrogen reference point to be established by modelling current nutrient losses from each property, with no property being allowed to increase losses ~~exceed its reference point~~ in the future and higher dischargers being required to reduce their nutrient losses
- an accreditation system to be set up for people who will assist farmers to prepare their Farm Environment Plan, and to certify agricultural industry schemes
- Waikato Regional Council to develop approaches outside the rule framework that allow contaminant loss risk factors to be assessed at a sub-catchment level, and implement mitigations that look beyond individual farm boundaries to identify the most cost-effective solutions.

There are a number of existing provisions, including rules, in the Waikato Regional Plan that will continue to apply for point source discharges.

Municipal and industrial point source dischargers will also be required to revise their discharges in light of the Vision and Strategy and the water quality objectives, and sub-catchment limits^ and targets^ that have been set. This will happen as the current consent terms expire.

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

~~In the short term, I~~Land use change from tree cover to animal grazing, or any livestock grazing other the dairy or arable cropping to dairy, or any land use to commercial vegetable production, will be constrained. Provision has been made for some flexibility of land use for Māori land that has not been able to develop due to historic and legal impediments. As these impediments have had an impact on the relationship between tangata whenua and their ancestral lands, with associated cultural and economic effects, Chapter 3.11 seeks to recognise and provide for these relationships. These constraints on land use change are interim, until a future plan change introduces a second stage, where further reductions in discharges of sediment, nutrients and microbial pathogens from point sources and activity on the land will be required. This second stage will focus on land suitability and how land use impacts on water quality, based on the type of land and the sensitivity of the receiving water. Methods in Chapter 3.11 include the research and information to be developed to support this.

Reviewing progress toward achieving the Vision and Strategy

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

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

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

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

Te Horopaki me ngā Whakamārama

Te whakahaere ngātahi i ngā awa o Waikato me Waipā

E toru ngā Ture mō ngā Awa e whakatū ana i ngā whakaritenga whakahaere ngātahi mō ngā awa o Waikato me Waipā, me ngā riu o aua awa. Ko ngā ture ēnei, ko te Te Ture Whakataunga Kokoraho Raupatu a Waikato-Tainui (Te Awa o Waikato) 2010, ko Te Ture o Ngā Iwi o Te Awa o Waikato 2010, arā o Ngāti Tūwharetoa, o Raukawa, o Te Arawa anō hoki me Te Ture o Ngā Wai o Maniapoto (Te Awa o Waipā) 2012.

Ko ngā āpiti ā-iwi i whai wāhi ki te whanaketanga o te Upoko 3.11, ko Maniapoto rātou ko Raukawa, ko Ngāti Tūwharetoa, ko ngā iwi o ngā awa o Te Arawa me Waikato-Tainui. Kei roto i te ture ngā whakamārama mō te āhua o te whai wāhitanga o ngā iwi o te awa ki ngā tukanga whakarite, arotake, panoni rānei i te mahere ā-rohe. Kei reira anō hoki te here kei runga i te Kaunihera ki te whakatū i tētehi Ohu Mahi Ngātahi i te taha o tēnā iwi, o tēnā iwi o te awa, ko tētehi o ngā aronga, ko te whakatakoto ngātahi i ngā tūtohunga ki te Kaunihera mō te panonitanga o te mahere.

I whakatūria Te Ture Whaimana o Te Awa o Waikato e ngā Ture e toru mō ngā Awa hei pukapuka matua e whakatau ana i te anga whakamuatanga mō ngā awa o Waikato me Waipā. Mehemea ka kitea he taupatupatutanga i tētehi Tauākī kaupapa here ā-motu, i te Tauākī kaupapa here takutai moana a Aotearoa rānei, kei runga ko Te Ture Whaimana, waihoki he wāhanga tēnei nō Te Tauākī Kaupapa Here ā-Rohe a Waikato.

E kī ana te Ture Whaimana, kua whakakinongia ngā awa o Waikato me Waipā, ā, me whakaora mai, me tiaki anō hoki ka tika, heoi he mahi anō i tua atu i ērā. E kaha arotahingia ana tētehi whāinga i tēnei upoko, arā ko te whakaoranga o te kounga wai o roto i te awa o Waikato, kia pai ai tā te tangata kaukau ki roto, kia pai ai te kohi kai i ngā wāhi katoa o te awa, mai i te mātāpuna ki te pūaha. E whakatinanahia ana te Ture Whaimana i te Upoko 3.11 mā te:

- whakaiti i te ngaronga o te hauota, o te pūtūtae-whetū, o te waiparapara me te tukumate ora poto i te whenua
- whakahaere tonu i te rukenga roha me te rukenga pū tuwha o te hauota, o te pūtūtae-whetū, o te waiparapara, o te tukumate ora poto anō hoki
- tuku i te tangata me ngā hapori kia taunga haere ai rātou ki ngā here o te Upoko 3.11 me te tautoko i ngā tūmahi kia tutuki ai ngā whāinga taupoto, i runga anō i te mārama me whai wāhi tonu ki ngā mahere ā-rohe ka whai ake, te whakaitinga o te ngaronga o te hauota, o te pūtūtae-whetū, o te waiparapara me te tukumate ora poto i te whenua
- whakaū kia whakahaere tonu te Kaunihera ā-rohe o Waikato i ngā rangahau, i te aroturuki me te mātai i ngā rerekētanga ā-whenua, i roto anō hoki i te wai kia āhei ai te whai i te Mātauranga Māori me ngā tikanga pūtaiao o te wā, ka puta mai ana aua tikanga
- whakarite i ngā herenga o anamata mō ngā mahi i runga i te whenua, me te āpiti atu i ngā tāpuitanga^ e whakaū ana i te hāngai pū o ngā tūmahi me te whakahaeretanga o te whakamahinga whenua ki ngā āheinga ahupūngao koiora o te whenua, ki te wāhi me ngā pānga o ngā rukenga ki ngā roto, ki ngā awa me ngā repo i roto i te riu.

Te huarahi o te mahi ngātahi

I whakaae ngā āpiti hautū ngātahi ki te whai i te huarahi o te mahi ngātahi ki te whakatewhatewha me te whakawhanake i ngā huarahi whakahaere wai Māori ka whāia i ngā riu o ngā awa o Waikato me Waipā.

Ko tētehi āhuatanga matua o te huarahi o te mahi ngātahi ko te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga, i noho mai hei kanohi mō te hunga whai pānga me te hapori whānui i te kaupapa o Wai Ora: He Rautaki Whakapaipai. Ko te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga te huarahi matua i mahi ngātahi ai te hunga whai pānga me te hapori whānui i te kaupapa. I āta arotake, i āta whiriwhiri mārire anō te rōpū i ngā rauemi whāiti nā tētehi rōpū mātanga ā-waho i ahu mai i ētehi tūmomo pekanga mātauranga. I te Panonitanga Tuatahi o te Mahere e Marohitia nei, i whai hoki te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga i ngā whakaaro o ō rātou rāngai me te hapori, ā, nā rātou ngā kōrero o te Upoko 3.11 i whakatakoto ki te hunga whakatau.

Te Whakawhiti Kōrero

Kei roto i te Rārangi Whakawhiti Kōrero 1 o te RMA ngā here kia mātua whakawhiti kōrero me ētehi hunga, pērā i ngā rūnanga ā-iwi, i te wā e whakaritea ana te Whakataurangitanga. Kua oti ngā whakawhitinga kōrero me ngā hunga e pāngia ana, tae atu ki ngā rūnanga ā-iwi e hāngai ana, ā, kua āta arohia ngā take i ara ake ai i aua whakawhitinga kōrero e te Kaunihera ā-Rohe o Waikato i te whakaritenga o Te Whakataurangitanga Tuatahi. Nā ngā whakawhitinga kōrero i hua ai Te Whakataurangitanga i te Panonitanga Tuatahi o te Mahere e Marohitia nei.

Te Kounga Wai me te Tauākī Kaupapa Here ā-Motu mō te Whakahaere Wai Māori

Kua herea ngā kaunihera ā-rohe e te Tauākī Kaupapa Here ā-Motu mō te Whakahaere Wai Māori 2016 ki te whakarite whāinga wai Māori^ me te whakatakoto tāpuitanga^, whāinga^ rānei (he tāpuitanga te whāinga me whakatutuki i roto i te wā i tohua ai). Me mātua whakaū ngā kaunihera ā-rohe kāore e nui rawa te tohanga^ o te rawa wai, me whakatika rānei e rātou tērā tohanga mehemea kua whērā kē.

E whakaaturia mai ana i ngā hua o te aroturuki ā-kounga wai, ahakoa ngā rerekētanga i ngā wāhi katoa o ngā riu o ngā awa o Waikato me Waipā, he kino tonu ngā pānga ki ngā hōpua wai nā ngā rukenga ā-hauota, ā-pūtūtae-whetū, ā-waiparapara, ā-tukumate ora poto anō hoki. I whakatau te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga, he nui rawa te tohanga^ i te horopaki o te kounga wai. Kāore e taea e ngā hōpua wai o ngā riu o ngā awa o Waikato me Waipā te whakaputa ētehi atu rukenga ā-hauota, ā-pūtūtae-whetū, ā-waiparapara, ā-tukumate ora poto anō hoki, me te kore e puta o ngā pānga kino ki ngā uara o te hapori. Me whakaiti ngā tāhawahawatanga roha me ngā tāhawahawatanga i ngā pū tuwha e tutuki ai ngā whāinga ā-tau me ngā whāinga tauroa mō te wai Māori, o te Upoko 3.11.

Ka tohutohu te Tauākī Kaupapa Here ā-Motu mō te Whakahaere Wai Māori i te Kaunihera ā-Rohe o Waikato ki te whakarite whāinga wai Māori e whakamana ana i ngā whāinga o te Tauākī Kaupapa Here ā-Motu mō te Whakahaere Wai Māori, e whakamārama ana anō hoki i te āhua o te wai e hiahiatia ana e ngā hapori ā-rohe o Waikato hei ngā tau e heke mai ana.

Ko tētehi wāhanga o te tukanga o te Tauākī Kaupapa Here ā-Motu mō te Whakahaere Wai Māori i whāia ai hei whakarite i te Upoko 3.11, ko te tautuhi i ngā wae whakahaere wai māori me ngā uara o ia wae, kātahi ka kōwhiria ngā āhuatanga o te kounga wai^ e hāngai ana me ngā āhuatanga^ ka taea te aroturuki i roto i te wā. Mā ngā whāinga wai Māori^ me ngā tāpuitanga^, ngā whāinga^ rānei e whakatau ngā here e tutuki ai ngā āhuatanga^. Kei raro i te Tauākī Kaupapa Here ā-Motu mō te Whakahaere Wai Māori, ko te tāpuitanga^ te taumata o te whakamahinga o ngā rawa e wātea ana, kia āhei ai te whakatutukitanga o tētehi whāinga wai Māori.

I tautuhi te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga i te whakamahinga rawa ka pā ki te whakatutukitanga o ngā whāinga wai Māori^, ki ngā hiahia tauroa mō te kounga wai me te whakatutukitanga o te Ture Whaimana. E takoto ana i te Upoko 3.11 ngā kaupapa here me ngā tikanga e here ana i ngā mahi i runga i te whenua me te rukenga ki te whenua, ki te wai rānei.

Ka pā ki ngā whakatupuranga maha te whakatutukitanga o Te Ture Whaimana

Kua kōwhiri te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga i te 80 tau hei pae wā ki te whakatutuki i ngā whāinga kounga wai o Te Ture Whaimana. He pae wā tēnei ka pā ki ngā whakatupuranga maha, ā, he nui ake hoki te tūmanako i ngā pae o raro ā-motu kua whakatakotoria i te Tauākī Kaupapa Here ā-Motu mō te Whakahaere Wai Māori, nā te mea e whai ana tēnei ki te whakatutuki i ngā paerewa teitei ake kia pai ai tā te tangata kaukau ki roto i te wai, kia pai ai hoki te kohi kai i ngā wāhi katoa o ngā awa o Waikato me Waipā, mai i ngā mātāpuna ki ngā pūaha, me ngā riu. E ai ki ngā pārongo e wātea anaināianei, kua whakatau te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga ka nui te utu, ka uaua hoki te whakatutukitanga katoatanga o Te Ture Whaimana i mua i te tau 2096. Kua kitea te 'āputa auahatanga' i te pae wā o te 80 tau, arā e whakatutuki katoatia ai te kounga wai me whai hangarau, me whai tikanga rānei kāore anō kia hua ake, kāore anō rānei e taea, i ngā āhuatanga ā-ōhanga. Hei āpiti atu, e mōhiotia anaināianei, e tutuki ai te whakaoranga o te kounga wai me whakarerekē te whakamahinga o ētehi whenua nui tonu, he āhua nui, he tino nui rānei te rukenga o ērā whenua kia iti ake te rukenga (hei tauira, mā te whakatupu rākau).

Kua whai te Rōpū Mahi Ngātahi o ngā Hunga Whai Pānga i tētehi huarahi wāwāhi nā te nui o ngā panonitanga me whai kia whakaorangia mai anō, kia tiakina hoki te kounga wai i te roanga o te pae wā o te 80 tau. Nā tēnei huarahi i wāhia ai ngā whakatikahanga me puta mai, ko te tuatahi o ngā whakatikahanga he whakarite, he whakatinana anō hoki i ngā tūmomo tūmahi me mahi rawa i roto i te tekau tau, e tutuki ai te tekau ōrau o ngā panonitanga, i te kounga waiināianei ki te kounga wai tauroa hei te tau 2096. E kitea ana i tēnei huarahi wāwāhi he raru pea ka pā ki te pāpori i te nui o ngā panonitanga ā-whakamahinga whenua i roto i te wā poto, ā, he nui te mahi, he nui hoki te utu ki te hunga whakamahi rawa, ki te ahumahi, ki te Kaunihera ā-rohe o Waikato hoki ki te whakarite i te tukanga panonitanga i te wāhanga tuatahi. Me whai tukanga whakatinana hou, me whai tohungatanga, me whakatū hui whiriwhiri kaupapa hei taunaki i te wāhanga tuatahi. Mā te huarahi wāwāhi e whai wā ai kia puta mai ngā hangarau me ngā tikanga auaha e tika ana kia puta hei whakatutuki i ngā whāinga^ me ngā tāpuitanga^ i roto i ngā mahere ā-rohe ka whai ake.

Nā te nui o te panonitanga me puta rawa e tutuki ai ngā tāpuitanga^ i roto i te 80 tau, he whāinga nui tonu te whakatutuki i te wāhanga tuatahi o ngā whāinga wai Māori tauroa o tēnei Mahere. Nā konei, kāore pea e kitea i roto i te wā poto te pānga o ngā tūmahi me ngā panonitanga i runga i te whenua ki te kounga wai i roto i ngā hōpua wai. I whēnei ai, nā te roa o te wā e memeha haere ai te kukūnga o ngā tāhawahawatanga i roto i te wai, whai i muri mai i te whakaritenga o ngā mahi whakangāwari i ngā pānga, otirā nā te roa o te wā e heke ai te hauota i te oneone ki ngā wai o te whenua, tae atu ki te wai ka rere ki ngā kōawāwa. Nā konei, ka roa pea te wā kātahi ka kitea i roto i te wai te pānga o ngā tūmahi o

nāianei kua whakaritea kia iti iho ai te hauota (ka rerekē te roa o te wā i ngā wāhi katoa o te riu). I runga hoki i tērā, he 'utanga hauota' kāore anō kia kitea i te wai e puta tonu mai ana nā te whakamahinga whenua i mua.

I runga i te huarahi e whāia ana i te Upoko 3.11 hei whakaiti i te ngaronga o ngā tāhawahawatanga i ngā pāmu kararehe, me:

- aukati i ngā kararehe i ngā hōpua wai hei tūmahi whakangāwari totoa
- whai Mahere Taiao ā-Pāmu (tae atu ki ngā kaiwhakatupu huawhenua ā-arumoni) e whakaū ana i ngā tikanga whakahaere pai ā-ahumahi, e tautuhi ana anō hoki i ētehi atu tūmahi whakangāwari hei whakaiti i ngā rukenga roha i mua i ētehi rā ka āta tohua, ka aroturukihia ai
- whakarite tauine tohu hauota ā-whenua mā te whakatauira i ngā ngaronga whakamōmona i ia whenua, kāore tētehi whenua e āhei ki te hipa i tana tohu hei ngā tau e heke mai ana, ā, me whakaiti rawa ngā kairuke kaha rawa i ngā ngaronga whakamōmona
- whakarite tētehi pūnaha whakamanatanga mō te hunga ka āwhina i ngā kaipāmu ki te whakarite i ā rātou Mahere Taiao ā-Pāmu, ki te whakapūmau anō hoki i ngā kaupapa ā-ahumahi ahuwhenua
- whakawhanake te Kaunihera ā-rohe o Waikato i ētehi huarahi kāore e herea ana ki te anga ā-ture kia āhei ai te arotake i ngā tūponotanga ngaronga tāhawahawatanga i ngā riu o ngā kautawa, ka whakatinana hoki i ngā mahi whakangāwari pānga kāore e herea ki ngā rohenga o ngā pāmu, hei tautuhi i ngā urupare, iti katoa te utu.

He nui ngā whakatau kua mana kē me ngā ture kei roto i tēnei Mahere, ka hāngai tonu ki ngā rukenga pū tuwha.

Me panoni rawa ngā kairuke i ngā pū tuwha nō ngā whakahaere ā-rohe, nō ngā ahumahi anō hoki i ā rātou rukenga kia hāngai ki Te Ture Whaimana, ki ngā whāinga hoki mō te kounga wai, ki ngā tāpuitanga^ o ngā riu kōawāwa me ngā whāinga^ kua whakaritea. Ka whēnei hei te paunga o ngā here ā-whakaaetanga o tēnei wā.

He nui ngā tūmomo whakataunga kei roto i tēnei Mahere e hāngai ana ki ngā mahinga ngahere. Ka riro tonu mā ēnei whakataunga ngā mahinga ngahere e whakahaere, engari ka tāpirihia atu ētehi atu here e pā ana ki te whakarite mahere hauhake me te whakamōhio i te Kaunihera ā-Rohe o Waikato ki ngā tūmahi hauhake.

Hei ngā tau e tū tata mai ana, ka herea te panonitanga ā-whakamahinga whenua, whēnei i te huringa o te ngahere hei pāmu kararehe, i te huringa rānei o te pāmu whakatupu kararehe hei pāmu miraka kau. Kua whakaritea kia āhua ngāwari ake ngā here mō te whakamahinga o ngā whenua Māori kāore anō kia whanake nā ngā raruraru ā-hītori me ngā raruraru ā-ture. Nā te mea kua pā ēnei raruraru ki te hononga i waenganui i te tangata whenua me ō rātou whenua tūpuna, me ngā pānga ā-ahurea, ā-ōhanga i puta i tērā, e whai ana te Upoko 3.11 ki te whakamana, ki te whakarite hoki i ēnei hononga. Mō tēnei wā ēnei here i runga i ngā panonitanga ā-whakamahinga whenua, kia whakatakotoria rā anōtia tētehi wāhanga tuarua i tētehi panonitanga ā-mahere o anamata, e herea ai ngā kairuke ki te whakaiti anō i ngā rukenga waiparapara, whakamōmona, tukumate ora poto anō hoki i ngā rukenga pū tuwha me ngā mahi i runga i te whenua. Ka aro tēnei wāhanga tuarua ki te pai o te whenua me te pānga o te whakamahinga whenua ki te kounga wai, i runga i te āhua o te whenua me te āhua o ngā wai taketake. Kei te Upoko 3.11 ngā tikanga whēnei i ngā rangahau me ngā pārongo me whakawhanake ake hei taunaki i tēnei.

Te arotake i te kokenga ki te whakatutuki i Te Ture Whaimana o Te Awa o Waikato

Ko te whāinga matua o te Upoko 3.11, he here i ngā kaiwhakamahi rawa kia tīmata rātou ki te whakaiti i ngā rukenga tāhawahawatanga, koia nei te wāhanga tuatahi e tutuki ai Te Ture Whaimana, ka whakahaerehia ētehi tūmahi i runga pāmu, ka arotakehia anō hoki ngā rukenga pū tuwha ka tata ana ki te wā e whakahoungia ai ngā whakaaetanga rawa. Mā te huarahi wāwāhi e taunga haere ai te tangata me ngā hapori, i runga i te mārama he whakaitinga atu anō ka whakaritea e ngā mahere ā-rohe ka whai ake.

Me arotake pokapoka Te Ture Whaimana kei roto i ngā Ture e toru mō ngā Awa e te Te Manatū Whakahaere i Te Awa o Waikato, ākuanei pea māna e panoni aua tuhinga kia whakaurua atu he tāpuitanga, he tikanga anō hoki.

E here ana Te Ture Penapena Rawa i ngā kaunihera ā-rohe kia tīmata tā rātou arotake i ā rātou mahere ā-rohe kia pau te tekau tau e whakahaerehia ana aua mahere. Kia oti tēnei hei ngā tau e heke mai ana, me whai i muri i te wāhanga tuatahi kei roto i te Upoko 3.11 o tēnei Mahere ētehi atu panonitanga hei whakaiti i ngā rukenga roha me ngā rukenga i ngā pū tuwha.

I te wā e whāia ana tēnei Mahere, ka mātai te Kaunihera ā-rohe o Waikato i te kokenga o ngā tūmahi e kawea ana i runga i te whenua hei whakatutuki i Te Ture Whaimana. Hei āpiti atu, ka whakamahia ngā rangahau me ngā kohinga pārongo i te arotakenga o tēnei Mahere, hei ārahi i ngā tohanga ā-whenua o ngā rukenga tāhawahawatanga hei ngā tau e heke mai ana.

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

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

This section describes the values and uses for the Waikato and Waipā Rivers. The values and uses reflect the Vision and Strategy for the Waikato River. The values and uses set out below apply to all FMU's unless explicitly stated, and provide background to the freshwater objectives[3], and the attributes and attribute states outlined in Table 3.11-1.

Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato[4]

"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]

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

[3] Wairakei Pastoral Ltd PC1-11260, DoC PC1-1831

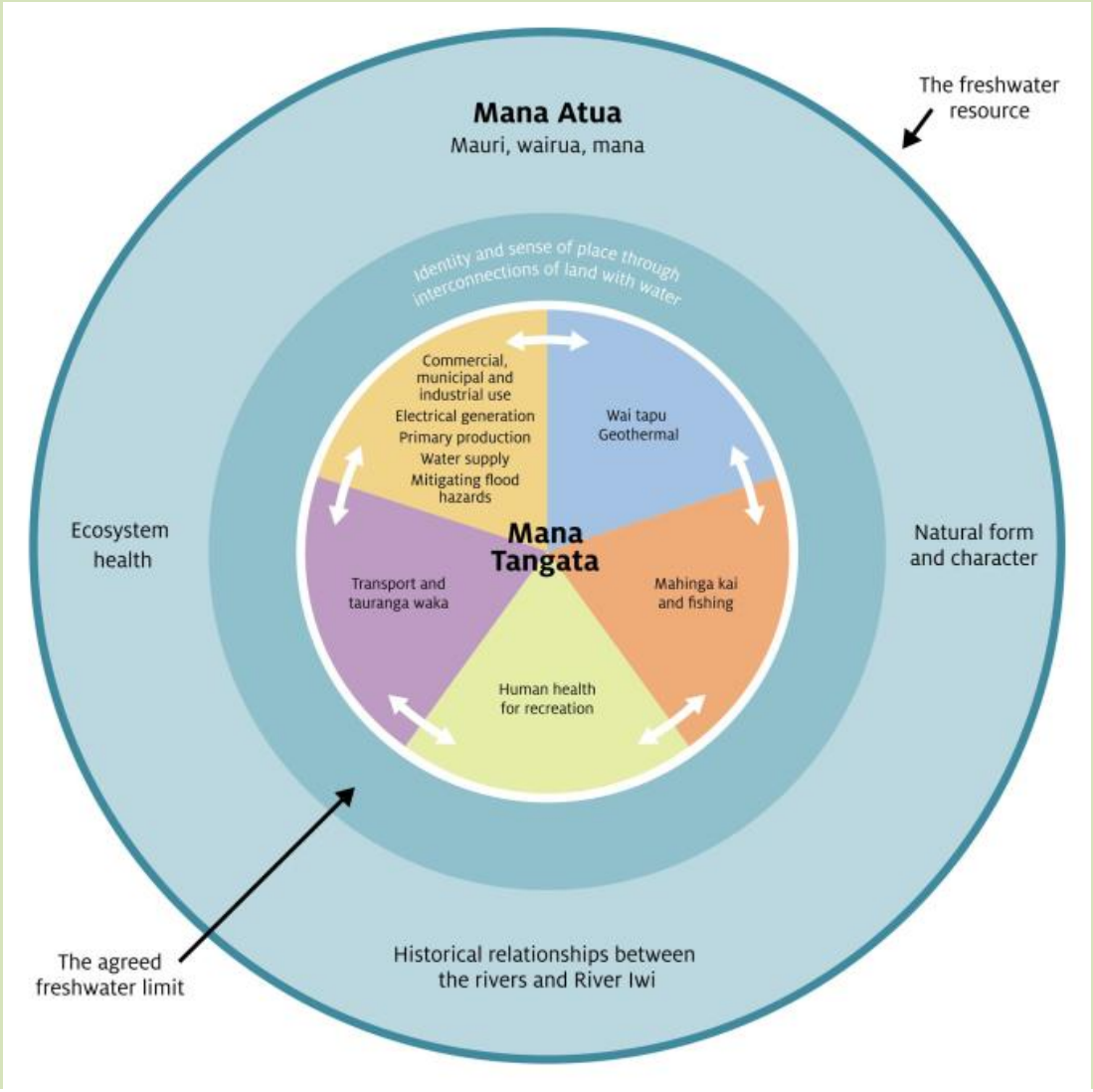
[4] *The Nga Wai o Maniapoto (Waipa River) Act 2012 extended Te Ture Whaimana o te Awa o Waikato to also cover the Waipa River and its catchment*

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

Te Mana o te Wai: Mana Atua, Mana Tangata

Values can be thought of in terms of Mana Atua and Mana Tangata, which represent Te Mana o te Wai[6]. Mana Atua represents the intrinsic values of water including the mauri (the principle of life force), wairua (the principle of spiritual dimension) and inherent mana (the principle of prestige, authority) of the water and its ecosystems in their natural state. Mana Tangata refers to values of water arising from its use by people for economic, social, spiritual and cultural purposes. Mana Atua and Mana Tangata values encompass past, present and future.

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



Note: New diagram from Variation 1 to be inserted.

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

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

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

3.11.1.1 Mana Atua – Intrinsic values

~~**Intrinsic values – Ancestry and History**~~[7]

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

Ko ngā kōrero tūpuna me ngā Kōrero o Mua~~o nehera~~ / Ancestry and History

~~Each~~ River Iwi and other iwi have ~~has~~ their own unique and intergenerational relationship with the rivers, tributaries, lakes, estuaries, wetlands and springs.	▪ ~~The~~ R~~r~~ivers, tributaries, lakes, estuaries, wetlands and springs have always been seen as taonga (treasures) to all River Iwi and other iwi. ▪ ~~The~~ R~~r~~ivers, tributaries, lakes, estuaries, wetlands and springs have always given River Iwi and other iwi a strong sense of identity and connection with the land and water. ▪ Rivers, tributaries, lakes, estuaries, wetlands and springs were used holistically; River Iwi and other iwi understood the functional relationships with and between all parts of the rivers, tributaries, lakes, estuaries, wetlands and springs, spiritually and physically as kaitiaki. ▪ Tribal taniwha and tupua dwell in the rivers which are also the location of continued spiritual and cultural traditions and practices maintained over the many centuries. ▪ Iwi tupuna inhabited a rohe that teemed with life in the rivers, tributaries, lakes, estuaries, wetlands and springs. These resources were subject to access and use rights as an essential part of kaitiakitanga. ▪ Iwi strive to maintain and restore these relationships despite the modification and destruction that has occurred through different types of development ~~along~~ affecting the rivers, tributaries, lakes, estuaries, wetlands and springs.[PC1-8136]

~~**Intrinsic values - Ecosystem health**~~

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

[7] Watercare V1PC1-888

Ecosystem health

The Waikato and Waipa catchments support resilient freshwater ecosystems and healthy freshwater populations of indigenous plants and animals.	▪ Clean fresh water restores and protects aquatic native vegetation to provide habitat and food for native aquatic species and for human activities or needs, including swimming and drinking. ▪ Clean fresh water restores and protects macroinvertebrate communities for their intrinsic value and as a food source for native fish, native birds and introduced game species. ▪ Clean fresh water supports the natural ecological functioning of river, wetland, lake and estuarine ecosystems ▪ Clean fresh water supports healthy populations and intact communities of native freshwater fish and their habitats, including spawning and migration habitats, and restores and sustains threatened and at-risk fish species into the future. ▪ Wetlands and floodplains provide ~~water purification~~, refuge, feeding and breeding habitat for aquatic species, habitat for water fowl and other ecosystem services such as flood attenuation. ▪ Fresh water contributes to unique habitats including peat lakes, shallow riverine lakes and karst formations which all support unique biodiversity. ▪ Rivers and adjacent riparian margins are critical components of ecosystem health ~~have value as ecological corridors~~. ▪ Protection and regonition of Priority Biodiversity Areas is a key component of achieving ecosystem health [PC1-8139]

~~**Intrinsic values - Natural form and character**~~

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

Natural form and character

Retain the integrity of ~~the~~ lakes, rivers, tributaries and wetlands within the landscape and its aesthetic features and natural qualities for people to enjoy.	▪ ~~The~~ Lakes, rivers, , tributaries, estuaries and wetlands[8] have amenity and naturalness values, including native vegetation, undeveloped stretches, and significant sites. ▪ People are able to enjoy the natural environment; it contributes to their health and wellbeing. ▪ The rivers are an ecological and cultural corridor. ▪ The lakes, rivers, tributaries, estuaries and wetlands as a whole living entity. ▪ Matters contributing to the natural form and character of fresh water bodies are the biological, visual and physical characteristics that are valued by the community including: i. its biophysical, ecological, geological, geomorphological and morphological aspects; ii. the natural movement of water and sediment including hydrological and fluvial processes; iii. the location of the water body relative to its natural course; iv. the relative dominance of indigenous flora and fauna; v. the presence of culturally significant species; vi. the colour of the water; and vii. the clarity of the water. [PC1-8152]

3.11.1.2 Mana Tangata – Use values

~~**Use values - Wai tapu**~~

Ko ngā wai tapu me ngā wai kino / Sacred and harmful waters

Wai tapu and wai kino

[8] DoC PC1-8136, 8189, 8152, 8532, 8533, 8535, 8540

Area of water body set aside for spiritual activities that support spiritual, cultural and physical wellbeing or have properties that require additional caution or care.	▪ ~~The~~ Lakes, rivers, tributaries, estuaries and wetlands are a place for sacred rituals, wairua, healing, spiritual nurturing and cleansing. ▪ ~~The~~ Lakes, rivers, tributaries, estuaries and wetlands provide for cultural and heritage practices and cultural wellbeing, particularly at significant sites. ▪ ~~The~~ Lakes, rivers , tributaries, estuaries and wetlands have different states of wai tapu and wai kino that are adhered to and respected. [PC1-8132]

~~**Use values – Geothermal**~~

Ko ngā Ngāwhā / Geothermal

Geothermal

A valued resource that is naturally gifted to sustain certain activities (meeting spiritual and physical needs).	▪ Geothermal areas and their various resources were prized by tūpuna (ancestors) for their many uses and are still valued and used today. ▪ Geothermal areas of the river have natural form and character, and unique flora found only in the geothermal environment. ▪ Geothermal areas are a special microclimate.

~~**Use values – Mahinga kai**~~

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

Mahinga kai

The ability to access the Waikato and Waipa Rivers, lakes, and wetlands and their tributaries to gather sufficient quantities of kai (food) that is safe to eat and meets the social and spiritual needs of their stakeholders.	▪ ~~The~~ Lakes, rivers, tributaries, estuaries and wetlands provide for freshwater native species, native vegetation, and habitat for native animals. ▪ ~~The~~ Lakes, rivers , tributaries, estuaries and wetlands provide for freshwater game and introduced kai species. ▪ ~~The~~ Lakes, rivers , tributaries, estuaries and wetlands provide for cultural wellbeing, knowledge transfer, intergenerational harvest, obligations of manaakitanga (to give hospitality to, respect, generosity and care for others) and cultural opportunities, particularly at significant sites. ▪ The rivers, , tributaries, estuaries should be safe to take food from, both fisheries and kai. ▪ ~~The~~ Lakes, rivers, , tributaries, estuaries and wetlands support aquatic life, healthy biodiversity, ecosystem services, flora and fauna and biodiversity benefits for all. ▪ The rivers and tributaries are a corridor. ▪ ~~The~~ Lakes, rivers, , tributaries, estuaries and wetlands provide resources available for use which could be managed in a sustainable way. ▪ ~~The rivers provide for recreation needs and for social wellbeing.~~[9] [PC1-8133]

~~**Use values – Human health for recreation**~~

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

Human health for recreation

~~The~~ Lakes wetlands, tributaries, estuaries and rivers are a place to swim and undertake recreation activities in an	▪ ~~The~~ Lakes ,wetlands, tributaries, estuaries and rivers provide for recreational use, social needs and social wellbeing, are widely used by the community, and are a place to relax, play, exercise and have an active lifestyle.

[9] Federated Farmers V1PC1-106

environment that poses minimal risk to health.	▪ An important value for the lakes, estuaries ~~and~~ rivers and tributaries is cleanliness; the lakes estuaries ~~and~~ rivers and tributaries should be safe for people to swim in. ▪ The lakes estuaries ~~and~~ rivers and tributaries provide resources available for use which could be managed in a sustainable way. [PC1-8135]

~~**Use values - Transport and tauranga waka**~~

He urungi / Navigation

Transport and tauranga waka

All communities can use ~~the~~ lakes and rivers to pilot their vehicles and waka and navigate to their destinations.	▪ ~~The~~ Lakes and rivers provide for recreational use (navigation), and sporting opportunities. ▪ ~~The~~ Lakes and rivers are a corridor, mode of transport and mode of communication. ▪ ~~The~~ Lakes and rivers provide for culture and heritage, cultural wellbeing, and social wellbeing, particularly at significant sites.

~~**Use values - Primary production**~~

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

Primary production

The rivers support regionally and nationally significant primary production in the catchment (agricultural, horticultural, forestry). These industries contribute to the economic, social and cultural wellbeing of people and communities, and are the major component of wealth creation within the region. These industries and associated primary production also support other industries and communities within rural and urban settings.	▪ The rivers support a wide variety of primary production in the catchment, including dairy, meat, wool, horticulture and forestry. ▪ Due to the economies of scale of these industries, other service sectors, such as agritech, aviation and manufacturing, are able to operate. ▪ These industries combined contribute significantly to regional and national GDP, exports, food production and employment. ▪ The rivers and the surrounding land offer unique opportunities for many communities and industries to operate, contributing to the lifestyle and sense of community, pride and culture in rural and urban[10] Waikato.

~~**Water supply**~~

Ko ngā hapori wai Māori / Municipal and domestic water supply

Water supply

The rivers provide for community water supply, municipal supply and~~,~~ drinkable water supply ~~and health~~.[11]	▪ The catchments' surface and subsurface water is of a quality that can be effectively treated to meet appropriate health standards for both potable and non-potable uses.

~~**Use values - Commerical, municipal and industrial use**~~

[10] Hamilton CC PC1-10067
[11] Federated Farmers V1PC1-117

Ko ngā āu putea / Economic or commercial development

Commercial, municipal and industrial use

The rivers, lakes, and wetlands provide economic opportunities to people, businesses and industries.	Fresh water is used for industrial and municipal processes, which rely on the assimilative capacity for discharges to surface water bodies. In addition: ▪ ~~The~~ Lakes, rivers and wetlands provide for economic wellbeing, financial and economic contribution, individual businesses and the community and the vibrancy of small towns. They are working lakes, rivers and wetlands; they create wealth. ▪ Those industries are important to the monetary economy of Waikato region, enabling a positive brand to promote to overseas markets. ▪ ~~The~~ Lakes, rivers and wetlands provide for domestic and international tourism. Promotion of a clean, green image attracts international and domestic visitors. ▪ ~~The~~ Lakes, rivers and wetlands provide assimilative capacity for wastewater disposal, flood and stormwater, and ecosystem services through community schemes or on site disposal. ▪ Wetlands and floodplains provide water purification [Consequential amendment]

~~**Use values - Electricty generation**~~

Electricity generation

The river provides for reliable, renewable hydro and geothermal energy sources and thermal generation, securing national self-reliance and resilience. New Zealand's social and economic wellbeing are dependent on a secure, cost-effective electricity supply system. Renewable energy contributes to our international competitive advantage. Electricity also contributes to the health and safety of people and communities.	▪ Waikato hydro scheme extends over 186km, comprising Lake Taupō storage, dams, lakes, and power stations. Tongariro Power scheme adds 20 per cent to natural inflows to Lake Taupō. ▪ Huntly Power Station's role in the New Zealand electricity system is pivotal, particularly when weather dependent renewable generation is not available. Fresh water is used for cooling and process water. ▪ Geothermal power stations located on multiple geothermal systems use fresh water for cooling, process water and drilling.

~~**Use values - Mitigating flood hazards**~~

Mitigating flood hazards

Flood management systems protect land used and inhabited by people and livestock.[12]	▪ River engineering, including stopbanks and diversions, protect land and infrastructure from damage by flooding. ▪ Natural infrastructure that mitigate flood impacts, recognising that altered flood regimes, can impact on intrinsic values and uses. [Consequential amendment]

[12] Hamilton CC PC1-10167

3.11.2 Objectives/Ngā Whāinga

New Objective #1

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

New Objective #2

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

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

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

~~By 2096 at the latest~~[13]~~, a reduction in the discharges of nitrogen, phosphorus, sediment and microbial pathogens to land and water results in achievement of the restoration and protection of the Waikato and Waipā Rivers, such that of the 80-year water quality attribute targets states~~[14] ~~in Table 3.11-1 are met~~[15]~~.~~
To restore and protect the Waikato and Waipā catchments so that the 80 year water quality limits/targets in Tables 3.11-1, 3.11-1a, 13.11-3 and 3.11-4 are achieved by 2096 [PC1-10535]

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

~~Waikato and Waipa communities and their economy benefit from the~~ Long -term restoration and protection of water quality in the Waikato and Waipā[16] River catchments, , from the reduction of discharges, ~~which~~ will enable~~s the~~ people and communities ~~to continue~~ to provide for their social, economic and cultural wellbeing. [PC1-10537]

Objective 3~~: Short term improvements in water quality in the first stage of restoration and protection of water quality for each sub-catchment and Freshwater Management Unit/Te Whāinga 3: Ngā whakapainga taupoto o te kounga wai i te wāhanga tuatahi o te whakaoranga me te tiakanga o te kounga wai i ia riu kōawāwa me te Wae Whakahaere Wai Māori~~[17]

~~Actions put in place and implemented by 2026 to~~ Rreduce diffuse and point source[18] discharges ~~of nitrogen, phosphorus, sediment and microbial pathogens, are sufficient~~ to achieve the short-term water quality ~~attribute states~~ limits/targets in Table~~s~~ 3.11-1.[19] , 3.11.1a,3.11-3 and 3.11-4 by 2030. ~~ten percent of the required change between current water quality and the 80-year water quality attribute targets in Table 3.11-1. A ten percent change towards the long-term water quality improvements is indicated by the short term water quality attribute targets in Table 3.11-1.~~ [PC1-10537]

[13] Tangata Whenua – Waikato and Waipa River Iwi PC1-3245
[14] Fonterra PC1-10455
[15] Watercare PC1-8450; Beef and Lamb PC1-11154
[16] Mercury NZ Ltd PC1-9506
[17] Watercare PC1-8450
[18] DoC PC1-10540
[19] Southern Pastures Ltd Partnership PC1-11095

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

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

~~a. considering the values and uses when taking action to achieve the attribute^ targets^ for the Waikato and Waipa Rivers in Table 3.11-1; and~~

~~b. recognising that further contaminant reductions will be required by subsequent regional plans and signalling anticipated future management approaches that will be needed to meet Objective 1.~~

OR

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

~~A staged approach to~~ reducing contaminant losses ~~change~~[20] ~~enables people and communities to undertake adaptive management to continue to provide for their social, economic and cultural wellbeing in the short term while:~~

~~a. considering the values and uses when~~[21] ~~taking action to achieve the attribute^ targets^~~ states[22] ~~for the Waikato and Waipa Rivers in Table 3.11-1; and~~

~~b. recognising that further contaminant reductions will be required by subsequent regional plans and signalling anticipated future management approaches that will be needed~~ in order[23] ~~to meet Objective 1~~[24]~~.~~ [PC1-10542]

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

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

a. tangata whenua have the ability to:
   i. manage their own lands and resources, by exercising mana whakahaere, for the benefit of their people; and
   ii. actively sustain a relationship with ancestral land and with the rivers and other water bodies in the catchment; and
b. new impediments to the flexibility of the use of tangata whenua ancestral lands are minimised; and
c. improvement in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.
d. Intrinsic values of waterbodies and ecosystems are recognised and provided for. [PC1-10521] [VCPC1-997][PC1-10545]

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

~~a. Nitrogen, phosphorus, sediment and microbial pathogen loads in the catchment of Whangamarino Wetland are reduced in the short term, to make progress towards the long-term restoration of Whangamarino Wetland; and~~

~~b. The management of contaminant loads entering Whangamarino Wetland is consistent with the achievement of the water quality attribute^targets^ in Table 3.11-1.~~

OR

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

~~a. Nitrogen, phosphorus, sediment and microbial pathogen loads in the catchment of Whangamarino Wetland are reduced in the short term, to make progress towards the long-term restoration of Whangamarino Wetland; and~~

~~b. The management of contaminant loads entering Whangamarino Wetland is consistent with the achievement of the water quality attribute^targets^ in Table 3.11-1.~~

[20] Rotorua Lakes DC PC1-2468
[21] Southern Pastures Ltd Partnership PC1-11096 and Ata Rangi PC1-6113
[22] Fonterra PC1-10451
[23] Southern Pastures Ltd Partnership PC1-11096 and Ata Rangi PC1-6113
[24] Rotorua Lakes DC PC1-2468

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

New Objective #3

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

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

~~Reasons for adopting Objective 1~~

~~**Objective 1** sets long term limits^ for water quality consistent with the Vision and Strategy. Objective 1 sets aspirational 80-year water quality targets^, which result in improvements in water quality from the current state monitored in 2010-2014. The water quality attributes^ listed in Table 3.11-1 that will be achieved by 2096 will be used to characterise the water quality of the different FMUs when the effectiveness of the objective is assessed.~~[25] ~~Objective 1 sets the overall context for what is to be achieved in terms of water quality improvements. There is not any hierarchy of Objectives 1 to 6~~[26]

~~Reasons for adopting Objective 2~~

~~**Objective 2** sets the long term outcome for people and communities, recognising that restoration and protection of water quality will continue to support communities and the economy. The full achievement of the Table 11-1 2096 water quality attribute^ targets^ may require a potentially significant departure from how businesses and communities currently function, and it is important to minimise social disruption during this transition.~~[27]

~~Reasons for adopting Objective 3~~

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

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

~~Point source discharges are currently managed through existing resource consents, and further action required to improve the quality of these discharges will occur on a case-by-case basis at the time of consent renewal, guided by the targets and limits set in Objective 1.~~[28]

~~Reasons for adopting Objective 4~~

~~**Objective 4** provides for a staged approach to long-term achievement of the Vision and Strategy. It acknowledges that in order to maintain the social, cultural and economic wellbeing of communities during the 80-year journey, the first stage (the short term 10-year period) must ensure that overall costs to people can be sustained.~~

~~In the future, a property-level allocation of contaminant discharges may be required. Chapter 3.11 sets out the framework for collecting the required information so that the most appropriate approach can be identified. Land use type or intensity at July 2016 will not be the basis for any future allocation of property-level contaminant discharges. Therefore, consideration is needed of how to manage impacts in the transition.~~

[25] Watercare PC1-8450; Beef and Lamb PC1-111541
[26] Oji Ltd PC1-6392
[27] Forest and Bird PC1-8220
[28] Watercare PC1-8450

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

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

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

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

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

3.11.3 Policies/Ngā Kaupapa Here

Policy 1: ~~Manage d~~ Diffuse discharge management ~~s of nitrogen, phosphorus, sediment and microbial pathogens~~/Te Kaupapa Here 1: Te whakahaere i ngā rukenga roha o te hauota, o te pūtūtae-whetū, o te waiparapara me te tukumate ora poto

Reduce ~~Manage and require reductions in~~[29] ~~catchment-wide and~~[30] sub-catchment~~-wide~~ diffuse[31] discharges ~~of nitrogen, phosphorus, sediment and microbial pathogens,~~ by:

a1. Requiring all farming activities to operate at Good Farming Practice, or better; and[32]

a2. Establishing~~, where possible,~~ a Nitrogen Reference Point for all properties or enterprises; and[33]

a. Enabling activities with a low level of contaminant discharge to water bodies ~~provided those discharges do not increase~~[34]; and

b. Requiring ~~farming~~ activities with moderate to high levels of contaminant discharge to water bodies to reduce their discharges proportionate to the amount of (2016) discharge and the water quality improvements required in the sub-catchment[35]; and

b1. Calculating the 75th percentile, 60th percentile and 50th percentile nitrogen leaching values and requiring farmers with a Nitrogen Reference Point greater than the 75th percentile in river and Whangamarino Wetland sub-catchments or 60th percentile in lake sub-catchments to reduce nitrogen loss to below the ~~75~~th relevant percentile and farmers with a Nitrogen Reference Point between the 50th and 75th percentile to demonstrate real and enduring reductions of nitrogen leaching, with resource consents specifying an amount of reduction or changes to practices required to take place; and[36]

~~b2. Where Good Farming Practices are not adopted, to specify controls in a resource consent that ensures contaminant losses will be reducing;~~[37]

~~b3. Except as provided for in Policies [1(a) and] 16, generally granting only those land use and discharge consent applications that demonstrate clear and enduring reductions in diffuse discharges of nitrogen, phosphorus, sediment and microbial pathogens; and~~[38]

b4. ~~Except as provided for in Policies [1(a) and] Policy 16, generally not granting land use~~ Consent application~~s that involve a change in the use of the land, or an increase in the intensity of the use of land, unless the application~~ will only be granted where the application demonstrate~~s~~ clear and enduring reductions in diffuse discharges of contaminants ~~nitrogen, phosphorus, sediment and microbial pathogens~~; and[39]

c. Progressively excluding cattle, horses, deer and pigs from rivers, streams, drains, wetlands and lakes. [PC1-10639]

Policy 2: Farm Environment Plans ~~Tailored approach to reducing diffuse discharges from farming activities~~/Te Kaupapa Here 2: He huarahi ka āta whakahāngaihia hei whakaiti i ngā rukenga roha i ngā mahinga pāmu

Reduce ~~Manage and require reductions in~~[40] catchment-wide and[41] sub-catchment~~-wide~~[42] diffuse discharges ~~of nitrogen, phosphorus, sediment and microbial pathogens~~ from farming activities on properties and enterprises, through Farm Environment Plans[43] that:

a1. Set out clear, specific and timeframed minimum standards for Good Farming Practice; and[44]

a. Take ~~Taking~~ a tailored, risk based approach to define mitigation actions on the land that will reduce diffuse discharges ~~of nitrogen, phosphorus, sediment and microbial pathogens, with the mitigation actions to be specified in a Farm~~

[29] DoC PC1-10643
[30] WRC V1PC1-1497
[31] Fert NZ PC1-9707, Federated Farmers V1PC1-162
[32] Dairy NZ PC1-10196
[33] Hort NZ PC1-10051, Hira Bhana and Co Ltd PC1-4020 (shifted from Pol 2 with modifications)
[34] Beef and Lamb PC1-12576
[35] Beef and Lamb PC1-12711 (shifted from Pol 2 with modifications)
[36] C and G Tierney PC1-7717, Sinclair Family Trust PC1-6180, Federated Farmers V1PC1-357
[37] Consequential to DairyNZ PC1-10196
[38] DoC PC1-71759
[39] DoC PC1-71759
[40] DoC PC1-10643
[41] WRC V1PC1-1497
[42] Consequential to WRC V1PC1-1497
[43] Federated Farmers V1PC1-172
[44] Ballance PC1-6862, FANZ PC1-9712

~~Environment Plan either associated with a resource consent, or in specific requirements established by participation in a Certified Industry Scheme~~[45]; and

b. Undergo ~~Requiring~~ the same level of rigour in developing, monitoring and auditing ~~of mitigation actions on the land that is~~ set out in a Farm Environment Plan, whether the consent holder is a member of a Certified Sector Scheme or not ~~it is established with a resource consent or through Certified Industry Schemes~~[46]; and

b2. Are flexible and able to be updated so that continuous improvement, new technologies and mitigation practices can be adopted, such that diffuse discharges ~~of nitrogen, phosphorus, sediment and microbial pathogens~~ further reduce over time.[47]

~~c. Establishing a Nitrogen Reference Point for the property or enterprise; and~~[48]

~~d. Requiring the degree of reduction in diffuse discharges of nitrogen, phosphorus, sediment and microbial pathogens to be proportionate to the amount of current discharge (those discharging more are expected to make greater reductions), and proportionate to the scale of water quality improvement required in the sub-catchment; and~~[49]

~~e. Requiring stock exclusion to be completed within 3 years following the dates by which a Farm Environment Plan must be provided to the Council, or in any case no later than 1 July 2026.~~[50] [PC1-10646]

Policy 3: ~~Tailored approach to r~~ Reducing diffuse discharges from commercial vegetable production systems/Te Kaupapa Here 3: He huarahi ka āta whakahāngaihia hei whakaiti i ngā rukenga roha i ngā pūnaha arumoni hei whakatupu hua whenua

~~Provide for commercial vegetable production while reducing~~ ~~Manage and require reductions in~~ Reduce diffuse discharges of contaminants from commercial vegetable production activities ~~nitrogen, phosphorus, sediment and microbial pathogens~~ by: ~~from commercial vegetable production through a tailored, property or enterprise-specific approach where:~~

a. Enabling ~~commercial vegetable production activities,~~ ~~Flexibility is provided including the~~ flexibility to undertake crop rotations on changing parcels of land ~~for commercial vegetable production,~~ within sub-catchments, while ~~reducing average contaminant discharges over time~~ adopting sector-based initiatives and other mitigation measures to progressively reduce losses of contaminants ~~nitrogen, phosphorus, sediment and microbial pathogens~~; ~~and~~

~~b. The maximum area in production for a property or enterprise is established and capped utilising commercial vegetable production data from the 10 years up to 2016; and~~

c. Establishes baselines for each property from the baseline period using commercial vegetable production data from each of the 5 years up to 2016 for;
   (i) the maximum area of land in commercial vegetable production; and
   (ii) the nitrogen and phosphorus surpluses (ie total applied nutrient inputs, less crop uptake) for each commercial vegetable production crop; and
   (iii) sediment control measures; ~~Establishing a Nitrogen Reference Point for each property or enterprise;~~ and

d. Requiring a 10% decrease in the diffuse discharge of nitrogen and ~~Enabling commercial vegetable production that~~ a clearly demonstrate~~ds~~ a tailored reduction in the diffuse discharge of other contaminants ~~nitrogen, phosphorus, sediment and microbial pathogens~~ as measured against the baselines identified in ~~b~~c above of all contaminants through adherence to Good Farming Practice, Farm Environment Plans and the water quality limits/targets of Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4~~relevant minimum standards~~; ~~is achieved across the sector through the implementation of Best or Good Management Practices;~~ and

~~e. Identified mitigation actions are set out and implemented within timeframes specified in either a Farm Environment Plan and associated resource consent, or in specific requirements established by participation in a Certified Industry Scheme.~~

~~f. Commercial vegetable production enterprises that reduce nitrogen, phosphorus, sediment and microbial pathogens are enabled; and~~

~~g. The degree of reduction in diffuse discharges of nitrogen, phosphorus, sediment and microbial pathogens is proportionate to the amount of current discharge (those discharging more are expected to make greater reductions), and the scale of water quality improvement required in the sub-catchment.~~

h. Providing for resource consents for enterprises to encompass multiple properties within a single sub-catchment, provided that:
   (i) a to d above are met; and

[45] South Waikato District Council PC1-12522
[46] Huirimu Farms Ltd PC1-5909, Ata Rangi PC1-6244, Southern Pastures Limited Partnership PC1-11197
[47] Federated Farmers V1PC1 -175
[48] Hort NZ PC1-10051, Hira Bhana and Co Ltd PC1-4020 (shifted to Pol 1 with modifications)
[49] Beef and Lamb PC1-12711 (shifted to Pol 1 with modifications)
[50] G and J Jeffries PC1-12802

(ii) There is clear accounting against contaminant baselines across the multiple properties, including on any land that is no longer used for commercial vegetable production, such that sub-catchment-wide diffuse discharges progressively decrease.[51]

Policy 3A: Certified Sector Schemes

Waikato Regional Council will support the development of Certified Sector Schemes as groups or organisations responsible for preparing and monitoring the implementation of Farm Environment Plans by:

a. Setting out minimum standards for Certified Sector Schemes in Schedule 2; and

b. Establishing a process for approving Certified Sector Schemes based on their ability to meet the minimum standards, including entering into a contractual agreement with each Certified Sector Scheme to meet and maintain those standards; and

c. Requiring independent audit of the performance of Certified Sector Schemes in preparing and monitoring the implementation of Farm Environment Plans for their members.[52]

Policy 4: Future discharge reductions ~~Enabling activities with lower discharges to continue or to be established while signalling further change may be required in future/~~Te Kaupapa Here 4: Te tuku kia haere tonu, kia whakatūria rānei ngā tūmahi he iti iho ngā rukenga, me te tohu ake ākuanei pea me panoni anō hei ngā tau e heke mai ana

~~Manage sub-catchment-wide diffuse discharges of nitrogen, phosphorus, sediment and microbial pathogens, and enable existing and new low-discharging activities to continue provided that cumulatively the achievement of Objective 3 is not compromised.~~ ~~Activities and uses currently defined as low dischargers may in the future need to~~ To recognise that future regional plan changes or regional plans are likely to require all farming activities make further reductions in the ~~take mitigation actions that will reduce~~ diffuse discharges of contaminants ~~of nitrogen, phosphorus, sediment and microbial pathogens~~ in order for Objective 1 to be met.[53] Future necessary discharge reductions should be considered when assessing resources consent applications.

~~To grant resource consents that authorise farming activities for a duration that will enable further reductions in contaminant losses to be implemented through replacement resorce consents rather than by way of a review of consent conditions; unless the application demonstrates clear and enduring ongoing reductions of contaminant losses beyond those imposed in response to the short-term water quality attribute states in Table 3.11-1 and the property is not in a Priority 1 sub-catchment.~~[54] [PC1-10655]

Policy 5: Staged approach/Te Kaupapa Here 5: He huarahi wāwāhi

To recognise that~~:a. Aa~~ll farmers, businesses and communities[55] will need to contribute to achieving the water quality targets ~~attribute states~~[56] in Table 3.11-1 ~~, and~~ To achieve this:

b. Changes in practices and activities need to start immediately[57]; and

c. The rate of change will need to be staged over the coming decades to minimise social, economic[58] and cultural disruption and enable innovation and new practices to develop; and

d. Responding to the reasonably foreseeable effects of climate change will mean that different regulatory and non-regulatory responses may be needed in future.[59] [PC1-10661]

~~Recognise that achieving the water quality attribute^ targets^ set out in Table 11-1 will need to be staged over 80 years, to minimise social disruption and allow for enable innovation and new practices to develop, while making a start on reducing discharges of nitrogen, phosphorus, sediment and microbial pathogens, and preparing for further reductions that will be required in subsequent regional plans.~~

[51] Federated Farmers PC1-10817, Federated Farmers V1PC1-176, Balle Bros PC1-11407, Charion Investment Trust PC1-7691, DoC PC1-10653, Hira Bhana PC1-4145, Hort NZ PC1-10052

[52] Huirimu Farms Ltd PC1-5909, Ata Rangi PC1-6244, Waipapa Farms Ltd and Carlyle Holdings Ltd PC1-4704

[53] C Barker PC1-3748

[54] Federated Farmers PC1-12754, FANZ PC1-11176

[55] M & R Johnston PC1-8099, K Stokes PC1-5248

[56] Winstone Aggregates PC1-3607

[57] Forest and Bird PC1-8257

[58] Charion Investment Trust PC1-7748

[59] WRC PC1-2985

~~Policy 6: Restricting land use change/Te Kaupapa Here 6: Te here i te panonitanga ā-whakamahinga whenua~~

~~Except as provided for in Policy 16, land use change consent applications that demonstrate an increase in the diffuse discharge of nitrogen, phosphorus, sediment or microbial pathogens will generally not be granted.~~

~~Land use change consent applications that demonstrate clear and enduring decreases in existing diffuse discharges of nitrogen, phosphorus, sediment or microbial pathogens will generally be granted.~~[60]

Policy 7: Preparing for allocation in the future/Te Kaupapa Here 7: Kia takatū ki ngā tohanga hei ngā tau e heke mai ana DELETED BY OFFICERS

Prepare for further diffuse discharge reductions and any future property or enterprise-level allocation of diffuse discharges of ~~nitrogen, phosphorus, sediment and microbial pathogens~~ contaminants that will be required by subsequent regional plans, by implementing the policies and methods in this chapter. ~~To ensure this occurs, collect information and undertake research to support this, including collecting information about current discharges, developing appropriate modelling tools to estimate contaminant discharges, and researching the spatial variability of land use and contaminant losses and the effect of contaminant discharges in different parts of the catchment that will assist in defining 'land suitability'.~~

~~Any future allocation should consider the following principles:~~

~~a. Land suitability[61] which reflects the biophysical and climate properties, the risk of contaminant discharges from that land, and the sensitivity of the receiving water body, as a starting point (i.e. where the effect on the land and receiving waters will be the same, like land is treated the same for the purposes of allocation); and~~

~~b. Allowance for flexibility of development of tangata whenua ancestral land; and~~

~~c. Minimise social disruption and costs in the transition to the 'land suitability' approach; and~~

~~d. Future allocation decisions should take advantage of new data and knowledge.~~

Policy 8: Prioritised implementation/Te Kaupapa Here 8: Te raupapa o te whakatinanatanga

Prioritise the management of diffuse discharges ~~of nitrogen, phosphorus, sediment and microbial pathogens~~ ~~land and water resources by implementing Policies 2, 3 and 9, and~~[62] in accordance with the prioritisation of areas set out in Table 3.11-2, commercial vegetable production activities[63] ~~[OPTION and dairy farming[64]]. and~~ , the catchments of lakes and the Whangamarino Wetland.[65] ~~Priority areas include:~~

~~a. Sub-catchments where there is a greater gap between the water quality targets^ in Objective 1 (Table 3.11-1) and current water quality; and~~

~~b. Lakes Freshwater Management Units^; and~~

~~c. Whangamarino Wetland.~~

[60] Federated Farmers V1PC1-194

[61] *Future mechanisms for allocation based on land suitability will consider the following criteria:*
a) The biophysical properties of the land that determine productive potential and susceptibility to contaminant loss (e.g. slope, soil type, drainage class, and geology); and
b) the local climate regime that determines productive potential and the likelihood of water storage and runoff patterns (e.g. frost, rainfall and its seasonal distribution); and
c) The natural capacity of the landscape to attenuate contaminant loss; and
d) the Objective 1 water quality limits^ related to nitrogen, phosphorus, microbial pathogens and sediment for the surface waters that the land is hydrologically connected to; and
e) the desired values^ in those receiving waters (ecological and human health) and how they are influenced by the four contaminants.
The future weightings are to be determined.
For the avoidance of doubt, land suitability criteria exclude current land use and current water quality, the moderating effects of potential mitigations, and non-biophysical criteria (economic, social and cultural). Instead these factors will be of importance in analysing the implications of a completed land suitability classification.

[62] Ravensdown PC1-10119

[63] J Reeves & A Taylor PC1-8537

[64] Fonterra PC1-10489

[65] DoC PC1-10670

In addition to the priority sub-catchments listed in Table 3.11-2, the 75th percentile nitrogen leaching value dischargers in river and Whangamarino Wetland sub-catchments and 60th percentile in lake sub-catchments will also be prioritised for the development of Farm Environment Plans focussed on reducing diffuse discharge.[66]
[V1PC1-404]

Policy 9: Sub-catchment (including edge of field) mitigation planning, co-ordination and funding/Te Kaupapa Here 9: Te whakarite mahi whakangāwari, mahi ngātahi me te pūtea mō te riu kōawāwa (tae atu ki ngā taitapa)

Take a prioritised and integrated approach to sub-catchment water quality management by undertaking sub-catchment planning, and use this planning to support actions including edge of field mitigation measures. Support measures that efficiently and effectively contribute to water quality improvements. This approach includes:

a. Engaging early with tangata whenua and with landowners, communities and potential funding partners in sub-catchments in line with the priority areas listed in Table 3.11-2, the sub-catchments of lakes and the Whangamarino wetland; and
b. Assessing the reasons for current water quality and sources of contaminant discharge, at various scales in a sub-catchment; and
c. Encouraging cost-effective mitigation~~s~~ measures where they have the biggest effect on improving water quality; and
d. Allowing, where multiple farming enterprises contribute to ~~a~~ mitigation measures, for the resultant reduction in diffuse discharges to be apportioned to each enterprise in accordance with their respective contribution to the mitigation and their respective responsibility for the ongoing management of the mitigation provided that the reduction can be confidently secured for the duration of any resource consent~~;~~ and each enterprise continues to reduce contaminants from individual properties at the same time; and
e. Recognising the contribution of sub-catchments to whole of catchment water quality by ~~U~~using sub-catchment monitoring information to measure progress toward ~~the freshwater objectives~~ the achievement of water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 ~~across the whole of each FMU~~.

Policy 10: Provide for point source discharges of regional significance/Te Kaupapa Here 10: Te whakatau i ngā rukenga i ngā pū tuwha e noho tāpua ana ki te rohe

When deciding resource consent applications for point source discharges ~~of nitrogen, phosphorus, sediment and microbial pathogens~~ to water or onto or into land, provide for the values of the Freshwater Management Unit and the water quality targets in Table 3.11-1 when considering the:

a. Continued operation of regionally significant infrastructure; and
b. Continued operation of regionally significant industry.

[PC1-10676]

Policy 11: Application of Best Practicable Option ~~and mitigation or offset of effects~~ to point source discharges/Te Kaupapa Here 11: Te whakahāngai i te Kōwhiringa ka Tino Taea me ngā mahi whakangāwari pānga; te karo rānei i ngā pānga ki ngā rukenga i ngā pū tuwha

Require any person undertaking a point source discharge ~~of nitrogen, phosphorus, sediment or microbial pathogens~~ to water or onto or into land in the Waikato and Waipa River catchments to, as a minimum,[67] adopt the Best Practicable Option* to avoid or mitigate the adverse effects of the discharge~~, at the time a resource consent application is decided~~[68].

~~Where it is not practicable to avoid or mitigate all any[69] adverse effects, cannot be reasonably avoided, they should be mitigated, and where they cannot be reasonably mitigated, it is encouraged that[70] an offset measure may be proposed in an alternative location or locations to the point source discharge, for the purpose of ensuring positive effects on the environment to lessen any residual adverse effects of the discharge(s) that will or may result from allowing the activity provided that the:~~

~~a. Primary discharge does not result in any significant or[71] toxic adverse effect at the point source discharge location; and~~
~~b. Offset measure is for the same contaminant; and~~

[66] Fonterra PC1-10489 (consequential to option to add dairy farming)
[67] BT Mining PC1-9924
[68] Tangata Whenua – Waikato and Waipa River Iwi PC1-3349
[69] DoC PC1-10694
[70] DoC PC1-10694
[71] Fish & Game PC1-10887

~~c. Offset measure occurs preferably within the same sub-catchment in which the primary discharge occurs and if this is not practicable, then within the same Freshwater Management Unit^ or a Freshwater Management Unit^ located upstream, and~~

~~d. Offset measure remains in place for the duration of the consent and is secured by consent condition or another legally binding mechanism~~[72]

[PC1-10694]

Policy 12: ~~Additional considerations for~~ Considering point source discharges ~~in relation to water quality targets~~/Te Kaupapa Here 12: He take anō hei whakaaro ake mō ngā rukenga i ngā pū tuwha e pā ana ki ngā whāinga ā-kounga wai

When deciding a resource consent application, c~~C~~onsider[73] the contribution made by a point source discharge to the ~~nitrogen, phosphorus, sediment and microbial pathogen~~ catchment loads and the impact of that contribution on the ~~likely~~[74] achievement of the short term water quality targets ~~attribute states^ targets^~~ in Table 3.11-1~~Objective 3~~ or the progression towards the 80-year water quality targets ~~attribute states^ targets^~~ in ~~Objective 1~~Table 3.11-1[75], taking into account:

a. The relative proportion of contaminants ~~nitrogen, phosphorus, sediment or microbial pathogens~~ that the particular point source discharge contributes to the catchment load; and
b. Past ~~technology~~ upgrades undertaken to ~~model, monitor and~~[76] reduce the discharge of contaminants ~~nitrogen, phosphorus, sediment or microbial pathogens~~ within the previous consent term; and
c. ~~The ability~~Whether it is appropriate to stage future mitigation actions to allow investment costs to be spread over time ~~and~~ to[77] meet the water quality targets ~~attribute states^ targets^~~ specified above.~~; and~~

~~d. The diminishing return on investment in treatment plant upgrades in respect of any resultant reduction in nitrogen, phosphorus, sediment or **microbial pathogens** when treatment plant processes are already achieving a high level of contaminant reduction through the application of the Best Practicable Option*.~~[78]

[PC1-10738]

Policy 13: Point sources consent duration/Te Kaupapa Here 13: Te roa o te tukanga tono whakaaetanga mō te pū tuwha

When determining an appropriate duration for any point source discharge[79] consent granted consider the following matters:

a. ~~The appropriateness of a longer consent duration~~ ~~A consent term exceeding 25 years,~~ ~~where~~ Whether the applicant demonstrates that the discharge is consistent with achieving the values of the Freshwater Management Unit and water quality targets ~~attribute states~~ set out in Table 3.11-1 ~~the approaches set out in Policies 11 and 12 will be met~~[80]; and
b. The magnitude and significance of the investment made or proposed to be made in contaminant reduction measures and any resultant improvements in the receiving water quality; and
c. The need to provide appropriate certainty of investment where contaminant reduction measures are proposed (including investment in treatment plant upgrades or land based application technology); and
d. Any common catchment expiry date listed in Table XX and every 10 years thereafter. For consents granted wthin three years prior to the common catchment expiry date, the consent duration may be granted to align with the date 10 years after the common catchment expiry date. [PC1-10739]

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

Restore and protect lakes by 2096 through the implementation of a tailored lake-by-lake approach, guided by existing data and information and any existing Lake Catchment Plans as well as Lake Catchment Plans prepared over the next 10 years, which will include collecting and using data and information to support improving the management of land use[81] activities in the lakes Freshwater Management Units^.[PC1-10742]

[72] GBC Winstone PC1-2947
[73] Hamilton CC PC1-10843
[74] Tangata Whenua – Waikato and Waipa River Iwi PC1-3353
[75] Fonterra PC1-10609
[76] Hamilton CC PC1-10843
[77] Fish & Game PC1-10888
[78] Tangata Whenua – Waikato and Waipa River Iwi PC1-3353
[79] Mercury PC1-9577
[80] Forest & Bird PC1-8325
[81] Tangata Whenua – Waikato and Waipa River Iwi PC1-3404

Policy 15: Whangamarino Wetland/Te Kaupapa Here 15: Ngā Repo o Whangamarino

Restore and ~~P~~protect ~~and make progress towards restoration of~~ the Whangamarino Wetland through the reduction of both diffuse and point source discharges of contaminants entering the wetland system, to:

i. Achieve the water quality limits/targets for Whangamarino Wetland in Tables 3.11-1 and 3.11-4;
ii. Protect the significant values and ecosystem health of the wetland system;
iii. Avoid further loss of bog wetland habitat;
iv. Increase the availability of mahinga kai; and
v. Support implementation of the Lake Waikare and Whangamarino Wetland Catchment Plan;
vi. Recognise the hydrological drivers that affect water quality.

~~. by reducing the diffuse discharge of contaminants nitrogen, phosphorus, sediment and microbial pathogens in the sub-catchments that flow into the wetland to:~~

~~a. Reduce and minimise further loss of the bog ecosystem; and~~
~~b. Provide increasing availability of mahinga kai; and~~
c. ~~Support implementation of any catchment plan prepared in future by Waikato Regional Council that covers Whangamarino Wetland.~~

Policy 16: Flexibility for development of land returned under Te Tiriti o Waitangi settlements and multiple owned Māori land/Te Kaupapa Here 16: Te hangore o te tukanga mō te whakawhanaketanga o ngā whenua e whakahokia ai i raro i ngā whakataunga kokoraho o Te Tiriti o Waitangi me ngā whenua Māori kei raro i te mana whakahaere o te takitini

For the purposes of considering land use change applications under Rule 3.11.5.7, land use change that enables the development of tangata whenua ancestral lands shall be managed in a way that recognises and provides for:

a. The relationship of tangata whenua with their ancestral lands; and
b. The exercise of kaitiakitanga; and
c. The creation of positive economic, social and cultural benefits for tangata whenua now and into the future;
d. The water quality limits/targets specified through Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4.

~~Taking into account:~~

~~i. Best management practice actions for nitrogen, phosphorus, sediment and microbial pathogens for the proposed new type of land use; and~~
~~ii. The suitability of the land for development into the proposed new type of land use, reflecting the principles for future allocation as contained in Policy 7, including the risk of contaminant discharge from that land and the sensitivity of the receiving water body; and~~
~~iii. The short term water quality attribute states targets^[82] to be achieved in Objective 3.~~ [PC1-10745]

Policy 17: Considering the wider context of the Vision and Strategy/Te Kaupapa Here 17: Te whakaaro ake ki te horopaki whānui o Te Ture Whaimana

When applying policies and methods in Chapter 3.11, seek opportunities to advance those matters in the Vision and Strategy and the values^ for the Waikato and Waipa Rivers that fall outside the scope of Chapter 3.11, ~~but could be considered secondary benefits of methods carried out under this Chapter~~, including, but not limited to:

a. Opportunities to enhance biodiversity, wetland values^ and the functioning of ecosystems; and
b. Opportunities to enhance access and recreational values^ associated with the rivers.

Policy 18: Protection of indigenous fish habitat

To contribute toward achieving ecosystem health, ensure the protection of spawning habitats of īnanga and other large-bodied galaxiids from the adverse effects of land use activities and stock access. [PC1-10639]

[82] Fonterra PC1-10451

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3.11.4 Implementation methods/Ngā tikanga whakatinana

3.11.4.1 Working with others/Te mahi tahi me ētehi atu

Waikato Regional Council will work with stakeholders including Waikato River iwi partners, Waikato River Authority, Waikato River Restoration Strategy partners, Department of Conservation, territorial authorities, industry and sector bodies, to implement Chapter 3.11 including all the following methods in 3.11.4. This will include coordinating priorities, funding and physical works, promoting awareness and providing education, to assist in giving effect to the *Vision and Strategy for the Waikato River/Te Ture Whaimana o Te Awa o Waikato* for the Waikato and Waipa Rivers.

3.11.4.2 Certified Industry Scheme/Te kaupapa ā-ahumahi kua whai tohu

Waikato Regional Council will develop an industry certification process for industry bodies as per the standards outlined in Schedule 2. The **Certified Industry Scheme** will include formal agreements between parties. Agreements will include:

a. Provision for management of the **Certified Industry Schemes**;
b. Oversight, and monitoring of **Farm Environment Plans**;
c. Information sharing;
d. Aggregate reporting on **Certified Industry Scheme** implementation; and
e. Consistency across the various **Certified Industry Schemes**

~~3.11.4.3 Farm Environment Plan/Ngā Mahere Taiao ā Pāmu~~

~~Waikato Regional Council will prepare parameters and minimum requirements for the development of a certification process for professionals to develop, certify and monitor **Farm Environment Plans** in a consistent approach across the region. A **Farm Environment Plan** will be prepared by a certified person as per the requirements outlined in Schedule 1, and will assess the risk of **diffuse discharges** of nitrogen, phosphorus, sediment and **microbial pathogens** and specify actions to reduce those risks in order to bring about reductions in the discharges of those contaminants. Waikato Regional Council will develop guidance for risk assessments, auditing and compiling **Farm Environment Plans**.~~

~~Waikato Regional Council will take a risk based approach to monitoring **Farm Environment Plans**, starting with more frequent monitoring and then moving to monitoring based on risk assessment. Robust third party audit (independent of the farmer and **Certified Farm Environment Planner**) and monitoring will be required.~~

3.11.4.4 Lakes and Whangamarino Wetland/Ngā Roto me ngā Repo o Wangamarino

Waikato Regional Council, working with others, will:

a. As a priority, b~~B~~uild on the Shallow Lakes Management Plan and existing information, data and Lake Catchment Plans by developing Lake Catchment Plans and investigat~~e~~ing lake-specific options to ~~improve~~ achieve water quality limits/targets in Tables 3.11-1, 3.11-1a and 3.11-4 and ecosystem health, and manage pest species. In many instances, this may require an adaptive management approach.
b. Prepare and implement Lake Catchment Plans, where catchment plans to do not already exist, with community involvement which include:
    i. A vision for the lake developed in consultation with the community.
    ii. Description of the desired state of lake and recognition of the challenges (e.g. costs) and opportunities (e.g. benefits) in achieving it.
    iii. An evidence-based description of the problem (i.e. what is the gap between the current state and desired state) that recognises the presence of multiple stressors and uncertainty in responses and time frames.
    iv. Community engagement in defining actions that will move the lake towards its desired state.
    v. Responsibility for achieving the agreed actions and expected timeframes, developed in consultation with those who will be undertaking the work.
    vi. A monitoring regime that will provide evidence of the implementation of the defined actions and any changes in the state of the lake.
c. As a priority, ~~undertake the development and~~ implement~~ation of~~ the Lake Waikare and Whangamarino Wetland Catchment Management Plan ~~using the process set out in b).~~
d. Work towards managing the presence of pest weeds and fish in the shallow lakes and connected lowland rivers area, including Whangamarino Wetland.
e. Support research and testing of restoration tools and options to maintain and enhance the health of shallow lakes and Whangamarino Wetland (e.g. lake modelling, lake bed sediment treatments, constructed wetlands, floating wetlands, silt traps, pest fish management, and farm system management tools).

f. Support lake and Whangamarino Wetland restoration programmes including, but not limited to, advice, funding, and project management. Restoration programmes may have a wider scope than water quality, including hydrological restoration, revegetation and biodiversity restoration.
~~g. Develop a set of 10-year water quality attribute^ targets^ for each lake Freshwater Management Unit^.~~
h. Evaluate options and implement a programme to reduce the impact of altered hydrological regimes on the water quality of wetland systems.
i. Undertake a review of all resource consents that relate to the Lower Waikato Flood Control Scheme by 2021.

3.11.4.4a Benchmarking of wetland current state

Waikato Regional Council, working with others, will undertake the benchmarking of wetland soil nutrients, surface water quality, sub-catchment sediment and nutrient inputs and wetland vegetation for all natural wetlands across the Waikato and Waipā River catchments by 2023.

3.11.4.5 Sub-catchment scale planning/Te whakamāherehere mō to whānuitanga o ngā riu kōawaawa

Waikato Regional Council will work with others to develop **sub-catchment** scale plans (where a catchment plan does not already exist) where it has been shown to be required. **Sub-catchment** scale planning will:

a. Identify the causes of current water quality decline, identify cost-effective measures to bring about reductions in contaminant discharges, and coordinate the reductions required at a **property**, **enterprise** and **sub-catchment** scale (including recommendations for funding where there is a public benefit identified).
b. Align works and services to reduce ~~nitrogen, phosphorus, sediment and **microbial pathogen**~~ discharges including riparian management, targeted reforestation, constructed wetlands, sediment traps and sediment detention bunds.
c. Assess and determine effective and efficient placement of constructed wetlands at a **sub-catchment** scale to improve water quality.
d. Support research that addresses the management of wetlands, including development of techniques to monitor ecological change and forecasting evolution of wetland characteristics resulting from existing land use in the wetland catchments.
e. Integrate the regulatory requirements to fence waterways with the requirements for effective drainage scheme management.
f. Coordinate funding of mitigation work by those contributing to water quality degradation, in proportion to that contribution.
g. Utilise public funds to support **edge of field mitigations** where those mitigations provide significant public benefit.

3.11.4.6 Funding and implementation/Te pūtea me te whakatinanatanga

Waikato Regional Council will:

a. Provide staff resources and leadership within the organisation for the implementation of Chapter 3.11.
b. Seek to secure funding for the implementation of Chapter 3.11 through the annual plan and long term plan processes.

3.11.4.7 Information needs to support any future allocation/Ngā pārongo e hiahiatia ana hei taunaki i ngā tohanga o anamata

Gather information and commission appropriate scientific research to inform any future framework for the allocation of diffuse discharges including:

a. Collection of information and undertaking research on current discharges, developing appropriate modelling tools to estimate contaminant discharges, and researching the spatial variability of land use and contaminant losses and the effect of contaminant discharges in different parts of the catchment that will assist in defining 'land suitability'.
b. Implementing processes that will support the setting of property or enterprise-level diffuse discharge limits in the future.
c. Researching:
    i. The quantum of contaminants that can be discharged at a sub-catchment and Freshwater Management Unit^ scale while meeting the Table 3.11-1 water quality attribute^ targets^.
    ii. Methods to categorise and define 'land suitability'.
    iii. Tools for measuring or modelling discharges from individual properties, enterprises and sub-catchments, and how this can be related to the Table 3.11-1 water quality attribute^ targets^.
d. Applying the following principles to any future allocation regime:
e. Land with the same qualities and characteristics should receive the same allocation;
f. Flexibility of land use is maintained;

g. The allocation regime should be robust, technically feasible and simple to operate while being informed by sound science and reliable modelling information;
h. The natural capitals of soils are a primary consideration;
i. Improvement of water quality remains a primary objective of the allocation;
j. Clear regulation, monitoring and auditing of discharges within an allocation regime is critical; and
~~k. Land suitability[83] which reflects the biophysical and climate properties, the risk of contaminant discharges from that land, and the sensitivity of the receiving water body, as a starting point (i.e. where the effect on the land and receiving waters will be the same, like land is treated the same for the purposes of allocation); and~~
~~l. Allowance for flexibility of development of tangata whenua ancestral land; and~~
~~m. Minimise social disruption and costs in the transition to the 'land suitability' approach; and~~
n. Future allocation decisions should take advantage of new data and knowledge, where appropriate.

3.11.4.x Initiate allocation of diffuse discharges

The Waikato Regional Council will initiate a framework for the allocation of diffuse discharges including reductions in nitrogen load according to specified timeframes for reductions by sub-catchment. The Waikato Regional Council will:
a. Use science-based limits for the total allowable load of a contaminant for subcatchment which will meet the water quality objectives of the plan;
b. Implement contaminant leaching rates for diffuse discharges from properties and enterprises by allocating to limits, targets and timeframes;
c. Quantify nitrogen load reductions based on over-allocation of nitrogen beyond the science-based limit for sub-catchments; and
d. Define timeframes for sub-catchment nitrogen load reductions to be made. [Fish and Game relief PC1-11007]

3.11.4.8 Reviewing Chapter 3.11 and developing an allocation framework for the next Regional Plan/Te arotake i te Upoko 3.11, te whakarite hoki i tētehi anga toha mō te Mahere ā-Rohe e whai ake ana

Waikato Regional Council will:
a. Develop discharge allocation frameworks for individual **properties** and **enterprises** based on information collected under Method 3.11.4.7, taking into account the best available data, knowledge and technology at the time; and
b. Use this to inform future changes to the Waikato Regional Plan to manage discharges of ~~–~~ contaminants ~~– nitrogen, phosphorus, sediment and **microbial pathogens**~~ at a **property** or **enterprise**-level to meet the targets^ in the Objectives.

3.11.4.9 Managing the effects of uban development/Te whakahaere i ngā pānga o te whanaketanga ā-tāone

Waikato Regional Council will:
a. Continue to work with territorial authorities to implement the Waikato Regional Policy Statement set of principles that guide future development of the built environment which anticipates and addresses cumulative effects over the long term.
b. When undertaking sub-catchment scale planning under Method 3.11.4.5 in urban sub-catchments engage with urban communities to raise awareness of water quality issues, and to identify and implement effective solutions for the urban context.

3.11.4.10 Accounting system and monitoring/Te pūnaha kaute me te aroturuki

Waikato Regional Council will establish and operate a publicly available accounting system and monitoring in each Freshwater Management Unit^, including:

[83] *Future mechanisms for allocation based on land suitability will consider the following criteria:*
a) The biophysical properties of the land that determine productive potential and susceptibility to contaminant loss (e.g. slope, soil type, drainage class, and geology); and
b) the local climate regime that determines productive potential and the likelihood of water storage and runoff patterns (e.g. frost, rainfall and its seasonal distribution); and
c) The natural capacity of the landscape to attenuate contaminant loss; and
d) the Objective 1 water quality limits^ related to nitrogen, phosphorus, microbial pathogens and sediment for the surface waters that the land is hydrologically connected to; and
e) the desired values^ in those receiving waters (ecological and human health) and how they are influenced by the four contaminants.
The future weightings are to be determined.
For the avoidance of doubt, land suitability criteria exclude current land use and current water quality, the moderating effects of potential mitigations, and non-biophysical criteria (economic, social and cultural). Instead these factors will be of importance in analysing the implications of a completed land suitability classification.

a. Collecting information on nitrogen, phosphorus, sediment and **microbial pathogen** levels in the respective fresh water bodies in each Freshwater Management Unit^ from:
   i. Council's existing river monitoring network; and
   ii. **Sub-catchments** that are currently unrepresented in the existing monitoring network; and
   iii. Lake Freshwater Management Units^.
b. Collecting water quality information in an integrated manner, within freshwater bodies and the Waikato River delta and estuary
c. Collecting the following information in relation to wetlands:
   i. Wetland and wetland buffer extents;
   ii. Sediment and nutrient levels in wetlands;
   iii. Wetland vegetation types and extents (as an indicator of ecosystem health)
d. Collecting information on freshwater fish species the macroinvertebrate community index (as indicators of ecosystem health)
e. Using the information collected to establish the baseline data for compiling a monitoring plan and to assess progress towards achieving the Table 11-1 water quality attribute^ targets^; and
f. Using state of the environment monitoring data including biological monitoring tools such as the Macroinvertebrate Community Index to provide the basis for identifying and reporting on long-term trends; and
g. An information and accounting system for the **diffuse discharges** from **properties** and **enterprises** that supports the management of nitrogen, phosphorus, sediment and **microbial pathogens diffuse discharges** at an **enterprise** or **property** scale.

3.11.4.11 Monitoring and evaluation of the implementation of Chapter 3.11/Te aroturuki me te arotake i te whakatinanatanga o te Upoko 3.11

Waikato Regional Council will, on a 3-yearly basis:
a. Utilise information gathered through method 3.11.4.11 to r~~R~~eview and report on the progress towards and achievement of the 80-year water quality objectives of Chapter 3.11.
b. Research and identify methods to measure actions at a **sub-catchment, property** and **enterprise** level, and their contribution to reductions in the discharge of contaminants.
c. Monitor the achievement of the values^ for the Waikato and Waipa Rivers and the uses made of those rivers.
d. Collate data on the number of land use resource consents issued under the rules of this chapter, the number of **Farm Environment Plans** completed, compliance with the actions listed in **Farm Environment Plans**, **Nitrogen Reference Points** for **properties** and **enterprises**, and nitrogen discharge data reported under **Farm Environment Plans**.
e. Work with industry to collate information on the functioning and success of any **Certified Industry Scheme**.

3.11.4.12 Support research and dissemination of best practice guidelines to reduce diffuse discharges/Te taunaki i te rangahautanga me te tuaritanga o ngā aratohu mō ngā mahi tino whai take hei whakaiti i ngā rukenga roha

Waikato Regional Council will:
a. Develop and disseminate **best management practice** guidelines for reducing the **diffuse discharges** of nitrogen, phosphorus, sediment and **microbial pathogens**; and
b. Support research into methods for reducing **diffuse discharges** of contaminants to water.

3.11.5 Rules/Ngā Ture

~~**3.11.5.1 Permitted Activity Rule – Small and Low Intensity farming activities/Te Ture mō ngā Mahi e Whakaaetia ana – Ngā mahi iti, ngā mahi pāiti hoki i runga pāmu**~~

~~**Rule 3.11.5.1 Permitted Activity Rule – Small and Low Intensity farming activities**~~

~~The use of land for farming activities (excluding commercial vegetable production) and the associated diffuse discharge of nitrogen, phosphorus, sediment and microbial pathogens onto or into land in circumstances which may result in those contaminants entering water is a permitted activity subject to the following conditions:~~

~~1. The property is registered with the Waikato Regional Council in conformance with Schedule A; and~~
~~2. Cattle, horses, deer and pigs are excluded from water bodies in conformance with Schedule C; and~~

~~Either:~~
~~3. The property area is less than or equal to 4.1 hectares; and~~
~~4. The farming activities do not form part of an enterprise being undertaken on more than one property; or~~

~~The property area Where the property area is greater than 4.1 hectares:~~
~~5. For grazed land, the stocking rate of the land is less than 6 stock units per hectare; and~~
~~6. No arable cropping occurs.; and~~
~~7. The farming activities do not form part of an enterprise being undertaken on more than one property.~~[84,85]

3.11.5.1A Interim Permitted Activity Rule – Farming

Rule 3.11.5.1A – Interim Permitted Activity Rule – Farming

The use of land for farming and the associated diffuse discharge of contaminants onto or into land in circumstances which may result in those contaminants entering water that would otherwise contravene section 15(1) of the RMA, which is not a permitted activity under Rule 3.11.5.2, is a permitted activity until:

1. ~~The later of~~ 1 September 2021 ~~or 6 months after this Plan becomes operative~~, for properties in Priority 1 sub-catchments listed in Table 3.11-2, and all properties in river and Whangamarino Wetland sub-catchments with a Nitrogen Reference Point greater than the 75th percentile nitrogen leaching value or lake sub-catchments with a Nitrogen Reference Point greater than the 60th percentile nitrogen leaching value; and
2. The later of 1 March 2025 or 1 year after this Plan becomes operative for properties in Priority 2 sub-catchments listed in Table 3.11-2;[86] and
3. 1 January 2026 for properties in Priority 3 sub-catchments listed in Table 3.11-2;

subject to the following conditions:

1. The property is registered with the Council in conformance with Schedule A; and
2. Cattle, horses, deer and pigs are excluded from water bodies in conformance with Schedule C; and
3. No commercial vegetable production occurs; and
4. A Nitrogen Reference Point is produced for the property in conformance with Schedule B; and
5. Full electronic access to Overseer or any other software or system that models or records diffuse contaminant losses for the farming land use authorised by this rule is granted to the Council; ~~and~~[87]

6. There has been less than a cumulative net total of 4.1 hectares of change in the use of land from that which was occurring at 22 October 2016 within a property ~~or enterprise~~ from:
   1. Woody vegetation to farming activities; or
   2. Any farming activity other than dairy farming to dairy farming; or
   3. Any farming activity to Commerical Vegetable Production[88]~~; and~~
7. The discharge of any contaminant is managed to ensure that after reasonable mixing, either by itself or in combination with the same similar or other contaminants, it does not give rise to any of the following effects on receiving waters:
   (a) the production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials:
   (b) any conspicuous change in the colour or visual clarity:

[84] Fonterra V1PC1-757, Waipa DC PC1-3249, Waitomo DC PC1-10312
[85] H Oatway PC1-6524
[86] Beef + Lamb V1PC1-1719, J Craig PC1-9675, Drummon Dairy Holdings Ltd PC1-5652, K and A Reese PC1-7784
[87] WRC V1PC1-218
[88] Fonterra V1PC1-757, Waipa DC PC1-3249, Waitomo DC PC1-10312

(c) any emission of objectionable odour:
(d) the rendering of fresh water unsuitable for consumption by farm animals:
(e) any significant adverse effects on aquatic life. [PC1-11054]

3.11.5.2 Permitted Activity Rule – ~~Other~~ Low intensity farming ~~activities~~/Te Ture mō ngā Mahi e Whakaaetia ana – Ētehi atu mahi i runga pāmu

Rule 3.11.5.2 - Permitted Activity Rule – ~~Other~~ Low intensity farming ~~activities~~

The use of land for farming ~~activities (excluding commercial vegetable production)~~ and the associated diffuse discharge of contaminants ~~nitrogen, phosphorus, sediment and microbial pathogens~~ onto or into land in circumstances which may result in those contaminants entering water and the associated diffuse that would otherwise contravene section 15(1) of the RMA ~~where the property area is greater than 4.1 hectares, and has more than 6 stock units per hectare or is used for arable cropping,~~[89] is a permitted activity subject to the following conditions:

A. For all properties:
   1. The property is registered with the Waikato Regional Council in conformance with Schedule A; and
   2. Cattle, horses, deer and pigs are excluded from water bodies in conformance with Schedule C ~~and Conditions 3(e) and 4(e) of this Rule~~; and
   2A. The farming activities do not form part of an enterprise; and
   2B. No commercial vegetable production occurs; and
   2C. No dairy farming or grazing of dairy cattle occurs; and
   2D. No feedlots or sacrifice paddocks are used on the property; and
   2E. No more than 5% of the land used for farming is used for cropping, including winter forage crops; and[90]
   2F The discharge of any contaminant is managed to ensure that after reasonable mixing, either by itself or in combination with the same similar or other contaminants, it does not give rise to any of the following effects on receiving waters:
      (a) the production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials:
      (b) any conspicuous change in the colour or visual clarity:
      (c) any emission of objectionable odour:
      (d) the rendering of fresh water unsuitable for consumption by farm animals:
      (e) any significant adverse effects on aquatic life [PC1-11054]

B~~3~~. ~~Where t~~The property area is less than or equal to 20 hectares; or~~:~~
   ~~a. The farming activities do not form part of an enterprise being undertaken on more than one property; and~~
   ~~b. Where the land is:~~
      ~~i. used for grazing livestock, the stocking rate of the land is no greater than the stocking rate of the land at 22 October 2016; or~~
      ~~ii. not used for grazing livestock, the land use has the same or lower diffuse discharges of nitrogen, phosphorus, sediment or microbial pathogens as the land use at 22 October 2016; and~~
   ~~c. Upon request, the landowner shall obtain and provide to the Council independent verification from a Certified Farm Environment Planner that the use of land is compliant with either (b)(i) or (b)(ii) above; and~~
   ~~d. Upon request from the Council, a description of the current land use activities shall be provided to the Council; and~~
   ~~e. Where the property or enterprise contains any of the water bodies listed in Schedule C, new fences installed after 22 October 2016 must be located to ensure cattle, horses, deer and pigs cannot be within three metres of the bed of the water body (excluding constructed wetlands and drains).~~[91]

C~~4~~. ~~Where t~~The property ~~or enterprise~~ area is greater than 20 hectares, and either:
   1. The stocking rate of the land is less than 6 stock units per hectare; or
   2. The only farming activity occurring on the property is the raising, training or housing of horses; or[92]
   3. The stocking rate of the land is greater than 6 stock units but less than 10 stock units per hectare; and[93]
      a. A Nitrogen Reference Point is produced for the property ~~or enterprise~~ in conformance with Schedule B; and
      ~~b. The diffuse discharge of nitrogen from the property or enterprise does not exceed either:~~
         ~~i. the Nitrogen Reference Point; or~~
         ~~ii. 15kg nitrogen/hectare/year;~~

[89] Fonterra V1PC1-757, Waipa DC PC1-3249, Waitomo DC PC1-10312
[90] J Alcock and J Easton PC1-9217, L Ashton PC1-7032, G Gleeson PC1-6410
[91] P Hurley PC1-1088, Federated Farmers V1PC1-338
[92] G Kilgour PC1-1906, R Cave PC1-3900
[93] P Keeling PC1-5497, Fonterra V1PC1-765

~~whichever is the lesser, over the whole property or enterprise when assessed in accordance with Schedule B; and~~[94]

c No part of the property ~~or enterprise~~ over 15 degrees slope is cultivated; and ~~or~~

c1. No part of the property over XX degrees of slope is[95] grazed; and

d. No winter forage crops are grazed in situ; and

~~e. Where the property or enterprise contains any of the water bodies listed in Schedule C:~~

~~i. There shall be no cultivation within 5 metres of the bed of the water body; and~~

~~ii. New fences installed after 22 October 2016 must be located to ensure cattle, horses, deer and pigs cannot be within three metres of the bed of the water body (excluding constructed wetlands and drains); and~~[96]

f~~5~~. ~~For all properties greater than 4.1 hectares, f~~From ~~31 March 2019~~ 30 November 2020~~, in addition to the requirements of Schedule A,~~ the following information is ~~must be~~ provided to the Waikato Regional Council by 1 September each year:

a. The monthly average ~~Annual~~ stock numbers of each stock class from 1 July to 30 June in the following year; and

b. Tonnes and type of ~~Annual~~ fertiliser applied from 1 July to 30 June in the following year ~~use~~; and

c. Tonnes of and type of ~~Annual brought in~~ animal feed brought onto the property in the previous 12 months~~.~~; and[97]

g. Full electronic access to Overseer or any other software or system that models or records diffuse contaminant losses for the farming land use authorised by this rule is granted to the Council; and[98]

h. Upon request, the landowner shall obtain and provide to the Council independent verification from a Certified Farm Environment Planner that the use of land is compliant with the conditions of this Rule within 20 working days of the request (unless otherwise agreed in writing by Council).[99]

[94] Fonterra V1PC1-765, Balle Bros Group PC1-11423, Hill Country Farmers Group PC1-7845
[95] Hill Country Farmers PC1-7845
[96] G Holmes PC1-4693, Huirimu Farms Ltd PC1-5908, A McGovern PC1-8319
[97] Consequential to Ballance PC1-6570, FANZ PC1-10642
[98] WRC V1PC1-218
[99] Shifted from within the rule ((3)(c)).

OPTION

3.11.5.2A Controlled Activity Rule – Medium intensity farming/

Rule 3.11.5.2A - Controlled Activity Rule – Medium intensity farming

The use of land for farming, which is not a permitted activity under Rules 3.11.5.1A to 3.11.5.2, is a controlled activity subject to the following conditions:

1. The property is registered with the Council in conformance with Schedule A; and
2. A Nitrogen Reference Point is produced for the property in conformance with Schedule B; and
3. Cattle, horses, deer and pigs are excluded from water bodies in conformance with Schedule C; and
4. The farming activities do not form part of an enterprise; and
5. No commercial vegetable production occurs; and
6. Full electronic access to Overseer or any other software or system that models or records diffuse contaminant losses for the farming land use authorised by this rule is granted to the Council; and
7. A Farm Environment Plan has been prepared in conformance with Schedule 1 and has been approved by a Certified Farm Environment Planner, and is provided to the Council at the time the resource consent application is lodged; and
8. Either:
    a. The Nitrogen Reference Point is not exceeded; or
    b. The stocking rate of the land is no greater than 18 stock units per hectare and has not increased above the stocking rate during the Reference Period in Schedule B; and
6. There has been less than a cumulative net total of 4.1 hectares of change in the use of land from that which was occurring at 22 October 2016 within a property or enterprise from:
    1. Woody vegetation to farming activities; or
    2. Any farming activity other than dairy farming to dairy farming; or
    3. Any farming activity to Commerical Vegetable Production

Waikato Regional Council reserves control over the following matters:

i. The content, compliance with and auditing of the Farm Environment Plan.
ii. The actions and timeframes to achieve Good Farming Practices or better in order to reduce the diffuse discharge of contaminants nitrogen, phosphorus, sediment or microbial pathogens to water or to land where they may enter water.
iii. For enterprises, the procedures and limitations, including Nitrogen Reference Points, to be applied to land that enters or leaves the enterprise.
iv. Where the Nitrogen Reference Point exceeds the 75th percentile nitrogen leaching value, actions, timeframes and other measures to ensure the diffuse discharge of nitrogen is reduced so that it does not exceed the 75th percentile nitrogen leaching value by 1 July 2026.
v. The term of the resource consent.
vi. The timeframe and circumstances under which the consent conditions may be reviewed.
vii. Procedures for reviewing, amending and re-approving the Farm Environment Plan.

OPTION

3.11.5.3 Permitted Restricted Discretionary Activity Rule – Farming activities with a Farm Environment Plan under a Certified Industry Sector Scheme/Te Ture mō ngā Mahi e Whakaaetia ana – Ngā mahi i runga pāmu kua whai Mahere Taiao ā-Pāmu i raro i te Kaupapa ā-Ahumahi kua Whai Tohu

Rule 3.11.5.3 Permitted Restricted Discretionary Activity Rule – Farming activities with a Farm Environment Plan under a Certified Industry Sector Scheme

Except as provided for in Rule 3.11.5.1 and Rule 3.11.5.2 tThe use of land for farming activities (excluding commercial vegetable production) where the land use is registered to a Certified Industry Sector Scheme, and the associated diffuse discharge of nitrogen, phosphorus, sediment and microbial pathogens onto or into land in circumstances which may result in those contaminants entering water is a permitted restricted discretionary activity subject to the following conditions:

1. The property is registered with the Waikato Regional Council in conformance with Schedule A; and
2. A Nitrogen Reference Point is produced for the property or enterprise in conformance with Schedule B; and
3. Cattle, horses, deer and pigs are excluded from water bodies in conformance with Schedule C; and
4. The Certified Industry Sector Scheme meets the criteria set out in Schedule 2 and has been approved by the Chief Executive Officer of the Waikato Regional Council as meeting the standards set out in Schedule 2; and
5. A Farm Environment Plan which has been prepared in accordance with Schedule 1 and has been approved by a Certified Farm Environment Planner, and is provided to the Waikato Regional Council at the time the resource consent application is lodged; and as follows:
   a. By 1 July 2020 1 March 2022 for properties or enterprises within Priority 1 sub-catchments listed in Table 3.11-2, and all properties or enterprises with a Nitrogen Reference Point greater than the 75th percentile nitrogen leaching value;
   b. By 1 July 2023 1 March 2025 for properties or enterprises within Priority 2 sub-catchments listed in Table 3.11-2;
   c. By 1 July 2026 for properties or enterprises within Priority 3 sub-catchments listed in Table 3.11-2; and

5a. Full electronic access to Overseer or any other software or system that records farm data and models or records diffuse contaminant losses for the farming land use authorised by this rule is granted to the Waikato Regional Council; and

5b. There have been less than a cumulative net total of 4.1 hectares of change in the use of land from that which was occurring at 22 October 2016 within a property or enterprise from:
   1. Woody vegetation to farming activities; or
   2. Any farming activity other than dairy farming to dairy farming; or
   3. Any farming activity to Commerical Vegetable Production

6. The use of land shall be undertaken in accordance with the actions and timeframes specified in the Farm Environment Plan; and
7. The Farm Environment Plan provided under Condition 5 may be amended in accordance with the procedure set out in Schedule 1 and the use of land shall thereafter be undertaken in accordance with the amended plan; and
8. A copy of the Farm Environment Plan amended in accordance with condition (7) shall be provided to the Waikato Regional Council within 30 working days of the date of its amendment.

Waikato Regional Council restricts its discretion to the following matters:

i. The content, compliance with and auditing of the Farm Environment Plan.
ii. The actions and timeframes to achieve Good Farming Practices or better in order to reduce the diffuse discharge of nitrogen, phosphorus, sediment or microbial pathogens to water or to land where they may enter water.
iii. The effects, including cumulatively, of diffuse discharge of nitrogen, phosphorus, sediment and microbial pathogens, particularly where the activity may lead to an increase in the discharge of one or more contaminants.
iv. For enterprises, the procedures and limitations, including Nitrogen Reference Points, to be applied to land that enters or leaves the enterprise.
v. Where the Nitrogen Reference Point exceeds the 75th percentile nitrogen leaching value, actions, timeframes and other measures to ensure the diffuse discharge of nitrogen is reduced so that it does not exceed the 75th percentile nitrogen leaching value by 1 July 2026.
vi. The term of the resource consent.
vii. The timeframe and circumstances under which the consent conditions may be reviewed.
viii. Procedures for reviewing, amending and re-approving the Farm Environment Plan.

3.11.5.4 ~~Controlled~~ Restricted Discretionary Activity Rule – Farming activities with a Farm Environment Plan ~~not under a Certified Industry Scheme~~/Te Ture mō ngā Mahi ka āta Whakahaerehia – Ngā mahi i runga pāmu kua whai Mahere Taiao ā-Pāmu kāore i raro i te Kaupapa ā-Ahumahi kua Whai Tohu

Rule 3.11.5.4 – ~~Controlled~~ Restricted Discretionary Activity Rule – Farming ~~activities~~ with a Farm Environment Plan ~~not under a Certified Industry Scheme~~

~~Except as provided for in Rule 3.11.5.1 and Rule 3.11.5.2 t~~The use of land for farming ~~activities (excluding commercial vegetable production) where that land use is not registered to a Certified Industry Scheme,~~ and the associated diffuse discharge of contaminants onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene section 15(1) of the RMA ~~nitrogen, phosphorus, sediment and microbial pathogens onto or into land in circumstances which may result in those contaminants entering water~~, which is not a permitted activity under Rules 3.11.5.1A to 3.11.5.2, is a Restricted Discretionary ~~permitted~~[100] activity ~~until:~~

~~1. 1 January 2020 1 September 2021 for properties or enterprises in Priority 1 sub-catchments listed in Table 3.11-2~~
~~2. 1 January 2023 1 September 2024 for properties or enterprises in Priority 2 sub-catchments listed in Table 3.11-2;~~
~~3. 1 January 2026 for properties or enterprises in Priority 3 sub-catchments listed in Table 3.11-2;~~[101]

subject to the following conditions:

1. The property is registered with the Waikato Regional Council in conformance with Schedule A; and
2. A Nitrogen Reference Point is produced for the property or enterprise in conformance with Schedule B; and
3. No commercial vegetable production occurs; and
4. A Farm Environment Plan has been prepared in conformance with Schedule 1 and has been approved by a Certified Farm Environment Planner, or prepared under a Certified Sector Scheme, and is provided to the Council at the time the resource consent application is lodged; and[102]
5. Cattle, horses, deer, sheep, goats and pigs are excluded from water bodies in accordance with Schedule C; and[103]
6. Full electronic access to Overseer or any other software or system that models or records diffuse contaminant losses for the farming land use authorised by this rule is granted to the Waikato Regional Council; and[104]
7. There have been less than a cumulative net total of 4.1 hectares of change in the use of land from that which was occurring at 22 October 2016 within a property or enterprise from:
    1. Woody vegetation to farming activities; or
    2. Any farming activity other than dairy farming to dairy farming; or
    3. Any farming activity to Commerical Vegetable Production[105]

~~After the dates set out in 1), 2) and 3) above the use of land shall be a controlled activity (requiring resource consent), subject to the following standards and terms:~~

~~a. A Farm Environment Plan has been prepared in conformance with Schedule 1 and has been approved by a Certified Farm Environment Planner, and is provided to the Waikato Regional Council at the time the resource consent application is lodged by the dates specified in I-III below; and~~
~~b. The property is registered with the Waikato Regional Council in conformance with Schedule A; and~~
~~c. A Nitrogen Reference Point is produced for the property or enterprise in conformance with Schedule B and is provided to the Waikato Regional Council at the time the resource consent application is lodged; and~~
~~d. Cattle, horses, deer and pigs are excluded from water bodies in conformance with Schedule C.~~

Waikato Regional Council restricts its discretion to the following matters: ~~Matters of Control~~
~~Waikato Regional Council reserves control over the following matters:~~

i. The content, compliance with and auditing of the Farm Environment Plan.
ii. The actions and timeframes to achieve Good Farming Practices or better in order to ~~for undertaking mitigation actions that maintain or~~ reduce the diffuse discharge of contaminants ~~nitrogen, phosphorus, sediment or microbial pathogens~~ to water or to land where they may enter water.
iia. The effects, including cumulative~~ly~~ effects, of diffuse discharge of contaminants ~~nitrogen, phosphorus, sediment and microbial pathogens, particularly where the activity may lead to an increase in the discharge of one or more contaminants.~~

[100] H G and S J Brooks PC1-86, Denzie, B PC1-3617
[101] Fonterra V1PC1-757, Waipa DC PC1-3249, Waitomo DC PC1-10312
[102] Previously part of rule (condition a) with addition of Certified Sector Schemes.
[103] Previously part of rule (condition d)
[104] WRC V1PC1-218
[105] Fonterra PC1-10644

iib. For enterprises, the procedures and limitations, including Nitrogen Reference Points, to be applied to land that enters or leaves the enterprise.

~~iii. The actions, timeframes and other measures to ensure that the diffuse discharge of nitrogen from the property or enterprise, as measured by the five year rolling average annual nitrogen loss as determined by the use of the current version of OVERSEER®, does not increase beyond the property or enterprise's Nitrogen Reference Point, unless other suitable mitigations are specified.~~

iv. Where the Nitrogen Reference Point exceeds the 75th percentile nitrogen leaching value for river and Whangamarino Wetland sub-catchments or 60th percentile nitrogen leaching value for lake sub-catchments, actions, timeframes and other measures to ensure the diffuse discharge of nitrogen is reduced so that it does not exceed the ~~75th~~ relevant percentile nitrogen leaching value by 1 July 2026.

v. The term of the resource consent.

vi. The monitoring, record keeping, reporting and information provision requirements for the holder of the resource consent to demonstrate and/or monitor compliance with the Farm Environment Plan.

vii. The timeframe and circumstances under which the consent conditions may be reviewed ~~or the Farm Environment Plan shall be amended~~.

viii. Procedures for reviewing, amending and re-approving the Farm Environment Plan.

ix. Information to be provided to show that the property is being managed in a way that would not cause an increase in loss of contaminants, which may include annual Overseer modelling for the property or enterprise, or information on matters such as stocking rate, fertiliser application, imported feed and cropping

~~**Dates:**~~

~~I. For Priority 1 sub-catchments, and properties with a Nitrogen Reference Point of greater than 75th percentile nitrogen leaching value, by 1 July 2020~~

~~II. For Priority 2 sub-catchments, by 1 July 2023~~

~~III. For Priority 3 sub-catchments, by 1 July 2026~~

~~**Notification:**~~

~~Consent applications will be considered without notification, and without the need to obtain written approval of affected persons.~~[106]

[V1PC1-420]

Rule 3.11.5.5 - ~~Controlled~~ Restricted Discretionary Activity Rule – Existing commercial vegetable production

The use of land for commercial vegetable production ~~and the associated diffuse discharge of nitrogen, phosphorus, sediment and microbial pathogens onto or into land in circumstances which may result in those contaminants entering water~~, is a ~~permitted activity until 1 January 2020, from which date it shall be a controlled~~ restricted discretionary activity ~~(requiring resource consent)~~ subject to the following conditions ~~standards and terms~~:

a. The property is registered with the Waikato Regional Council in conformance with Schedule A; and

~~b. A Nitrogen Reference Point is produced for the property or enterprise in conformance with Schedule B and provided to the Waikato Regional Council at the time the resource consent application is lodged; and~~

c. Cattle, horses, deer and pigs are excluded from water bodies in conformance with Schedule C; and

~~d. The land use is registered to a Certified Industry Scheme; and~~

e. The following information, relating to the land used by the applicant for commercial vegetable production each year in the period 1 July 2011 to 30 June 2016, is provided to the Council:
   i. The total, maximum area (hectares) of land used for commercial vegetable production; and
   ii. The maximum areas (hectares) of land and their locations, per sub-catchment [refer to Table 3.11-2]; and
   iii. quantification of nitrogen and phosphorus surpluses for each commercial vegetable production crop and a description of sediment control measures; and

   ~~The areas of land, and their locations broken down by sub-catchments [refer to Table 3.11-2], that were used for commercial vegetable production within the property or enterprise each year in the period 1 July 2006 to 30 June 2016, together with the maximum area of land used for commercial vegetable production within that period, shall be provided to the Council; and~~

f. The total area of land for which consent is sought for commercial vegetable production must not exceed the maximum land area of the property or properties ~~enterprise~~ that was used for commercial vegetable production during the period 1 July ~~2006~~ 2011 to 30 June 2016; and

~~g. Where new land is proposed to be used for commercial vegetable production, an equivalent area of land must be removed from commercial vegetable production in order to comply with standard and term f.; and~~

[106] Forest and Bird PC1-8208

h. A Farm Environment Plan for the property or enterprise prepared in conformance with Schedule 1 and approved by a Certified Farm Environment Planner is provided to the Waikato Regional Council at the time the resource consent application is lodged that, at a minimum, shows:
   i. Good Farming Practice;
   ii. Adherence to any relevant minimum standards; and
   iii. That losses of nitrogen, phosphorus and sediment that do not exceed the maximum annual losses that were occurring during the 5 years up to 2016; and

i. Full electronic access to Overseer or any other software or system that models or records diffuse contaminant losses for the farming land use authorised by this rule is granted to the Waikato Regional Council[107]

Waikato Regional Council restricts its discretion to the following matters: ~~Matters of Control~~
~~Waikato Regional Council reserves control over the following matters:~~

i. The content, compliance with and auditing of the Farm Environment Plan.
ii. The maximum total and per-sub-catchment area of land to be used for commercial vegetable production.
iii. The actions and timeframes to achieve Good Farming Practices or better and any relevant minimum standards to avoid exceeding baseline losses. ~~for undertaking mitigation actions that maintain or reduce the diffuse discharge of nitrogen, phosphorus or sediment to water or to land where those contaminants may enter water, including provisions to manage the effects of land being retired from commercial vegetable production and provisions to achieve Policy 3(d).~~
~~iv. The actions and timeframes to ensure that the diffuse discharge of nitrogen does not increase beyond the Nitrogen Reference Point for the property or enterprise.~~
v. The term of the resource consent.
vi. The monitoring, record keeping, reporting, contaminant accounting and information provision requirements for the holder of the resource consent to demonstrate and/or monitor compliance with any resource consent and the Farm Environment Plan.
vii. The time frame and circumstances under which the consent conditions may be reviewed.
viii. Procedures for reviewing, amending and re-certifying the Farm Environment Plan.
ix. The procedures and limitations, including Nitrogen Reference Points, to be applied to land that leaves the commercial vegetable growing activities.

Notification:

Consent applications will be considered without notification, and without the need to obtain written approval of affected persons.

~~**Advisory note:** Under section 20A(2) of the RMA a consent must be applied for within 6 months of 1 January 2020, namely by 1 July 2020.~~[108]

~~3.11.5.6 Restricted Discretionary Activity Rule – The use of land for farming activities/Te Ture mō ngā kōwhiringa mahi e herea ana – te whakamahinga o te whenua mō ngā mahinga pāmu~~

~~**Rule 3.11.5.6 - Restricted Discretionary Activity Rule – The use of land for farming activities**~~

~~The use of land for farming activities that does not comply with the conditions, standard or terms of Rules 3.11.5.1 to 3.11.5.5 and the associated diffuse discharge of nitrogen, phosphorus, sediment and microbial pathogens onto or into land in circumstances which may result in those contaminants entering water is a restricted discretionary activity (requiring resource consent)~~

~~Waikato Regional Council restricts its discretion over the following matters:~~
~~i. Cumulative effects on water quality of the catchment of the Waikato and Waipa Rivers.~~
~~ii. The diffuse discharge of nitrogen, phosphorus, sediment and microbial pathogens.~~
~~iii. The need for and the content of a Farm Environment Plan.~~
~~iv. The term of the resource consent.~~
~~v. The monitoring, record keeping, reporting and information provision requirements for the holder of the resource consent.~~
~~vi. The time frame and circumstances under which the consent conditions may be reviewed.~~
~~vii. The matters addressed by Schedules A, B and C.~~

[107] WRC V1PC1-218
[108] J L and R J Ashby V1PC1-866, Balle Bros Group PC1-11426, G and J Jeffries PC1-7240, K McLaughlin PC1-6018, Moerangi Trust PC1-4279, PLUG PC1-11178

~~**Notification:**~~

~~Consent applications will be considered without notification, and without the need to obtain written approval of affected persons.~~

3.11.5.6A Discretionary Activity Rule

Rule 3.11.5.6A - Discretionary Activity Rule

The use of land for farming that does not meet one or more of ~~[conditions (1) to (5a) of Rule 3.11.5.3 or]~~ conditions (1) to (6) of Rule 3.11.5.4 and any associated diffuse discharge of contaminants onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene section 15(1) of the RMA is a Discretionary activity.[109] [PC1-11054]

3.11.5.7 Non-Complying Activity Rule ~~– Land Use Change~~/Te Ture mō ngā mahi kāore e whai i ngā ture – Te Panonitanga ā-Whakamahinga Whenua

Rule 3.11.5.7 - Non-Complying Activity Rule ~~– Land Use Change~~

The use of land for farming that does not meet ~~[condition (5b) of Rule 3.11.5.3 or]~~ condition (7) of Rule 3.11.5.4 and any associated diffuse discharge of contaminants onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene section 15(1) of the RMA is a non-complying activity.[110] [PC1-11054]

~~Notwithstanding any other rule in this Plan, any of the following changes in the use of land from that which was occurring at 22 October 2016 within a property or enterprise located in the Waikato and Waipa catchments, where prior to 1 July 2026 the change exceeds a total of 4.1 hectares:~~

~~1. Woody vegetation to farming activities; or~~
~~2. Any livestock grazing other than dairy farming to dairy farming; or~~
~~3. Arable cropping to dairy farming; or~~
~~4. Any land use to commercial vegetable production except as provided for under standard and term g. of Rule 3.11.5.5 is a non-complying activity (requiring resource consent) until 1 July 2026.~~

~~**Notification:**~~

~~Consent applications will be considered without notification, and without the need to obtain written approval of affected persons, subject to the Council being satisfied that the loss of contaminants from the proposed land use will be lower than that from the existing land use.]~~[111]

~~3.11.5.8 Permitted Activity Rule – Authorised Diffuse Discharges~~

~~The diffuse discharge of nitrogen, phosphorus, sediment and or microbial contaminants from farming onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene section 15(1) of the RMA is a permitted activity, provided the following conditions are is met:~~

~~1. the land use activity associated with the discharge is authorised under Rules 3.11.5.1 to 3.11.5.7; and~~
~~2. the discharge of a contaminant is managed to ensure that after reasonable mixing it does not give rise to any of the following effects on receiving waters:~~
~~(a) any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or~~
~~(b) any conspicuous change in the colour or visual clarity; or~~
~~(c) the rendering of fresh water unsuitable for consumption by farm animals; or~~

[109] Fonterra PC1-10506
[110] Fonterra V1PC1-757, Waipa DC PC1-3249, Waitomo DC PC1-10312
[111] Forest and Bird PC1-8214

~~(d) any significant adverse effects on aquatic life.~~[112]

~~3.11.5.9 Non-Complying Activity Rule – Unauthorised Diffuse Discharges~~

~~The diffuse discharge of nitrogen, phosphorus, sediment and or microbial contaminants from farming onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene section 15(1) of the RMA that does not meet one or more of the conditions of Rule 3.11.5.8 is a non-complying activity.~~[113]

[112] Ata Rangi PC1-11127, Southern Pastures Limited Partnership PC1-11070
[113] Ata Rangi PC1-11127, Southern Pastures Limited Partnership PC1-11070

Schedule A - Registration with Waikato Regional Council/Te Āpitihanga A – Te rēhita me te Kaunihera ā-Rohe o Waikato

The purpose of this schedule is to provide baseline information on land use activities in the Waikato and Waipā Catchments as they were at 22 October 2016 [PC1-11060].

Properties with an area greater than ~~2 hectares~~ 4.1 hectares[114] (excluding urban properties) must be registered with the Waikato Regional Council in the following manner:

1. Registration must occur between ~~1 September 2018~~ ~~1 May 2020 and~~ ~~31 March 2019~~ by 30 November 2020.
2. Registration information set out in clause 5, and where relevant in clause 6, below must be provided.
3. Proof of registration must be provided to the Waikato Regional Council within 7 working days of a request by ~~to the~~ Waikato Regional Council being made (unless otherwise agreed in writing by Council) ~~if requested by the Council~~.[115]
4. Registration information must be updated by the new owner of a property within 30 working days of the new owner taking possession of the property, or otherwise at the request of the Waikato Regional Council.
5. All ~~property~~ owners must provide:
    a. The following information in respect of the current and any previous ~~land~~ property[116] owner as at 22 October 2016, if different, and the person responsible for using the land (if different from the ~~land~~ property owner):
        i. Full name.
        ii. Trading name (if applicable, where the owner is a company or other entity).
        iii. Full postal and email address.
        iv. Telephone contact details.
    b. Legal description ~~of the property as per the~~ and certificate(s) of title references (computer freehold registers) for all of the land in the property as at 22 October 2016.[117]
    c. Physical address of the property as at 22 October 2016.
    d. A description of the land use activity or activities undertaken on the property as at 22 October 2016, including the land area of each activity.
    e. The total land area of the property as at 22 October 2016 .
    f. Where the land is used for grazing, and no NRP is required under this Plan,[118] the annual average and maximum[119] stocking rate of animals grazed on the land as at 22 October 2016.
    g. If the property forms part of an enterprise as at 22 October 2016, the name of that enterprise.[120]
6. Properties that graze livestock as at 22 October 2016 must also provide a map showing~~:~~
~~a. The~~ the location of:
        i. Property boundaries; and
        ii. Water bodies listed in Schedule C for stock exclusion within the property boundary and fences adjacent to those water bodies; and
        iii. Livestock crossing points over those water bodies and a description of any livestock crossing structures.

[114] WRC PC1-3536
[115] WRC PC1-3536
[116] WRC PC1-3536
[117] Waipa DC PC1-3225
[118] WRC V1PC1-216
[119] J Liefting PC1-7166
[120] Waipa DC PC1-3225

Schedule B - Nitrogen Reference Point/Te Āpitihanga B – Te tohu ā-hauota

A property or enterprise with a cumulative area greater than 20 hectares (or any property or enterprise used for commercial vegetable production) must have a Nitrogen Reference Point calculated as follows:

a. The Nitrogen Reference Point must be calculated by a Certified Farm Nutrient Advisor ~~to determine~~by modelling the amount of nitrogen being leached from the property or enterprise during the relevant reference period specified in clause f), except for any land use ~~change~~ approved under Rules 3.11.5.6 or 3.11.5.7 where the Nitrogen Reference Point shall be determined through the Rule 3.11.5.6 or 3.11.5.7 consent process.

b. The Nitrogen Reference Point shall be the highest modelled annual nitrogen leaching loss that occurred during a single year (being 12 consecutive months) within the reference period specified in clause f), except for commercial vegetable production in which case the Nitrogen Reference Point shall be the average annual nitrogen leaching loss during the reference period.

c. The Nitrogen Reference Point must be calculated using the ~~current~~ most recent version of the OVERSEER® Model as the default model (~~or any~~ other models may be approved for use by the Chief Executive of the Waikato Regional Council, if justified on a case by case basis). The Nitrogen Reference Point must be updated using the initial reference data whenever a new version of the OVERSEER® Model, or any other approved model used to prepare the Nitrogen Reference Point, is released.

d. The Nitrogen Reference Point data shall comprise the data used by ~~electronic output file from~~ the OVERSEER® or other approved model to calculate the Nitrogen Reference Point, and where the OVERSEER® Model is used, it must be calculated using the OVERSEER® Best Practice Data Input Standards ~~2016~~ or replacement technical guidance that relate to the version of the OVERSEER® model being used, with the exceptions and inclusions set out in ~~Schedule B Table 1~~ a Waikato Regional Council Nitrogen Reference Point Guide. Where another approved model is used, it will conform to the data input standards as approved by the Chief Executive of the Waikato Regional Council.

e. The Nitrogen Reference Point Analysis (inputs and outputs) ~~and the Nitrogen Reference Point data~~ must be ~~provided~~ published to Waikato Regional Council within the period ~~1 September 2018~~ ~~1 May 2020 and~~ ~~31 March 2019~~ by 30 November 2020.

f. The Nitrogen Reference Period ~~reference period~~ is ~~the two financial years covering~~ 1 July 2014~~/2015 and 2015/~~ to 30 June 2016, except for commercial vegetable production in which case the reference period is 1 July 2006 to 30 June 2016.

g. The following records (where relevant to the ~~land use undertaken on the property or enterprise~~ calculation and compliance auditing of the Nitrogen Reference Point) must be retained for the life of the plan and/or relevant consent, whichever is longer, and provided to Waikato Regional Council at its request:
   i. ~~Stock numbers as recorded in annual accounts together with stock sale and purchase invoices~~Records of stock numbers and stock classes, births and deaths, stock movements on and off the property, grazing records and transport records;
   ii. ~~Dairy production data~~Total annual milk solids as stated in the milk supply statement;
   iii. ~~Invoices for fertiliser applied to the land~~Records of fertiliser type and amount, including annual accounts, and any records of fertiliser application rates and placement;
   iv. Quantity and type of ~~Invoices for~~ feed supplements ~~sold or~~ purchased and used on the property;
   v. Water use records for irrigation (to be averaged over 3 years or longer) in order to determine irrigation application rates (mm/ha/month per irrigated block) and areas irrigated;
   vi. Crops grown on the ~~land~~ property (area and yield), quantities of each crop consumed on the property, and quantities sold off farm; and
   vii. Horticulture crop diaries and NZGAP records; and
   viii. The Nitrogen Reference Point Data as defined in Schedule B clause d; and
   ix. Soil test data – including anion storage capacity; and
   x. A map which shows property boundaries, block management areas, retired/non-productive areas and areas used for effluent irrigation.

Advice note: For the avoidance of doubt, financial information contained within the above records may be redacted (blacked out) prior to it being provided to Waikato Regional Council.

~~Table 1: Data input methodology for ensuring consistency of Nitrogen Reference Point data using the OVERSEER® Model~~[121]

~~OVERSEER® Parameter~~	~~Setting that must be used~~	~~Explanatory note~~
~~Farm model~~ ~~Pastoral and horticulture~~	~~To cover the entire enterprise including riparian, retired, forestry, and yards and races.~~ ~~The model is to include non-contiguous properties that are part of~~	~~To capture the "whole farm" in one Overseer® file, where possible, to truly represent nitrogen losses from farm in the catchment area.~~

[121] Ballance PC1-6570, FANZ PC1-10642, Beef and Lamb PC1-11506, Fonterra PC1-10517

	the enterprise that are in the same sub-catchment. If the farm (for example where dairy animals are grazed or wintered) is part of another farming business such as a drystock farm, the losses from those animals will be represented in the drystock farm's Overseer model.	
Location Pastoral and horticulture	Select Waikato Region	This setting has an effect on climate settings and some animal characteristics and is required to ensure consistency.
Animal distribution – relative productivity pastoral only	Use "no differences between blocks" with the following exceptions: • Grazed pines or other woody vegetation. In this case use "Relative yield" and set the grazed pine blocks to 0.4 (40%). • Where the farm has a mixture of irrigated and non-irrigated areas. In this case use "Relative yield" and set the irrigated area to 1 (100%), and the non-irrigated areas to 0.75 (75%).	
Wetlands	Entered as Riparian Blocks	As per the 2016 OVERSEER® Best Practice Data Input Standards.
Stock number entry	Based on specific stock numbers only	To ensure consistency and accuracy of stock number inputs.
Animal weights	Only use OVERSEER® defaults – do not enter in weights and use the age at start setting where available (national averages).	Accurate animal weights are difficult to obtain and prove.
Block climate data	Only use the Climate Station tool For contiguous blocks use the coordinates from the location of the dairy shed or the middle of the farm area (for non-dairy). For non-contiguous blocks use individual blocks' climate station coordinates.	
Soil description	Use Soil Order – obtained from S-Map or where S-Map is unavailable from LRI 1:50,000 data or a soil map of the farm.	To ensure consistency between areas of the region that have S-Map data and those that don't.
Missing data	In the absence of Nitrogen Referencing information being provided the Waikato Regional Council will use appropriate default numbers for any necessary inputs to the OVERSEER® model (such default numbers will generally be around 75% of normal Freshwater Management Unit^ average values for those inputs).	Some farms will not be able to supply data, therefore a default must be established.

Schedule C - Stock exclusion/Te Āpitihanga C – Te aukatinga o ngā kararehe

Except as provided by Exclusions I. ~~and II.~~ and III, cattle, horses, deer and pigs ~~stock~~[122] must be excluded from the water bodies listed in 6. ~~i. to iv.~~ below as follows:

1. The water bodies ~~on~~ adjacent to land with a slope of up to X degrees[123] must be fenced to exclude cattle, horses, deer and pigs, unless those animals are prevented from entering the bed of the water body by a stock proof natural or constructed[124] barrier formed by topography or vegetation.

   Advice note: Clause 1 does not authorise the construction of fences or other barriers in the bed of a river or lake, or in a wetland.

2. New temporary, permanent or virtual[125] fences installed after 22 October 2016 must be located to ensure cattle, horses, deer and pigs will be excluded from the bed of the water body. The fences must be located at a distance of not less than ~~cannot be within one metre of the water body (excluding constructed wetlands).~~
   ~~a. 1 metre from the outer edge of the bed for land with a slope of less than 15 degrees; and~~
   ~~b. 3 metres from the outer edge of the bed for land with a slope between 15 and 25 degrees; and~~
   c. 10 metres from the outer edge of the bed ~~for~~ artificial or modified watercourses that are the full responsibility of a territorial authority or Waikato Regional Council for maintenance purposes.[126]
   d. 20m from the edge of the bed for all lakes for all stock listed above as well as sheep and goats;
   e. 10 metres from the edge of the bed for all permanent rivers and streams;
   f. 5 metres from the edge of the bed for all intermittent/ephemeral rivers and streams;
   g. 20 metres from the edge of the bed for all waterbodies where large galaxids including īnanga are known or predicted to spawn for all stock listed above as well as sheep and goats;
   h. 10m from the edge of the bed of all natural wetlands for all stock listed above as well as sheep and goats;
   i. The provision for minimum setbacks of 10m from the edge of bed of natural wetlands for the following activities:
      (a) Fertiliser application
      (b) Effluent discharge
      (c) Drain construction or enhancement.

3. ~~Livestock~~ Cattle, horses, deer and pigs[127] must not ~~be permitted to~~[128] enter onto or pass across the bed of the water body, except when using a livestock crossing structure [OPTION TO ADD or when they are being supervised and actively driven across a water body in one continuous movement provided no more than one crossing per week occurs].

   Advice note: Clause 3 does not authorise the construction of stock crossing structures in the bed of a river or lake, or in a wetland.[129]

4. For land use authorised under Rules 3.11.5.1 or 3.11.5.2, clauses 1 and 2 must be complied with:
   a. By 1 July 2023 for properties and enterprises within Priority 1 sub-catchments listed in Table 3.11-2.
   b. By 1 July 2026 for properties and enterprises within Priority 2 and Priority 3 sub-catchments listed in Table 3.11-2.
5. For land use authorised under Rules [3.11.5.3,] 3.11.5.4 or 3.11.5.5, clauses 1 and 2 must be complied with by the date and in the manner specified in the property's or enterprise's Farm Environment Plan, which shall be within 3 years following the dates by which a Farm Environment Plan must be provided to the Council, or in any case no later than 1 July 2026.
6. Water bodies from which cattle, horses, deer and pigs must be excluded:
   a. The bed of any river (including any stream and modified river or stream) or artificial watercourse that is permanently or intermittently flowing ~~[OPTION TO ADD and where the bed is predominantly unvegetated and comprises exposed fine sediment, sand, gravel, boulders or similar material or aquatic vegetation]~~; and
   b. The bed of any lake; and
   c. Any wetland, including a constructed wetland.
   ~~i. Any river that continually contains surface water.~~
   ~~ii. Any drain that continually contains surface water.~~

[122] Dairy Goat Co-Operative (N.Z) Ltd PC1-4135
[123] Beef and Lamb PC1-11507
[124] Fish and Game PC1-11022
[125] Ashby, J L and R J V1PC1-879, Beef and Lamb V1PC1-1724
[126] Cl. 16 to ensure consistency with Rule 4.2.18.1 of the WRP
[127] Dairy Goat Co-Operative (N.Z) Ltd PC1-4135, A and S Dudin PC1-4910, A and M Goddard PC1-2341
[128] Fonterra V1PC1-757, Waipa DC PC1-3249, Waitomo DC PC1-10312
[129] Beef and Lamb PC1-11507

~~iii. Any wetland, including a constructed wetland.~~
~~iv. Any lake.~~[130]

Exclusions:
The following situations are excluded from clauses 1, 2 and ~~2~~3:
I. Where the entry onto or passing across the bed of the water body is by horses that are being ridden or led.
~~II. Where the entry onto or passing across the bed of the water body is by a feral animal.~~[131]
III. Constructed ponds or constructed wetlands in which deer or pigs wallow that are located at least 10m away from the bed of a water body and which are not connected by an overland flow path to a water body.

[PC1-11055]

[130] DoC PC1-11055
[131] G Kilgour PC1-1923, A McGovern PC1-8327, Waipapa Farms Ltd and Carlyle Holdings Ltd PC1-4716

Schedule 1 - Requirements for Farm Environment Plans/Te Āpitihanga 1: Ngā Herenga i ngā Mahere Taiao ā-Pāmu

The Farm Environment Plan (FEP) will be prepared in accordance with Parts A, and B below, reviewed in accordance with Part C, and changed in accordance with Part D.

FEP Outcomes

The outcome of any Farm Environment Plan is to manage land use activities in a way that reduces the diffuse discharge of contaminants from farming activities and achieves the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4. To achieve this, a Farm Environment Plan shall clearly identify all sources of contaminants and identify the risk of those discharges entering streams, rivers, lakes and wetlands, the actions necessary to addresses the identified risks, and timeframes for those actions to be completed.

PART A – PROVISION OF FEP

An FEP must be submitted to Waikato Regional Council (the council) using either:

1. A council digital FEP tool including the matters set out in Part B below to the extent relevant; OR
2. An industry prepared FEP that:
   a) includes the following minimum components:
      i. the matters set out in Parts B below to the extent relevant; and
      ii. performance measures that are capable of being reviewed as set out in Part C below
   b) has been approved by the Chief Executive of Waikato Regional Council as meeting the criteria in (a) and capable of providing FEPs in a digital format, consistent with the council data exchange specifications.

The Waikato Regional Council data exchange specifications will set out the standards and detail of the data exchange process to be used by external industry parties in the provision of FEPs.

PART B – FEP CONTENT

The FEP shall contain as a minimum:

1. The property or enterprise details:
   a) Full name, address and contact details (including email addresses and telephone numbers) of the person responsible for the land use activities;
   b) Legal description of the land and any relevant farm identifiers such as dairy supply number.

2. A map(s) at a scale that clearly shows:
   a) The boundaries of the property or land areas being farmed;
   b) The boundaries of the main land management units or land uses ~~on~~ within the effective farmed area of the property or within the farm enterprise;
   c) The location of any ~~Schedule C waterbodies~~ river (including any stream or modified river or stream) or artificial watercourse that is permanently or intermittently flowing, the bed of any lake and any wetland, including a constructed wetland;
   d) The location of riparian vegetation and fences adjacent to water bodies;
   e) The location on any waterways where stock have access or there are stock crossings;
   f) The location of any critical source areas and hotspots for contaminant loss to groundwater or surface water; and
   g) The location(s) of any required actions to support the achievement of the objectives and principles listed in section 3, the objectives and policies of Chapter 3.11 and in particular the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 and the outcome statement outlined above.

3. The FEP shall include for each objective and principle in section 4 below ~~3 above~~:
   a) Detail and content that reflects the scale of environmental risk posed by the activity;
   b) A defined and auditable description of the actions and practices to be undertaken to farm in accordance with the objectives and principles in Part B;
   c) The records and evidence that must be kept that demonstrate performance and the achievement of an objective or principle listed in Part B.

4. An assessment of whether farming practices are consistent with each of the following objectives and principles; and
   a. a description of those farming practices that will continue to be undertaken in a manner consistent with the objectives and principles;
   b. A description of those farming practices that are not consistent with the objectives or principles, and a description of the time bound actions or practices that will be adopted to ensure the objectives or principles are met.

3a – Management area: Whole farm

Objective 1
To manage farming activities according to good farming practice, and in a way that minimises the loss of contaminants from the farm to achieve the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4.
Principles

1. Identify the characteristics of the farm system, the risks that the farm system poses to water quality, and the good farming practices that minimise the losses of sediment, microbial pathogens, phosphorus and nitrogen.
2. Maintain accurate and auditable records of annual farm inputs, outputs and management practices.
3. Manage farming operations to minimise losses of contaminants ~~sediment, microbial pathogens, phosphorus and nitrogen~~ to water, and maintain or enhance soil structure.
4. Manage farming activities within Peat Lake FMUs in accordance with the good management practice guidance contained in 'For Peat's Sake'.

3b – Management Area: Nutrient management

Objective 2
To minimise nutrient losses to water while maximising nutrient use efficiency to ensure that the water quality limits/targets in Tables 3.11-1 Table 3.11-1a, 3.11-3 and 3.11-4 are achieved.
Principles

5. Monitor soil phosphorus levels and maintain them at or below the agronomic optimum for the farm system.
6. Manage the amount and timing of fertiliser inputs, taking account of all sources of nitrogen and phosphorus including from the urine and faeces of animals, to match plant requirements and minimise risk of losses.
7. Store and load fertiliser to minimise risk of spillage, leaching and loss into waterbodies.
8. Ensure equipment for spreading fertilisers is well maintained and calibrated.
9. Store, transport and distribute feed to minimise wastage, leachate and soil damage.

Objective 3
To ensure farming activities are undertaken in accordance with the nitrogen management requirements of PC1 to ensure that the water quality limits/targets in Tables 3.11-1 Table 3.11-1a, 3.11-3 and 3.11-4 are achieved.

Principle
Either, where the property's NRP is ≤75th percentile for all river and Whangamarino Wetland sub-catchments, or ≤60th percentile in all lake sub-catchments :

10. Farm in a manner that does not result in farm nitrogen losses exceeding the farm's NRP;

Or, *where the property's NRP is > than the 75th percentile for all river and Whangamarino Wetland sub-catchments or >60th percentile in all lake sub-catchments*
10. Farm in a manner that does not result in farm nitrogen losses exceeding the relevant ~~75th%~~ percentile for the FMU and reduces diffuse losses of contaminants from the property.~~; or~~

3c – Management Area: Waterways

Objective 4
To minimise losses of contaminants ~~sediment, microbial pathogens, phosphorus and nitrogen~~ to waterways to ensure that the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved.
Principles

11. Identify risk of overland flow of contaminants ~~phosphorus, sediment and microbial pathogens~~ on the property and implement measures to ~~minimise~~ reduce losses of these to waterbodies.
12. Locate and manage farm tracks, gateways, water troughs, self-feeding areas, stock camps, wallows and other sources of run-off to minimise risks to water quality and ensure that the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved.
13. Ensure the application of minimum setbacks of 10m from the edge of bed of natural wetlands for the following activities:
    a. Fertiliser application
    b. Drain construction or enhancement.

Objective 5
To exclude ~~stock~~ cattle, horses, deer, pigs, sheep and goats from waterbodies and their margins and minimise ~~stock~~ damage to the beds and margins of all waterbodies including lakes, wetlands and riparian areas resulting from access by cattle, horses, deer, pigs, sheep and goats.

Principle

14. ~~Exclude stock from waterbodies to the extent that it is compatible with land form, stock class and stock intensity. Where exclusion is not possible, mitigate impacts on waterways.~~
15. Exclude ~~stock~~ cattle, horses, deer, pigs, sheep and goats in a manner consistent with the requirements of ~~s~~Schedule C.

3d – Management Area: Land and soil

Objective 6

1. To minimise contaminant losses to waterways from soil disturbance and erosion to ensure that the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved.

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Principles

1. Avoid cultivation of slopes >15˚ unless contaminant discharges to water bodies from that cultivation are demonstrated to be avoided
2. Manage any adverse effects of cultivation on slopes <15˚ through demonstrated erosion and sediment controls for each paddock that will be cultivated.
3. Require the application of minimum cultivation setbacks as follows:
    a. 20m from the edge of the bed for all lakes;
    b. 10 metres from the edge of the bed for all permanent rivers and streams;
    c. 5 metres from the edge of the bed for all intermittent/ephemeral rivers and streams
    d. 20 metres from the edge of the bed for all waterbodies where large galaxids including īnanga are known or predicted to spawn for all lakes;
    e. 10m from the edge of the bed of all natural wetlands;
4. Require the application of minimum 20m setbacks from forestry activities from:
    a. all waterbodies within lake FMUs; and
    b. all waterbodies within Upper Waikato River FMU and Middle Waikato River FMU.
5. Manage periods of exposed soil between crops/pasture to reduce risk of erosion, overland flow and leaching.
6. Manage or retire erosion-prone land to minimise soil losses through appropriate measures and practices.
7. Select appropriate paddocks for growing crops and intensive grazing, recognising and mitigating possible ~~nitrogen and phosphorus, faecal, and sediment loss~~ contaminant loss from critical source areas to ensure that the water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved.
8. Manage grazing and crops to minimise losses from critical source areas.
9. Identify any man-made drainage channels that can and will be retired and restored to their pre-excavated state.
10. Identify mitigation strategies and time-based actions to reduce the amount of contaminants entering natural wetlands.

3e – Management Area: Effluent

Objective 7

To minimise contaminant losses to waterways from farm animal effluent to ensure that water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved.

Principles

11. Ensure the effluent system meets industry-specific Code of Practice or equivalent standard.
12. Ensure effluent storage facilities are sealed to restrict the seepage of effulent. The permeability of the sealing layer must not exceed $1x10^{-9}$m/s
13. Have sufficient storage available for farm effluent and wastewater and actively manage effluent storage levels including storage capacity to allow for the withholding of effluent during periods of prolonged wet weather when the soil moisture deficit is insufficient to allow for effluent irrigation to occur.
14. Ensure equipment for spreading effluent and other organic manures is well maintained and calibrated.
15. Apply effluent to pasture and crops at depths, rates and times to match plant requirements and soil water holding capacity and ensure not ponding occurs to ensure that water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved.
16. Ensure minimum setbacks of 10m from the edge of bed of natural wetlands for effluent discharge is achieved.

3f – Management Area: Water and irrigation

Objective 8

To operate irrigation systems efficiently ~~and~~ ensuring that the actual use of water is monitored and is efficient.

Principles

17. Manage the amount and timing of irrigation inputs to meet plant demands and minimise risk of leaching and run off to ensure that water quality limits/targets in Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4 are achieved.
18. Design, check and operate irrigation systems to minimise the amount of water needed to meet production objectives.

PART C – FEP APPROVAL AND REVIEW REQUIREMENTS

The FEP shall be reviewed by a Certified Farm Environment Planner for consistency with this schedule:

1. Prior to lodging a landuse consent application with the Council under rule 3.11.5.3 – 3.11.5.5 of PC1; and
2. Within 12 months of the granting of that consent application; and
3. In accordance with the 3-yearly annual review intervals or other such review requirements set out in the conditions of ~~that~~ any resource consent.

The purpose of the review is to provide an expert opinion whether the farming activities on the property are being undertaken in a manner consistent with the objectives and principles set out in Part B of this schedule and the relevant objective and policies of Chapter 3.11 including Tables 3.11-1, 3.11-1a, 3.11-3 and 3.11-4.
The review shall be undertaken by a Certified Farm Environment Planner who holds a reviewing endorsement (issued by WRC), and must be undertaken in accordance with the review process set out the Waikato Regional Councils FEP Independent Review manual.

The review shall be undertaken by re-assessing the FEP in accordance with the requirements set out in this schedule.
The results of the review shall be provided to the Waikato Regional Council, within 20 working days of the review due date.

PART D – FEP CHANGES

Unless otherwise required by the Waikato Regional Council in accordance with any conditions of the resource consent, changes can be made to the FEP without triggering the need for review by a CFEP, provided:

1. The farming activity remains consistent with Part B of this schedule
2. The change to the FEP does not contravene any mandatory requirement of the resource consent, or any requirement of the Regional Plan that is not already authorised.
3. The nature of the change is documented in writing and made available to any CFEP undertaking a review, or to the Waikato Regional Council, on request.

ALL DELETED by Officers

A Farm Environment Plan shall be prepared in accordance with the requirements of A below. The Farm Environment Plan shall be certified as meeting the requirements of A by a Certified Farm Environment Planner.

The outcome of any Farm Environment Plan is to manage land use activities in a way that reduces the diffuse discharge of contaminants from farming activities. To achieve this, a Farm Environment Plan shall clearly ~~shall~~ identify all sources of contaminants ~~sediment, nitrogen, phosphorus and microbial pathogens~~, and identify the risk of those discharges entering streams, rivers, lakes and wetlands, the actions necessary to addresses the identified risks, and timeframes for those actions to be completed~~, in order to reduce the diffuse discharges of these contaminants.~~

The Farm Environment Plan must clearly identify how specified minimum standards will be complied with.

The requirements set out in A apply to all Farm Environment Plans, including those prepared within a Certified Industry Scheme.

This schedule applies to all farming activities, but it is acknowledged that some provisions will not be relevant to every farming activity.

B. Farm Environment Plans shall contain as a minimum:

1. The property or enterprise details:

(a) Full name, address and contact details (including email addresses and telephone numbers) of the person responsible for the property or enterprise.

(b) Trading name (if applicable, where the owner is a company or other entity).

(c) A list of land parcels which constitute the property or enterprise:

i. the physical address and ownership of each parcel of land (if different from the person responsible for the property or enterprise) and any relevant farm identifiers such as the dairy supply number, Agribase identification number, valuation reference; and
ii. The legal description of each parcel of land.

2. An assessment of the risk of diffuse discharge of ~~sediment, nitrogen, phosphorus and microbial pathogens~~ contaminants associated with the farming activities on the property discharging into any stream, river, lake or wetland, including both permanent and intermittent, and the priority of those identified risks, having regard to sub-catchment targets in Table 3.11-1 and the priority of lakes within the sub-catchment. As a minimum, the risk assessment shall include (where relevant to the particular land use):

(a) A description of where and how stock shall be excluded from water bodies for stock exclusion including:

i. the provision of fencing and livestock crossing structures to achieve compliance with Schedule C; and
ii. for areas with a slope exceeding 25o and where stream fencing is impracticable, the provision of alternative mitigation measures.

(b) A description of setbacks and riparian management, including:

i. The management of water body margins including how damage to the bed and margins of water bodies, and the direct input of contaminants will be avoided, and how riparian margin settling and filtering will be provided for; and
ii. Where practicable the provision of minimum grazing setbacks from water bodies for stock exclusion of 1 metre for land with a slope of less than 15° and 3 metres for land with a slope between 15° and 25°; and
iii. The provision of minimum cultivation setbacks ~~of 5 metres~~as follows:
   (a) 20m from the edge of the bed for all lakes for cattle, horses, deer, pigs, sheep and goats;
   (b) 10 metres from the edge of the bed for all permanent rivers and streams
   (c) 5 metres from the edge of the bed for all intermittent/ephemeral rivers and streams
   (d) 20 metres from the edge of the bed for all waterbodies where large galaxids including īnanga are known or predicted to spawn for all lakes for cattle, horses, deer, pigs, sheep and goats;
   (e) 10m from the edge of the bed of all natural wetlands for all lakes for cattle, horses, deer, pigs, sheep and goats;
iv. The provision for minimum setbacks of 10m from the edge of bed of natural wetlands for the following activities:
   (a) Fertiliser application
   (b) Effluent discharge
   (c) Drain construction or enhancement.

(c) A description of the critical source areas from which contaminants ~~sediment, nitrogen, phosphorus and microbial pathogens~~ are lost into stream, rivers, lakes and wetlands, including:

i. the identification of intermittent waterways, overland flow paths and areas prone to flooding and ponding, and an assessment of opportunities to minimise losses from these areas through appropriate stocking policy, stock exclusion and/or measures to detain floodwaters and settle out or otherwise remove contaminants ~~sediment, nitrogen, phosphorus and microbial pathogens~~ (e.g. detention bunds, sediment traps, ~~natural~~ and constructed wetlands); and

ii. the identification of actively eroding areas, erosion prone areas, and areas of bare soil and appropriate measures for erosion and sediment control and re-vegetation; and

iii. an assessment of the risk of diffuse discharge of contaminants ~~sediment, nitrogen, phosphorus and microbial pathogens~~ from tracks and races and livestock crossing structures to waterways, and the identification of appropriate measures to minimise these discharges (e.g. cut-off drains, and shaping); and

iv. the identification of areas where effluent accumulates including yards, races, livestock crossing structures, underpasses, stock camps, and feed-out areas, and appropriate measures to minimise the risk of diffuse discharges of contaminants from these areas to groundwater or surface water; and

v. the identification of other 'hotspots' such as fertiliser, silage, compost, or effluent storage facilities, wash-water facilities, offal or refuse disposal pits, and feeding or stock holding areas, and the appropriate measures to minimise the risk of diffuse discharges of contaminants from these areas to groundwater or surface water.

(d) An assessment of appropriate land use and grazing management for specific areas on the farm in order to maintain and improve the physical and biological condition of soils and minimise the diffuse discharge of contaminants ~~sediment, nitrogen, phosphorus and microbial pathogens~~ to water bodies, including:

i. matching land use to land capability; and

ii. identifying areas not suitable for grazing; and

iii. stocking policy to maintain soil condition and pasture cover; and

iv. the appropriate location and management of winter forage crops; and

v. suitable management practices for strip grazing.

(e) A description of nutrient management practices including a nutrient budget for the farm enterprise calculated using the model OVERSEER® in accordance with the OVERSEER® use protocols, or using any other model or method approved by the Chief Executive Officer of Waikato Regional Council.

(f) A description of cultivation management, including:

i. The identification of slopes over 15 o and how cultivation on them will be avoided; unless contaminant discharges to water bodies from that cultivation can be avoided; and
ii. How the adverse effects of cultivation on slopes of less than 15° will be mitigated through appropriate erosion and sediment controls for each paddock that will be cultivated including by:

(a) assessing where overland flows enters and exits the paddock in rainfall events; and
(b) identifying appropriate measures to divert overland flows from entering the cultivated paddock; and
(c) identifying measures to trap sediment leaving the cultivated paddock in overland flows; and
(d) maintaining appropriate buffers between cultivated areas and water bodies (minimum 5m setback).
(e) A description of collected animal effluent management including how the risks associated with the operation of effluent systems will be managed to minimise contaminant discharges to groundwater or surface water.
(f) A description of freshwater irrigation management including how contaminant loss arising from the irrigation system to groundwater or surface water will be minimised.

(g) The identification of any man-made drainage channels that can and will be retired and restored to their pre-excavated state.
(h) The identification of mitigation strategies and actions to reduce the amount of contaminants entering natural wetlands.

3. A spatial risk map(s) at a scale that clearly shows:

(a) The boundaries of the property; and

(b) The locations of the main land uses[132] that occur on the property; and

(c) The locations of existing and future mitigation actions to manage contaminant diffuse discharges; and

(d) Any relevant internal property boundaries that relate to risks and mitigation actions described in this plan; and

(e) The location of continually flowing rivers, streams, and drains and permanent lakes, ponds and wetlands; and

(f) The location of any emphemeral wetlands; and

(g) The location of riparian vegetation and fences adjacent to water bodies; and

(h) The location of critical source areas for contaminants, as identified in 2 (c) above.

[132] For dairy farms this might be the OVERSEER® blocks, for drystock farms this might be Land Use Capability blocks.

4. A description of the actions that will be undertaken in response to the risks identified in the risk assessment in 2 above (having regard to their relative priority) as well as where the mandatory time-bound actions will be undertaken, and when and to what standard they will be completed. This should include any mitigation strategies and actions to promote the reduction of contaminants entering natural wetlands.

5. A description of the following:

   (a) Actions, timeframes and other measures to ensure that the diffuse discharge of nitrogen from the property or enterprise, as measured by the five-year rolling average annual nitrogen loss as determined by the use of the current version of OVERSEER®, does not increase beyond the property or enterprise's Nitrogen Reference Point, unless other suitable mitigations are specified; or

   (b) Where the Nitrogen Reference Point exceeds the 75th percentile nitrogen leaching value, actions, timeframes and other measures to ensure the diffuse discharge of nitrogen is reduced so that it does not exceed the 75th percentile nitrogen leaching value by 1 July 2026, except in the case of Rule 3.11.5.5.

Vegetable growing minimum standards

Farm environment plans required under Rule 3.11.5.5 shall, in addition to the matters set out above, ensure the following matters are addressed.

No	Contaminant	Vegetable growing minimum standards
1	Nitrogen, Phosphorus	Annual soil testing regime, fertiliser recommendations by block and by crop
2	Nitrogen, Phosphorus	Tailored fertiliser plans by block and by crop
3	Nitrogen, Phosphorus	Both (1) and (2) prepared by an appropriately qualified person
4	Nitrogen, Phosphorus	Annual calibration of fertiliser delivering systems through an approved programme such as Spreadmark/Fertspread
5	Soil/Phosphorus	As a minimum by block: an approved erosion and sediment control plan constructed in accordance with the Erosion and Sediment Control Guidelines for Vegetable Production June 2014
6	Nitrogen, Phosphorus	Documentation available for proof of fertiliser placement according to recommended instruction
7	Nitrogen, Phosphorus	Adoption and use of improved fertiliser products proved effective and available such as formulated prills, coatings and slow release mechanisms
8	Nitrogen, Phosphorus	Evidence available to demonstrate split applications by block/crop following expert approved practice relating to: ○ form of fertiliser applied ○ rate of application ○ placement of fertiliser ○ timing of application

[PC1-10647], [PC1-12394] [PC1-11055]

Schedule 2 - Certification of ~~Industry~~ Sector Schemes/Te Āpitihanga 2 – Te whakamana i ngā tohu o ngā Kaupapa Ahumahi

The purpose of this schedule is to set out the minimum standards for Certified Sector Schemes. ~~criteria against which applications to approve an industry scheme will be assessed.~~

~~The application~~ Applications for approval as a Certified Sector Scheme shall be lodged with the Waikato Regional Council, and ~~shall~~ include information that demonstrates how the following ~~requirements~~ standards are met. The Waikato Regional Council may request further information or clarification on the application as it sees fit.

Approval will be at the discretion of the Chief Executive Officer of the Waikato Regional Council subject to the Chief Executive Officer being satisfied that the scheme will meet the standards set out in sections A to D below ~~effectively deliver on the assessment criteria~~.

~~**Assessment Criteria**~~

~~A. Certified Industry Scheme System~~

~~The application must demonstrate that the Certified Industry Scheme:~~

~~1. Is consistent with:~~
~~(a) the achievement of the water quality targets referred to in Objective 3; and~~
~~(b) the purposes of Policy 2 or 3; and~~
~~(c) the requirements of Rules 3.11.5.3 and 3.11.5.5.~~
~~2. Has an appropriate ownership structure, governance arrangements and management.~~
~~3. Has documented systems, processes, and procedures to ensure:~~
~~(a) Competent and consistent performance in Farm Environment Plan preparation and audit.~~
~~(b) Effective internal monitoring of performance.~~
~~(c) Robust data management.~~
~~(d) Timely provision of suitable quality data to Waikato Regional Council.~~
~~(e) Timely and appropriate reporting.~~
~~(f) Corrective actions will be implemented and escalated where required, including escalation to Waikato Regional Council if internal escalation is not successful.~~
~~(g) Internal quality control.~~
~~(h) The responsibilities of all parties to the Certified Industry Scheme are clearly stated.~~
~~(i) An accurate and up to date register of scheme membership is maintained.~~
~~(j) Transparency and public accountability of Certified Industry Schemes~~
~~(k) The articles of the scheme are available for public viewing.~~

~~B. People~~

~~The application must demonstrate that:~~

~~1. Those generating and auditing Farm Environment Plans are suitably qualified and experienced.~~
~~2. Auditing of Farm Environment plan requirements is independent of the Farm Environment Plan preparation and approval.~~

~~C. Farm Environment Plans~~

~~The application must demonstrate that Farm Environment Plans are prepared in conformance with Schedule 1.~~

A. Governance and management

Applications must include:

1. A description of the governance arrangements of the Scheme;
2. The contractual arrangements between the Scheme and its members;
3. A description of the process for gaining and ceasing membership;
4. A description of the Scheme area, including land uses, key environmental issues, property boundaries and ownership details of members' properties;
5. A procedure for keeping records of the matters in (4) above and advising WRC of changes;
6. A draft contractual agreement with the Waikato Regional Council that will require the Scheme, on certification, to meet and maintain the standards outlined in Section A to D below.

B. Preparation of Farm Environment Plans

Applications must include:

1. A statement of the Scheme's capability and capacity for preparing and certifying Farm Environment Plans that meet the requirements of Schedule 1, including the qualifications and experience of any personnel employed by or otherwise contracted to the Scheme to prepare or certify Farm Environment Plans;
2. An outline of timeframes for developing Farm Environment Plans for its members.

C. Implementation of Farm Environment Plans

Applications must include:

1. A statement of the Scheme's capability and capacity for monitoring and assessing the implementation of Farm Environment Plans, including the qualifications and experience of any personnel employed by or otherwise contracted to the Scheme to monitor or assess implementation of Farm Environment Plans;
2. A description of the expectations and agreements around landowner and property record-keeping;
3. A strategy for identifying and managing poor performance in implementing Farm Environment Plans.

D. Audit

Applications must include a description of an annual audit process to be conducted by an independent body, including:

1. A process for assessing performance against agreed actions in Farm Environment Plans at an individual property level;
2. A statement of how audit results will be shared with the Scheme's members and the wider community;
3. A process for assessing the performance of any personnel employed by or otherwise contracted to the Scheme to prepare, certify, and audit the implementation of Farm Environment Plans.

A summary audit report must be submitted to the Waikato Regional Council annually.[133]

[133] Fonterra PC1-10561, Ata Rangi PC1-6244, DOC PC1-10648, Southern Pastures Limited Partnership PC1-11197

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

Table 3.11-1: Short term water quality limits and targets and long term numerical ~~desired~~ water quality limits and targets ~~states~~[134] ~~targets~~ for the **rivers and streams in the** Waikato and Waipa River catchments/Ngā whāinga ā-tau taupoto, tauroa hoki mō te kounga wai i te riu o ngā awa o Waikato me Waipā [Consquential amendment]

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

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

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

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

Within the rivers and streams in the Waikato and Waipa River catchments, excluding those rivers and streams within Lake FMU catchments, these limits and targets ~~and desired water quality states~~ are used in decision-making processes guided by the objectives in Chapter 3.11 and for future monitoring of changes in the state of water quality within the catchments. With regard to consent applications for diffuse discharges or point source discharges of contaminants ~~sediment, nitrogen, phosphorus and microbial pathogens~~, it is not intended, nor is it in the nature of water quality targets and the desired water quality states[135], that they be used directly as receiving water compliance limits/standards. Reference should also be made to Method 3.2.4.1. [Consquential amendment]

~~**Explanatory note to Table 3.11-1**~~

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

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

- ~~the current state value for median nitrate is 0.740 mgNO3-N/L. The short term targets and 80 year desired water quality states targets are set at 0.740 mgNO3-N/Lto reflect that there is to be no decline in water quality~~
- ~~the current state value for E.coli is 696 E.coli/100ml. The 80 year desired water quality state target is set at 540 E.coli/100ml and the short term target is set at 10% of the difference between the current state value and the 80 year desired water quality state target[136].~~

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

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

[134] GBC Winstone PC1-3627
[135] GBC Winstone PC1-3627
[136] All recommended amendments to the Explanatory Note: GBC Winstone PC1-3627

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

			Attributes																	
Catchment number	Protection priority (P) or fish (F) ranking	Site	Annual Median Chlorophyll a (mg/m^3)		Annual Maximum Chlorophyll a (mg/m^3)		Annual Median Total Nitrogen (mg/m^3)		Annual Median Total Phosphorus (mg/m^3)		Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia[1] (mg NH_4-N/L)		Annual Maximum Ammonia[1] (mg NH_4-N/L)		~~95th percentile~~ *E. coli* (*E. coli*/100mL) NOF Band		Clarity (m)[2]	
			short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
73		Waikato River Ohaaki Br	1.5	1.5	13	13	134	134	10	10	0.039	0.039	0.062	0.062	0.002	0.002	0.013	0.013	~~70~~ C	~~70~~ B	3.8	3.8
66		Waikato River Ohakuri Tailrace Br	3.2	3.2	11	11	206	160	17	17	0.084	0.084	0.172	0.172	0.003	0.003	0.017	0.017	~~15~~ C	~~15~~ B	3.4	3.4
67		Waikato River Whakamaru Tailrace		5		25	260	160	20	20	0.101	0.101	0.230	0.230	0.003	0.003	0.010	0.010	~~60~~ C	~~60~~ B	2.0	3.0
64		Waikato River Waipapa Tailrace	4.1	4.1	25	25	318	160	25	20	0.164	0.164	0.320	0.320	0.007	0.007	0.017	0.017	~~162~~ C	~~162~~ B	2.0	3.0
74		Pueto Stm Broadlands Rd Br	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.450	0.450	0.530	0.530	0.003	0.003	0.009	0.009	~~92~~ C	~~92~~ B	1.8	3.0

72		**Torepatutahi Stm Vaile Rd Br**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.500	0.500	0.800	0.800	0.002	0.002	0.011	0.011	~~216~~ C	~~216~~ B	1.0	1.6
65		**Waiotapu Stm Homestead Rd Br**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.257	1.0	1.563	1.5	0.112	0.03	0.176	0.05	~~281~~ C	~~281~~ B	1.0	1.6
69		**Mangakara Stm (Reporoa) SH5**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.270	1.0	1.590	1.5	0.008	0.008	0.062	0.05	~~1584~~ C	~~540~~ B	0.9	1.0
62		**Kawaunui Stm SH5 Br**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	2.580	2.4	2.850	1.5	0.006	0.006	0.079	0.05	~~2335~~ C	~~540~~ B	1.4	1.6
58		**Waiotapu Stm Campbell Rd Br**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.915	0.915	1.100	1.100	0.291	0.24	0.315	0.05	~~18~~ C	~~18~~ B	1.2	1.6
59		**Otamakokore Stm Hossack Rd**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.740	0.740	1.190	1.190	0.006	0.006	0.024	0.024	~~680~~ C	~~540~~ B	1.2	1.6
56		**Whirinaki Stm Corbett Rd**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.770	0.770	0.870	0.870	0.002	0.002	0.012	0.012	~~98~~ C	~~98~~ B	2.7	3.0
54		**Tahunaatara Stm Ohakuri Rd**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.555	0.555	0.830	0.830	0.003	0.003	0.015	0.015	~~783~~ C	~~540~~ B	1.3	1.6
57		**Mangaharakeke Stm SH30 (Off Jct SH1)**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.525	0.525	0.750	0.750	0.003	0.003	0.015	0.015	~~684~~ C	~~540~~ B	1.1	1.6
70		**Waipapa Stm (Mokai) Tirohanga Rd Br**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.189	1.0	1.500	1.5	0.003	0.003	0.005	0.005	~~1147~~ C	~~540~~ B	1.2	1.6
71	P	**Mangakino Stm Sandel Rd**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.650	0.650	0.860	0.860	0.003	0.003	0.012	0.012	~~251~~ C	~~251~~ B	1.8	3.0

49		**Whakauru Stm SH1 Br**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.260	0.260	0.450	0.450	0.003	0.003	0.033	0.033	2106 C	540 B	0.8	1.0
48		**Mangamingi Stm Paraonui Rd Br**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	2.760	2.4	3.12	1.5	0.091	0.03	0.296	0.05	2151 C	540 B	0.8	1.0
45		**Pokaiwhenua Stm Arapuni - Putaruru Rd**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.680	1.0	2.040	1.5	0.002	0.002	0.020	0.020	1363 C	540 B	1.3	1.6
44		**Little Waipa Stm Arapuni - Putaruru Rd**	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.522	1.0	2.040	1.5	0.002	0.002	0.085	0.05	1377 C	540 B	1.5	1.6

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

[2] Median black disc horizontal sighting range under baseflow conditions

[3] Attribute is not applicable to the sub-catchment

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

			Attributes																			
Catchment number	Protection priority (P) or fish (F) ranking	Site	Annual Median Chlorophyll a (mg/m³)		Annual Maximum Chlorophyll a (mg/m³)		Annual Median Total Nitrogen (mg/m³)		Annual Median Total Phosphorus (mg/m³)		Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia[1] (mg NH_4-N/L)		Annual Maximum Ammonia[1] (mg NH_4-N/L)		~~95th percentile~~ *E. coli* (*E. coli*/100mL) NOF Band		Clarity (m)[2]	
			short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
33	P	Waikato River Narrows Boat Ramp	5.5	5	23	23	404	350	28	20	0.235	0.235	0.500	0.500	0.009	0.009	0.018	0.018	~~340~~ C	~~260~~ B	1.7	1.7
25	P	Waikato River Horotiu Br	6.1	5	23	23	432	350	34	20	0.260	0.260	0.530	0.530	0.007	0.007	0.029	0.029	~~774~~ C	~~540~~ B	1.4	1.6
32		Karapiro Stm Hickey Rd Bridge	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.520	0.520	1.689	1.5	0.008	0.008	0.031	0.031	~~4518~~ C	~~540~~ B	0.9	1.0
35		Mangawhero Stm Cambridge-Ohaupo Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.990	1.0	2.490	1.5	0.041	0.03	0.072	0.05	~~2920~~ C	~~540~~ B	0.3	1.0
29		Mangaonua Stm Hoeka Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.455	1.0	1.878	1.5	0.036	0.03	0.051	0.05	~~6372~~ C	~~540~~ B	1.0	1.0
31		Mangaone Stm Annebrooke Rd Br	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	2.580	2.4	2.940	1.5	0.009	0.009	0.02	0.02	~~2052~~ C	~~540~~ B	0.9	1.0
30	P	Mangakotukutuku Stm Peacockes Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.800	0.800	1.788	1.5	0.077	0.03	0.132	0.05	~~11394~~ C	~~540~~ B	0.5	1.0

			Attributes																			
Catchment number	Protection priority (P) or fish (F) ranking	Site	Annual Median Chlorophyll a (mg/m³)		Annual Maximum Chlorophyll a (mg/m³)		Annual Median Total Nitrogen (mg/m³)		Annual Median Total Phosphorus (mg/m³)		Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia[1] (mg NH_4-N/L)		Annual Maximum Ammonia[1] (mg NH_4-N/L)		~~95th percentile~~ *E. coli* (*E.coli*/100ml) NOF Band		Clarity (m) [2]	
			short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
28	P	Waitawhiriwhiri Stm Edgecumbe Street	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.880	0.880	1.240	1.24	~~0.256~~ 0.24	~~0.24~~ 0.03	0.318	0.05	~~5922~~ C	~~540~~ B	~~0.4~~ 0.5	1.0
23	P & F	Kirikiriroa Stm Tauhara Dr	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.815	0.815	1.572	1.5	0.096	0.03	0.183	0.05	~~2124~~ C	~~540~~ B	0.5	1.0

[1] The annual median and annual maximum ammonia have been adjusted for pH.
[2] Median black disc horizontal sighting range under baseflow conditions
[3] Attribute is not applicable to the sub-catchment

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

			Attributes																			
Catchment number	**Protection priority (P) or fish (F) ranking**	**Site**	**Annual Median Chlorophyll a (mg/m³)**		**Annual Maximum Chlorophyll a (mg/m³)**		**Annual Median Total Nitrogen (mg/m³)**		**Annual Median Total Phosphorus (mg/m³)**		**Annual Median Nitrate (mg NO_3-N/L)**		**Annual 95th percentile Nitrate (mg NO_3-N/L)**		**Annual Median Ammonia[1] (mg NH_4-N/L)**		**Annual Maximum Ammonia[1] (mg NH_4-N/L)**		**~~95th percentile~~ *E. coli* (*E.coli*/100mL) NOF Band**		**Clarity (m)[2]**	
			short term	**80 year**	**short term**	**80 year**	**short term**	**80 year**	**short term**	**80 year**	**short term**	**80 year**	**short term**	**80 year**	**short term**	**80 year**	**short term**	**80 year**	**short term**	**80 year**	**short term**	**80 year**
20	P	Waikato River Huntly-Tainui Br	5.9	5	19	19	562	350	43	20	0.365	0.365	0.900	0.900	0.005	0.005	0.015	0.015	~~1944~~ C ~~1494~~ C	~~540~~ B ~~540~~ B	0.9	1.0
9	P & F	Waikato River Mercer Br	10.0	5	30	25	631	350	49	20	0.365	0.365	0.870	0.870	0.003	0.003	0.010	0.010	~~1584~~ C ~~3474~~ C	~~540~~ B ~~540~~ B	0.9	1.0
4		Waikato River Tuakau Br	11.3	5	37	25	571	350	50	20	0.325	0.325	0.880	0.880	0.003	0.003	0.008	0.008	~~4955~~ C ~~1944~~ C	~~540~~ B ~~540~~ B	0.7	1.0
22	P & F	Komakorau Stm Henry Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.279	1.0	~~4.40~~ 3.5	~~3.5~~ 1.5	~~0.25~~ 0.24	0.24 0.03	~~0.419~~ 0.40	~~0.40~~ 0.05	~~3474~~ C	~~540~~ B	~~0.3~~ 0.5	1.0
17	P & F	Mangawara Stm Rutherford Rd Br	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.765	0.765	2.760	1.5	0.103	0.03	0.172	0.05	~~3474~~ C	~~540~~ B	~~0.3~~ 0.5	1.0

Catchment number	Protection priority (P) or fish (F) ranking	Site	Attributes																			
			Annual Median Chlorophyll a (mg/m³)		Annual Maximum Chlorophyll a (mg/m³)		Annual Median Total Nitrogen (mg/m³)		Annual Median Total Phosphorus (mg/m³)		Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia[1] (mg NH_4-N/L)		Annual Maximum Ammonia[1] (mg NH_4-N/L)		~~95th percentile~~ *E. coli* (*E.coli*/100ml) ~~NOF Band~~		Clarity (m)[2]	
			short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
19	P & F	Awaroa Stm (Rotowaro) Sansons Br @ Rotowaro-Huntly Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.700	0.700	1.190	1.190	0.021	0.021	0.089	0.05	~~1800~~ C	~~540~~ B	0.8	1.0
14	P & F	Matahuru Stm Waiterimu Road Below Confluence	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.715	0.715	1.689	1.5	0.016	0.016	0.059	0.05	~~6147~~ C	~~540~~ B	~~0.4~~ 0.5	1.0
16	P	Whangape Stm Rangiriri-Glen Murray Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.004	0.004	0.690	0.690	0.006	0.006	0.134	0.05	~~584~~ C	~~540~~ B	~~0.3~~ 0.5	1.0
12		Waerenga Stm ~~SH2~~ Maramarua Taniwha Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.820	0.820	1.410	1.410	0.005	0.005	0.022	0.022	~~5098~~ C	~~540~~ B	0.9	1.0
8		Whangamarino River Jefferies Rd Br	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.625	0.625	1.842	1.5	0.012	0.012	0.147	0.05	~~4712~~ C	~~540~~ B	0.6	1.0
2	P	Mangatangi River SH2 Maramarua	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.110	0.110	1.120	1.120	0.005	0.005	0.038	0.038	~~5567~~ C	~~540~~ B	0.5	1.0

1	P	Mangatawhiri River Lyons Rd Buckingham Br	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.013	0.013	0.370	0.370	0.003	0.003	0.011	0.011	~~5108~~ C	~~540~~ B	1.6	1.6
10	P	Whangamarino River Island Block Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.075	0.075	0.700	0.700	0.011	0.011	0.054	0.05	~~655~~ C	~~540~~ B	~~0.3~~ 0.6	1.0
3		Whakapipi Stm SH22 Br	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	3.390	2.4	5.120	3.5	0.006	0.006	0.081	0.05	~~1773~~ C	~~540~~ B	1.1	1.1
7		Ohaeroa Stm SH22 Br	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.473	1.0	1.806	1.5	0.003	0.003	0.015	0.015	~~4667~~ C	~~540~~ B	0.8	1.0
11		Opuatia Stm Ponganui Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.740	0.740	1.060	1.060	0.005	0.005	0.016	0.016	~~2898~~ C	~~540~~ B	0.6	1.0
5		Awaroa River (Waiuku) Otaua Rd Br Moseley Rd	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	1.369	1.0	2.310	1.5	0.021	0.021	0.135	0.05	~~1017~~ C	~~540~~ B	~~0.4~~ 0.5	1.0
NEW		Pungarehu Canal/Stream at Waerenga Rd or Farm Bridge																			04.-0.6	

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

[2] Median black disc horizontal sighting range under baseflow conditions

[3] Attribute is not applicable to the sub-catchment

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

Catchment number	Protection priority (P) or fish (F) ranking	Site	Attributes											
			Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia[1] (mg NH_4-N/L)		Annual Maximum Ammonia[1] (mg NH_4-N/L)		95th percentile *E. coli* (*E.coli*/100mL)		Clarity (m)[2]	
			short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
68		Waipa River Mangaokewa Rd	0.380	0.380	0.600	0.600	0.003	0.003	0.017	0.017	~~2417~~ C	~~540~~ B	1.5	1.6
60		Waipa River Otewa	0.228	0.228	0.502	0.502	0.003	0.003	0.008	0.008	~~2036~~ C	~~540~~ B	2.1	2.1
51	F	Waipa River SH3 Otorohanga	0.370	0.370	1.050	1.050	0.004	0.004	0.020	0.020	~~3289~~ C	~~540~~ B	1.2	1.6
43		Waipa River Pirongia-Ngutunui Rd Br	0.565	0.565	1.270	1.270	0.008	0.008	0.023	0.023	~~4441~~ C	~~540~~ B	0.7	1.0
34	P	Waipa River Whatawhata Bridge	0.673	0.673	1.319	1.319	0.009	0.009	0.026	0.026	~~3657~~ C	~~540~~ B	0.6	1.0
26	F	Ohote Stm Whatawhata/Horotiu Rd	0.495	0.495	1.370	1.370	0.023	0.023	0.052	0.05	~~2142~~ C	~~540~~ B	0.6	1.0
36	P	Kaniwhaniwha Stm Wright Rd	0.350	0.350	0.890	0.890	0.007	0.007	0.022	0.022	~~1917~~ C	~~540~~ B	0.9	1.0
38		Mangapiko Bowman Rd Stm	1.369	1.0	2.490	1.5	0.022	0.022	0.076	0.03	~~7074~~ C	~~540~~ B	0.6	1.0
39		Mangaohoi Stm South Branch Maru Rd	0.230	0.230	0.390	0.390	0.003	0.003	0.008	0.008	~~943~~ C	~~540~~ B	1.6	1.6
37	P	Mangauika Stm Te Awamutu Borough W/S Intake	0.210	0.210	0.280	0.280	0.002	0.002	0.003	0.003	~~1008~~ C	~~540~~ B	3.3	3.3

40		Puniu River Bartons Corner Rd Br	0.650	0.650	1.280	1.280	0.007	0.007	0.029	0.029	~~2790~~ C	~~540~~ B	0.9	1.0
47		Mangatutu Stm Walker Rd Br	0.380	0.380	0.880	0.880	0.003	0.003	0.012	0.012	~~738~~ C	~~540~~ B	1.5	1.6
46		Waitomo Stm SH31 Otorohanga	0.520	0.520	0.830	0.830	0.008	0.008	0.025	0.025	~~1453~~ C	~~540~~ B	0.6	1.0
53		Mangapu River Otorohanga	0.860	0.860	1.360	1.360	0.015	0.015	0.057	0.05	~~4284~~ C	~~540~~ B	0.7	1.0
52	F	Waitomo Stm Tumutumu Rd	0.630	0.630	0.800	0.800	0.004	0.004	0.013	0.013	~~2241~~ C	~~540~~ B	1.1	1.6
63		Mangaokewa Stm Lawrence Street Br	0.530	0.530	0.980	0.980	0.004	0.004	0.013	0.013	~~6224~~ C	~~540~~ B	1.4	1.6

[1] The annual median and annual maximum ammonia have been adjusted for pH.
[2] Median black disc horizontal sighting range under baseflow conditions
[3] Attribute is not applicable to the sub-catchment

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

Upper Waikato River Freshwater Management Unit

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

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

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

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

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

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

Protection priority or fish rank: P/F		Periphyton biomass (NOF band)[1]		Periphyton %WCC[2]		DIN (mg/L)[3]		DRP (mg/L)[3]		Cyano-bacteria (NOF band/ % benthic)[4]		Fine deposited sediment % cover[5]		Dissolved oxygen (NOF band)[6]		Temperature max·[7]		pH range[7]		Toxicants / metals % species protection[8]		MCI[9]	
Hard-bottomed stream type: HB		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	Short term	80 year
Waikato River Huntly-Tainui Br	P	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	B	B	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Waikato River Mercer Br	P & F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	B	B	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Waikato River Tuakau Br		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	B	B	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Komakorau Stm Henry Rd	P & F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Mangawara Stm Rutherford Rd Br	P & F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Awaroa Stm (Rotowaro) Sansons Br @ Rotowaro-Huntly Rd	P & F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Matahuru Stm Waiterimu Road Below Confluence	P & F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Whangape Stm Rangiriri-Glen Murray Rd	P	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Waerenga Stm SH2 Maramarua		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100

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

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

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

Protection priority or fish rank: P/F		Periphyton biomass (NOF band)[1]		Periphyton %WCC[2]		DIN (mg/L)[3]		DRP (mg/L)[3]		Cyano-bacteria (NOF band/ % benthic)[4]		Fine deposited sediment % cover[5]		Dissolved oxygen (NOF band)[6]		Temperature max.[7]		pH range[7]		Toxicants / metals % species protection[8]		MCI[9]	
Hard-bottomed stream type: HB		short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
Puniu River Bartons Corner Rd Br		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Mangatutu Stm Walker Rd Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Waitomo Stm SH31 Otorohanga		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	80	100
Mangapu River Otorohanga		N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	100	100
Waitomo Stm Tumutumu Rd	F	N/A	N/A	N/A	N/A	0.8	0.4	0.015	0.01	N/A	N/A	N/A	N/A	B	B	24	20	6 - 9	6.5 - 8.5	95	95	100	100
Mangaokewa Stm Lawrence Street Br	HB	B	B	40	30	0.8	0.4	0.015	0.01	20%	20%	25	20	B	B	24	20	6 - 9	6.5 - 8.5	95	95	100	100

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

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

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

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

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

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

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

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

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

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

	Attributes								
Lake FMU	**Annual Median Chlorophyll a (mg/m^3)**	**Annual Maximum Chlorophyll a (mg/m^3)**	**Annual Median Ammonia[1] (mg NH_4-N/L)**	**Annual Maximum Ammonia[1] (mg NH_4-N/L)**	**Annual Median Total Nitrogen (mg/m^3)**	**Annual Median total Phosphorus (mg/m^3)**	**95th percentile *E. coli* (*E. coli*/100mL)**	**80th percentile cyanobacteria (biovolume mm^3/L)**	**Clarity (m)**
	80 year*	**80 year***	**80 year***	**80 year***	**80 year***	**80 year***	**80 year***	**80 year***	**80 year***
Dune	12	60	0.24	0.40	750	50	540	1.8+	1
Riverine	12	60	0.24	0.40	800	50	540	1.8+	1
Volcanic Zone	12	60	0.24	0.40	750	50	540	1.8+	1
Peat	12	60	0.24	0.40[137]	750	50	540	1.8+	1

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

+1.8mm^3/L biovolume equivalent of potentially toxic cyanobacteria or 10mm^3/L total biovolume of all cyanobacteria

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

[2] Median black disc horizontal sighting range under baseflow conditions

[137] WRC PC1-3635

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

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

Sub-catchment identifier	Sub-catchment number	Priority
Mangatangi	2	1
Whakapipi	3	1
Whangamarino at Jefferies Rd Br	8	1
Whangamarino at Island Block Rd	10	1
Opuatia	11	1
Waerenga	12	1
Waikare	13	1
Matahuru	14	1
Whangape	16	1
Mangawara	17	1
Awaroa (Rotowaro) at Harris/Te Ohaki Br	18	1
Waikato at Huntly-Tainui Br	20	1
Kirikiriroa	23	1
Waikato at Horotiu Br	25	1
Waikato at Bridge St Br	27	1
Waitawhiriwhiri	28	1
Mangakotukutuku	30	1
Mangawhero	35	1
Moakurarua	42	1
Little Waipa	44	1
Pokaiwhenua	45	1
Mangamingi	48	1
Waipa at Otorohanga	51	1
Waitomo at Tumutumu Rd	52	1
Mangapu	53	1
Mangarapa	55	1
Mangaharakeke	57	1
Mangarama	61	1
Mangaokewa	63	1
Waikato at Waipapa	64	1
Waiotapu at Homestead	65	1

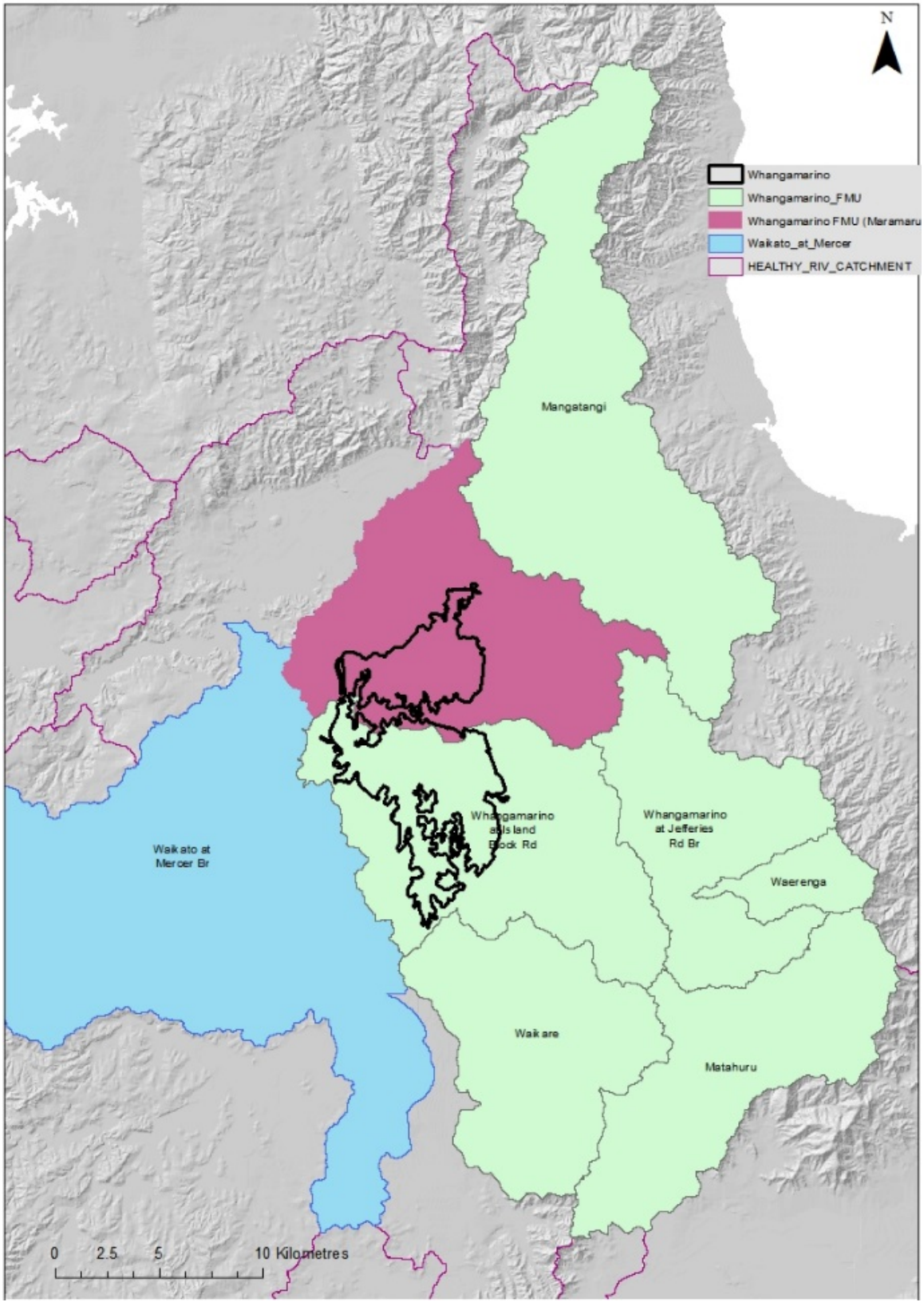
Waipa at Mangaokewa Rd	68	1
Waipapa	70	1
Torepatutahi	72	1
Waikato at Tuakau Br	4	2
Waikato at Port Waikato	6	~~2~~ 1
Waikato at Rangiriri	15	~~2~~ 1
Awaroa (Rotowaro) at Sansons Br	19	~~2~~ 1
Firewood	21	2
Komakorau	22	2
Waipa at Waingaro Rd Br	24	2
Mangaone	31	2
Waipa at SH23 Br Whatawhata	34	~~2~~ 1
Kaniwhaniwha	36	2
Mangapiko	38	2
Puniu at Bartons Corner Rd Br	40	2
Waipa at Pirongia-Ngutunui Rd Br	43	2
Waitomo at SH31 Otorohanga	46	2
Whakauru	49	2
Tahunaatara	54	2
Otamakokore	59	2
Waipa at Otewa	60	2
Kawaunui	62	2
Waikato at Whakamaru	67	2
Mangakara	69	2
Mangakino	71	2
Mangatawhiri	1	3
Awaroa (Waiuku)	5	3
Ohaeroa	7	3
Waikato at Mercer Br	9	3
Ohote	26	3
Mangaonua	29	3
Karapiro	32	3
Waikato at Narrows	33	~~3~~ 1
Mangauika	37	3
Mangaohoi	39	3
Waikato at Karapiro	41	3

Mangatutu	47	3
Puniu at Wharepapa	50	3
Whirinaki	56	3
Waiotapu at Campbell	58	~~3~~ 1
Waikato at Ohakuri	66	3
Waikato at Ohaaki	73	~~3~~ 1[138]
Pueto	74	3
Pungarehu Canal at Waerenga Rd or Farm Bridge [V1PC1-1006]	NEW	1

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

~~* part sub-catchment~~

[138] DoC PC1-11067



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

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

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

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

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

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

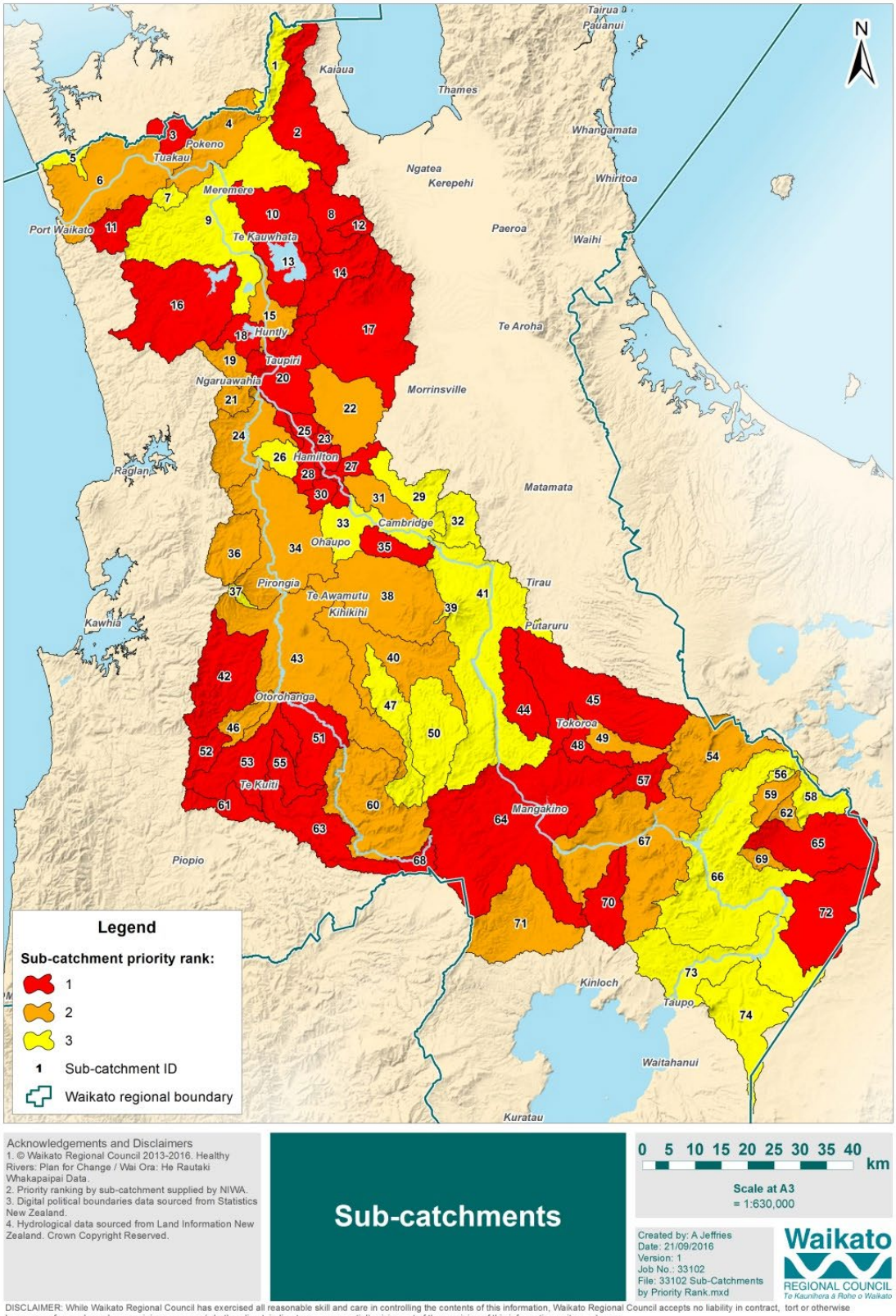
- Total Phosphorus – Median TP Concentration – applied to all monitoring sites in FMU
- Total Nitrogen – Median TN Concentration – applied to all monitoring sites in FMU
- Sediment – Mean Annual TSS Load – applied to the Pungarehu Canal/Stream monitoring site

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

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

The additional primary attributes for the Whangamarino FMU are:	**80 Year Targets**[139]	**Rationale**
TP Median Conc (mg/m3)	50 mg/m3[140]	The Whangamarino FMU is adversely affected by high phosphorus levels. The 80-year target of 50 mg/m3 aims to reduce TP overtime.
TN Median Conc (mg/m3)	750 mg/m3[141]	The Whangamarino FMU is adversely affected by high nitrogen levels. The 80-year target of 750 mg/m3 aims to reduce TN overtime.
TSS Annual Load (T/yr)	>30% reduction (10% reduction by 2030)	Water quality in the Pungarehu Canal is driven by the concentration of sediment, as well as the discharge volume regulated by a control gate. Achieving only the water clarity target for this site will not achieve the ecosystem health outcome.

[139] In addition to the 80 year targets, short-term targets of 10% reduction over 10 years, and 20% reduction over 20 years are required
[140] If site is in a better water quality state, 80 year target is to maintain
[141] If site is in a better water quality state, 80 year target is to maintain



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

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

~~PART B~~

~~Insert the following Condition to section 5.1.5 of the Waikato Regional Plan after 5.1.5(p)iii. and before the Advisory Note.~~

5.1.5 Conditions for Permitted Activity Rule 5.1.4.11 and Standards and Terms for Controlled Activity Rules/Ngā āhuatanga o te Ture 5.1.4.11 mō ngā Mahi e Whakaaetia ana, me ngā Paerewa me ngā Herenga mō ngā Ture mō ngā Mahi ka āta Whakahaerehia

q) In the Waikato and Waipa Catchment the Waikato Regional Council shall be notified in writing at least 20 working days prior to commencing harvest operations in a forest. The written notice must include a harvest plan unless otherwise agreed with Waikato Regional Council.

Harvest Plan

For the purposes of 5.1.5 (q) a forest harvest plan means a documented plan, including a harvest plan map, which clearly identifies the area to be harvested and the method to be followed to ensure identified risks to water bodies arising from the harvesting operation are managed.

The harvest plan should include:

a. A harvest plan map to a scale of up to 1:10,000 showing:

   i. Title, date, north arrow and harvest area boundary.

   ii. The locations of all existing and proposed roads, tracks, landings, fire breaks and stream crossings.

   iii. The locations of all water bodies, streams and wetlands.

   iv. The location of any protected riparian vegetation including significant natural areas.

   v. The proposed harvest methodology including cable and ground based harvest areas and the proposed direction of extraction.

   vi. Proposed slash disposal areas.

b. Associated text specifying the controls on the harvest operations to manage the identified risks to water bodies in the block from the harvesting operations including:

   i. Measures to control sediment discharges to water.

   ii. Management of slash.

   iii. Operations restrictions around water bodies.

   iv. Areas of existing riparian vegetation to be protected.

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PART C

Insert the following terms into the Glossary in alphabetical order.

Additions to Glossary of Terms/Ngā Āpitihanga ki te Rārangi Kupu

~~**Definition - 75th percentile nitrogen leaching value**~~

60th percentile nitrogen leaching value: The 60th percentile value (units of kg N/ha/year) of all of the Nitrogen Reference values for properties within each river Freshwater Management Unit (including properties within any lake Freshwater Management Unit wihin the relevant river Freshwater Management Unit and which is determined by the Chief Executive of the Waikato Regional Council and published on the Waikato Regional Council website and can be based on aggregated data supplied to the Waikato Regional Council and individual farm data received by the Waikato Regional Council by 30 November 2020. This value is applied as the benchmark value to apply in lake Freshwater Management Unit sub-catchments.

75th percentile nitrogen leaching value: The 75th percentile value (units of kg N/ha/year) of all of the Nitrogen Reference Point values for dairy farming properties ~~and enterprises~~ within each river (including properties within any lake Freshwater Management Unit within the relevant river Freshwater Management Unit)[142] Freshwater Management Unit^ and which ~~are~~ is determined by the Chief Executive of the Waikato Regional Council and published on the Waikato Regional Council website and can be based on aggregated data supplied to the Waikato Regional Council and individual farm data[143] received by the Waikato Regional Council by 30 November 2020YYY.[144] This value is applied as the benchmark value to apply in river Freshwater Management Unit sub-catchments.

~~**Definition - Arable cropping**~~

Arable cropping: means the following arable crops:

i. grain cereal, legume, and pulse grain crops
ii. herbage seed crops

oilseeds

iii. crops grown for seed multiplication for use in New Zealand or overseas
iv. hybrid and open pollinated vegetable and flower seeds

and includes maize grain, maize silage, cereal silage, and mangels.

~~**Definition - Best management practice/s**~~

~~**Best management practice/s:** For the purposes of Chapter 3.11, means maximum feasible mitigation to reduce the diffuse discharge of nitrogen, phosphorus, sediment or microbial pathogens from land use activities given current technology.~~

Certified Farm Environment Planner: is a person ~~or entity~~[145] certified by the Chief Executive Officer of Waikato Regional Council ~~and listed on the Waikato Regional Council website as a Certified Farm Environment Planner~~ and has as a minimum the following qualifications and experience:

a. ~~five~~ three[146] years' relevant experience in agricultural and horticultural[147] ~~the management of pastoral, horticulture or arable~~ farm systems; and
b. a Certificate of Completion in Advanced Sustainable Nutrient Management in New Zealand Agriculture from Massey University or[148] ~~completed~~ an equivalent[149] advanced training or a tertiary qualification in sustainable nutrient management ~~(nitrogen and phosphorus)~~[150]; and
c. experience in soil conservation and sediment management;~~.~~

[142] Federated Farmers V1PC1-790
[143] DairyNZ PC1-10253
[144] N and C Prendergast PC1-1779, R Hathaway PC1-5399
[145] Forest and Bird PC1-8478
[146] Hill Country Farmers Group PC1-8072
[147] NZIPIM PC1-8445
[148] Ballance PC1-7113, FANZ PC1-10662, Ravensdown PC1-10187, Oji PC1-8854
[149] Ravensdown PC1-10187, FANZ PC1-10662
[150] NZIPIM PC1-8445

and agrees to follow the procedures and guidelines set out by Waikato Regional Council and audits of the Certified Farm Environment Planner's work by Waikato Regional Council show that the Planner is preparing and/or approving Farm Environment Plans in accordance with the procedures and guidelines.[151]

Note: Certified Farm Environment Planners will be listed on the Waikato Regional Council's website.

~~**Definition - Certified Farm Nutrient Advisor**~~

Certified Farm Nutrient Advisor: is a person or entity certified by the Chief Executive Officer of Waikato Regional Council ~~and listed on the Waikato Regional Council website as a certified farm nutrient advisor~~ and has the following qualifications and experience as meeting the following criteria:

a. Is a certified as a Nutrient Management Adviser under the Nutrient Management Adviser Certification Programme Ltd; or[152] ~~Has completed nutrient management training to at least intermediate~~ level, and
b. Has completed nutrient management training to at least an advanced level[153], and h~~H~~as at least two years experience in nutrient management planning;[154]

and agrees to follow the procedures and guidelines set out by Waikato Regional Council and audits of the Certified Farm Nutrient Advisor's work by Waikato Regional Council show that that the Advisor is preparing robust and reliable nutrient loss reports.[155]

Note: Certified Farm Nutrient Advisors will be listed on the Waikato Regional Council's website.[156]

~~**Definition - Certified Industry Scheme/s**~~

Certified ~~Industry~~ Sector[157] **Scheme/s**: is a ~~scheme~~ group or organisation responsible for preparing and assisting with the implementation of Farm Environment Plans[158] that has been certified by the Chief Executive Officer of Waikato Regional Council and listed on the Waikato Regional Council website as meeting the standards[159] ~~assessment criteria and requirements~~ set out in Schedule 2 of Chapter 3.11.

~~**Definition - Commercial vegetable production**~~

Commercial vegetable production: means the following vegetables grown in New Zealand for commercial purposes:

i. asparagus, artichokes, Asian vegetables, beans, beetroot, boxthorn, broccoflower, broccoli, broccolini, Brussels sprouts, burdock, cabbage, capsicums, carrots, cauliflower, celeriac, celery, chilli peppers, chokos, courgettes, cucumbers, eggplant, Florence fennel, garland chrysanthemum, garlic, gherkins, herbs, Indian vegetables, kohlrabi, kumara, leeks, lettuces, marrows, melons, okra, onions, parsnips, peas, potatoes, puha, pumpkin, purslane, radishes, rakkyo, rhubarb, salad leaves, salsify, scallopini, scorzonera, shallots, silverbeet, spinach, spring onions, sprouted beans and seeds, squash, swedes, sweetcorn, taro, tomatoes, turnips, ulluco, watercress, witloof, yakon, yams, zucchinis~~, potatoes, tomatoes, asparagus, onions~~; and
ii. the hybrids of the vegetables listed in subparagraph i.

~~**Definition - Cultivation**~~

Cultivation: For the purposes of Chapter 3.11, means preparing land for growing pasture or a crop and the planting, tending and harvesting of that pasture or crop, but excludes:

a. direct drilling of seed.
b. no-tillage practices.
c. recontouring land.
d. forestry.

[151] Forest and Bird PC1-8478
[152] Ballance PC1-7090, FANZ PC1-10663, Ravensdown PC1-10199
[153] DairyNZ PC1-10251, Genetic Technologies Ltd PC1-3290, S.J. Williams PC1-5959
[154] Genetic Technologies Ltd PC1-3290, NZIPIM PC1-8446
[155] Forest and Bird PC1-8494
[156] A McGovern PC1-8292
[157] Mercury PC1-9684
[158] Maniapoto Maori Trust Board PC1-9338
[159] Fonterra PC1-10583

Dairy Cattle: means cows that are or have been used for milk production, whether they are being grazed on a milking platform or not.[160]

~~**Definition - Dairy Farming**~~

Dairy Farming: means farming of dairy cows on a **milking platform** ~~for milk production~~[161].

~~**Definition - Diffuse discharge/s**~~

Diffuse discharge/s: For the purposes of Chapter 3.11, means the discharge of contaminants that results from land use activities including cropping and the grazing of livestock and includes non-point source discharges**.**

~~**Definition - Drain**~~

Drain: For the purposes of Chapter 3.11, means an artificially created open[162] channel designed to lower the water table and/or reduce surface flood risk but does not include any modified (e.g. straightened) natural watercourse.

~~**Definition - Drystock Farming**~~

Drystock Farming[163]: means pasture grazing beef cattle, dairy animals grazed off a **milking platform**, sheep, and deer for meat, wool, or velvet production.

~~**Definition - Edge of field mitigation/s**~~

Edge of field mitigation/s: mitigation actions or technologies to reduce loss of contaminants from farm land by intervening at edge of field either on or off-farm, and includes constructed wetlands, sedimentation ponds and detention bunds.

~~**Definition - Enterprise/s**~~

~~**Enterprise/s:** means one or more parcels of land held in single or multiple ownership to support the principle land use or land which the principle land use is reliant upon, and constitutes a single operating unit for the purposes of management. An enterprise is considered to be within a sub-catchment if more than 50% of that enterprise is within the sub-catchment.~~

Definition - Escherichia coli (E. coli)

***Escherichia coli* (*E. coli*)[164]:** is a bacterium used as an indicator that faecal contamination of the water has almost certainly occurred, so pathogens may be present in the water (Pathogen: an organism capable of causing an illness in humans).

~~**Definition - Farm Environment Plan/s**~~

Farm Environment Plan/s: For the purposes of Chapter 3.11, means a plan developed in accordance with Schedule 1.

~~**Definition - Farming activities**~~

Farming ~~activities~~: For the purposes of Chapter 3.11, the grazing of animals or the growing of produce, including crops, commercial vegetable production and orchard produce but not does not include:

a. planted production forest; or
b. the growing of crops on land irrigated by consented municipal wastewater discharges; or
c. production or growing of produce undertaken entirely within a building; or[165]

[160] Consequential change to the relief sought by P Hurley PC1-1088, Federated Farmers V1PC1-338.
[161] Forest and Bird PC1-8292
[162] Fert NZ PC1-10668
[163] *adapted from NIWA 2016. https://www.niwa.co.nz/our-science/freshwater/tools/kaitiaki_tools/land-use/agriculture/dry-stock*
[164] *Ministry of Health Drinking-water Standards for New Zealand 2005 (Revised 2008) definition pg 146*
[165] Gourmet Mokai Ltd PC1-7250, Tuaropaki Trust PC1-3009

d. production or growing produce for consumption by the occupier of the property or their family.[166]

~~**Definition - Five-year rolling average**~~

Feedlot: means the containment and feeding of livestock, covered or uncovered, for the purpose of finishing for meat production, and the activity precludes the maintenance of vegetative groundcover.[167]

~~**Five-year rolling average[168]:** means the average of modelled nitrogen leaching losses predicted by OVERSEER® from the most recent 5 years.~~

~~**Definition - Forage crop**~~

Winter[169] **Forage crop:** means crops, annual or biennial, but excluding pasture species,[170] which are grown to be utilised by grazing or harvesting as a whole crop between 1 May and 30 September of each year.[171]

~~**Definition - Good Management Practice/s**~~

Good ~~Management~~ Farming[172] **Practice/s:** For the purposes of Chapter 3.11, means industry agreed and approved practices and actions undertaken on a property or enterprise that reduce or minimise the risk of contaminants entering a water body.

~~**Definition - Livestock crossing structure**~~

Livestock crossing structure: means a lawfully established structure ~~installed to allow~~ that enables[173] livestock to cross a water body such that the livestock do not enter or have access to the bed of the water body[174].

~~**Definition - Mahinga kai**~~

Mahinga kai: the customary and contemporary gathering and use of naturally occurring and cultivated foods (also known as Hauanga kai).

~~**Definition - Microbial pathogen/s**~~

Microbial pathogen/s[175]: A microorganism capable of inducing illness in humans.

~~**Definition - Milking platform**~~

Milking platform: means that area devoted to feeding cows on a daily basis and includes land used for the growing of feed for the cows within the same property ~~during the milking season~~[176].

~~**Definition - Nitrogen Reference Point**~~

Nitrogen Reference Point: ~~The nitrogen loss number (units of kg N/ha/year) that is derived from an OVERSEER® use protocol compliant OVERSEER® file that describes the **property** or farm **enterprise** and farm practices in an agreed year or years~~

[166] H Clarke PC1-8466
[167] Consequential change to the relief sought by P Hurley PC1-1088, Federated Farmers V1PC1-338.
[168] *Adapted from Freeman, M.; (ed). (2016). Using Overseer- Establishing national guidance for the appropriate and consistent use of Overseer by regional councils in setting and managing water quality limits Consultation Draft Overseer Guidance Project, Overseer Management Services Ltd. Wellington, New Zealand*
[169] New Zealand Grain and Seed Trade Association PC1-1680
[170] Genetic Technologies Ltd PC1-3341, A McGovern PC1-8295
[171] New Zealand Grain and Seed Trade Association PC1-1680
[172] Ballance PC1-6862, FANZ PC1-9712
[173] WRC PC1-3672
[174] Fish and Game PC1-11017
[175] *Adapted from Ministry of Health. 2008. Drinking-water Standards for New Zealand 2005 (Revised 2008). Wellington*
[176] Pamu PC1-5938

~~developed by a **Certified Farm Nutrient Advisor**, using the current version of the OVERSEER® model (or another model approved by the Council) for the **property** or **enterprise** at the "reference" point in time.~~
The nitrogen discharge benchmark established for a farm, when the farm system in place during the reference period is modelled using the most recent version of the Overseer model (or an alternative model approved by the Chief Executive Officer of the Waikato Regional Council) as described in Schedule B.[177]

~~**Definition – Offset/s**~~

Offset/s: For the purposes of Chapter 3.11 means for a specific contaminant/s an action that reduces residual adverse effects of that contaminant on water quality.

~~**Definition – Point source discharge/s**~~

Point source discharge: A stationary or fixed facility from which contaminants are discharged or emitted. For the purposes of Chapter 3.11~~, means discharges from a stationary or fixed facility, including~~ includes the irrigation onto land from consented industrial and municipal wastewater systems.[178]

Regionally significant industry: means an economic activity based on the use of natural and physical resources in the region, which is demonstrated to have benefits that are significant at a regional or national scale. These may include social, economic or cultural benefits.[179]

Regionally significant infrastructure: includes:
a. pipelines for the distribution or transmission of natural or manufactured gas or petroleum;
b. infrastructure required to permit telecommunication as defined in the Telecommunications Act 2001;
c. radio apparatus as defined in section 2(1) of the Radio Communications Act 1989;
d. the national electricity grid, as defined by the Electricity Industry Act 2010;
e. a network (as defined in the Electricity Industry Act 2010);
f. infrastructure for the generation and/ or conveyance of electricity that is fed into the national grid or a network (as defined in the Electricity Industry Act 2010);
g. significant transport corridors as defined in Map 6.1 and 6.1A;
h. lifeline utilities, as defined in the Civil Defence and Emergency Management Act 2002, and their associated essential infrastructure and services;
i. municipal wastewater treatment plants, water supply treatment plants and bulk water supply, wastewater conveyance and storage systems, municipal supply dams (including Mangatangi and Mangatawhiri water supply dams) and ancillary infrastructure;
j. flood and drainage infrastructure managed by Waikato Regional Council;
k. Hamilton City bus terminal and Hamilton Railway Station terminus; and
l. Hamilton International Airport.[180]

~~**Definition – Restoration**~~

~~**Restoration:** is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed. It is an intentional activity that initiates or accelerates an ecological pathway, or trajectory through time, towards a reference state consistent with Objective 1.~~[181]

Sacrifice Paddock: means the containment of livestock in a paddock that precludes the maintenance of vegetative groundcover.[182]

~~**Definition – Setback**~~

Setback: means the distance from the bed of a river or lake, or margin of a wetland.

[177] Fonterra PC1-10580, Pamu PC1-5932
[178] Fonterra PC1-10593
[179] Trustees of Highfield Deer Park PC1-3978
[180] Trustees of Highfield Deer Park PC1-3978
[181] Federated Farmers V1PC1-807
[182] Consequential change to the relief sought by P Hurley PC1-1088, Federated Farmers V1PC1-338.

~~**Definition - Stock unit**~~

Stock unit: means an animal that eats 6,000 megajoules of metabolisable energy per year, and for the stock listed, is determined by ~~and is illustrated in~~[183] the following stocking rate table[184]:

Stock class	**Number of Stock Units per animal**	**Animal performance definition**
Dairy bull	6.1	620kg Friesian breeding bull
Dairy cow	10.4	450kg F8J8 dairy cow producing 400kg MS
Dairy heifer 1-2 years age	5.1	F8J8 199 – 419kg Jul to Apr
Dairy heifer calf (weaned)	1.6	F8J8 110 – 199kg Dec to Jun
Beef bull	6	620kg Beef cross MA breeding bull
Beef cow	7.5	480kg MA Beef cross breeding cow calving at 96%
Bull 1-2 years age	6.8	Friesian bull 209kg to 535kg slaughter weight
Steer 1-2 years age	5.8	WF steer 203kg to 478kg slaughter weight
Heifer 1-2 years age	5.7	WF heifer 208kg to 420kg slaughter weight
Steer calf < 1 year (weaned)	2.7	WF steer 100kg to 203kg Dec to Jun
Bull calf < 1 year (weaned)		Fresian 100kg to 209kg bull Dec to Jun
Heifer calf < 1 year (weaned)	1.6	WF heifer 90kg to 208kg Dec to Jun
Ram	1	73kg Romney ram, 4.5kg wool
Adult ewe	1.01	63kg Romney MA ewe lambing at 126%, 4.5kg wool
Sheep 1-2 years of age	0.9	Romney hogget 46kg to 66kg, 4kg wool
Sheep <1 years of age (weaned)	0.5	Romney 26kg to 46kg from Dec to June, 2kg wool
Bucks & does < 1 year (weaned)	0.5	OVERSEER®default
Angora does	1.1	OVERSEER®default
Feral does	0.9	OVERSEER®default
Feral bucks & wethers	0.5	OVERSEER®default
Stag	2.4	Red stag 200kg, 4kg velvet
Breeding hind	2.5	Red hind 110kg, 86% fawning
Hind 1-2 years age	1.2	Red hind 53kg – 75kg
Hind fawn (weaned)	1	Red hind 37kg – 53kg over 4 months, annualised to 12 months
Stag 1-2 years age	2.3	Red stag 55kg – 159kg over 12 months, 2kg velvet
Stag fawn (weaned)	1.1	Red stag 42kg – 55kg over 4 months, annualised to 12 months
Alpaca	0.8	OVERSEER®default

[183] WRC V1PC1-1535

[184] *Table adapted from Perrin Ag Consultants Ltd 2016. Bay of Plenty Regional Council: Methodology for creation of NDA reference files and stocking rate table; version 2. Table 1: Stocking rate table pg. 18.*

Llama	1.6	OVERSEER®default
Pony	6	OVERSEER®default
Pony brood mare w/foal	8	OVERSEER®default
Small hack	8	OVERSEER®default
Small hack broodmare w/foal	10	OVERSEER®default
Large hack	12	OVERSEER®default
Thoroughbred	12	OVERSEER®default
Large hack broodmare w/foal	14	OVERSEER®default
Milking ewe	0.9	70kg ewe producing 50kg MS
Milking goat	1.8	80kg nanny producing 140kg MS

~~**Definition - Sub-catchment**~~

Sub-catchment: For the purposes of Chapter 3.11, means an area of land within the Waikato River catchment representing the contributing area draining to one of ~~69~~74[185] locations in the stream and river network~~, and used as the basic spatial unit for analysis and modelling.~~

~~**Definition - Tangata whenua ancestral lands**~~

Tangata whenua ancestral lands: means land that has been returned through settlement processes between the Crown and tangata whenua ~~of the catchment~~[186], or is, as at the date of notification (22 October 2016), Māori freehold land under the jurisdiction of Te Ture Whenua Maori Act 1993.

~~**Definition - Woody vegetation**~~

Woody vegetation: means indigenous vegetation, planted production forest, and any other non-pastoral vegetation (excluding weed species).

[185] *Refer to Map 3.11-2.*
[186] Iwi of Hauraki V1PC1-455

APPENDIX 2– S32AA ANALYSIS REGARDING SETBACKS FROM WATERBODIES

Amendment recommended	Evaluation of amendment (S32AA assessment)
Schedule 1: Requirements for Farm Environment Plans	

Setback requirements
 	
Introduction of the following setback requirements into revised Schedule 1.
 	
Cultivation setbacks of:
• 20m from the edge of the bed for all lakes;
• 10m from the edge of bed for all rivers and streams;
• 5m from the edge of bed for all intermittent/ephemeral rivers and streams;
• 20m from the edge of bed for all waterbodies where large galaxiids including īnanga are known or predicted to spawn;
• Minimum 10m setback from the edge of bed of natural wetlands including for:
  • Fertiliser application
  • Effluent discharge
  • Drain construction or enhancement.
 	
Setbacks for forestry activities of:
• 20m from all waterbodies in lake FMUs;
• 20m from all waterbodies in Upper Waikato River and Middle Waikato River FMUs;
	Effectiveness and Efficiency
	
	The amendments that I have proposed, which include increased setbacks from waterbodies as a means of stock exclusion, are a more effective way of reducing the adverse effects associated with stock entering or being in close proximity to waterbodies.
	
	The setbacks as proposed by technical experts' Dr Robertson, Ms McArthur and Dr Stewart provide a precautionary approach to the exclusion of animals and restrictions on the distance of cultivation activities from waterways. I consider this appropriate given that Objective F of the Vision and Strategy directs the 'adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River…' and that the direction in the Vision and Strategy is to ensure that the health and wellbeing of the Waikato River is restored and protected (Objective A).
	
	Also relevant is Objective I, which seeks the 'protection and enhancement of significant sites, fisheries, flora and fauna' which includes native species such and īnanga and other large-bodied galaxiids. The RMA also recognises the requirement, to recognise and provide for significant indigenous vegetation and significant habitats of indigenous fauna as a matter of national importance under s6 which is confirmed in the evidence of Dr Stewart who highlights the lakes which still contain indigenous macrophytes.
	
	Therefore, I consider that the amendments have recommended (based on the advice of technical experts) to be the most effective and efficient way to achieve the objectives of the Plan Change and the Vision and Strategy and protecting the health and wellbeing of the Waikato and Waipā catchment.

	Costs (Environmental, Economic, Social, Cultural) The amendments as I have recommended are likely to have economic and social costs for landowners. An increase in setback requirements can result in opportunity costs, in terms of lost agricultural revenues resulting from a reduction in area of productive land. Associated costs may also be related to fence construction or planting of buffer areas, depending on the mechanism used for stock exclusion. In

	some instances, there may also be costs associated with sourcing an alternative water supply for stock if the waterbody is currently the stock water source. The maintenance associated with different methods of stock exclusion can also result in costs for landowners. Riparian planting can incur substantial costs, from the initial planting, to ongoing upkeep through pest and weed control. Vegetated buffer strips, which are effective at intercepting and providing for the infiltration of contaminants, and in some cases can be effective for excluding stock can become saturated with sediment and it is acknowledged that this can alter their ability to function effectively. In addition, I anticipate that the amendments I have recommended are likely to incur economic and social costs for Council, as the process of identifying and mapping spawning habitats is likely to result in pressure on council staff and resources, or may require training, contracting or recruitment to appropriately manage the new workload. *In analysing the costs associated with stock exclusion requirements, I have provided a summary of the papers/reports referred to in the expert evidence of Ms Macarthur, Dr Robertson, Dr Stewart. The information contained in these documents is summarised in the table below.*
	Benefits (Environmental, Economic, Social, Cultural) The benefits of stock exclusion, both direct and indirect are well documented. Beneficial impacts to result from the direct exclusion of stock can include the following: • reduction in stream bank damage and resulting erosion (and thus sediment input) • reduction in bed disturbance of sediments • prevention of direct deposition of excreta into waterbodies Riparian planting can also result in significant environmental benefits, such as: • reduced sedimentation (due to overland flow) • reduced levels of nitrogen and phosphorus (via assimilation and nitrification) • provision of in-stream food supplies and habitat (carbon inputs via leaves and woody debris) • maintenance of stream microclimate (reduced air and soil temperatures, as well as reduced windspeeds) • Increases in biodiversity • Provide cover for fish and habitat for adult phase of stream invertebrates

	Vegetated buffer strips are also hugely beneficial and effective at: • Decreasing contaminant loss via intercepting and providing for the infiltration and deposition of contaminants • Reduction in overland flow velocities and; • In some cases, excluding stock from waterbodies 207. Health and safety benefits are also likely to arise from the adoption of the amendments that I have recommended. Stock exclusion means that animals will no longer be exposed to potentially dangerous situations that are associated with the entering and crossing of waterbodies. Farm workers are also likely to experience reduced risk in scenarios where stock must be removed from or moved across waterways. *In analysing the benefits associated with stock exclusion requirements, I have provided a summary of the papers/reports referred to in the expert evidence of Ms Macarthur, Dr Robertson, Dr Stewart. The information contained in these documents is summarised in the table below.*
	Risk of acting/not acting I consider that the risk of not acting is that water quality in the Waikato and Waipā catchments will continue to decline, accompanied by continued threats to freshwater fish species such as īnanga, and their spawning habitats.
	Most appropriate way to achieve the objectives? I consider that the amendments that I have recommended are the most appropriate way to achieve the objectives of the Plan Change and the Vision and Strategy.

Summary of the papers/reports referred to by the Department of Conservation's technical experts in their evidence relating to the need for increased stock exclusion setbacks from those proposed in the s42A Officer's report or the plan change as notified.

Document reference	Water body discussed	Setback recommendation and Reason	Identified costs or benefits

Daigneault, A. J., Eppink, F. V., & Lee, W. G. (2017). A national riparian restoration programme in New Zealand: Is it value for money? *Journal of Environmental Management, 187*, 166-177
 	
NZ based paper
	Streams
	
	(flowing through primary sector land)
		The optimal widths of the riparian margins, to optimize net benefits are:
		
		At a low-cost assumption: 30m
		
		At a medium-cost assumption: 27m
		
		At a high-cost assumption: 17m
		
		(p. 173-174, heading 4)
		
		The low-cost assumption at width of 30m generates net benefits of NZ$5.5 billion/yr.
		
		Medium-cost at width of 27m is NZ$4.5 billion/yr.
		
		Low-cost at width of 17m is NZ$3.4 billion/yr.
			<u>Benefits</u>
			• Reduce GHG emissions
			  ○ Differs for all buffer widths (between low-cost scenario with natural revegetation and medium/high-cost scenarios, planted with native trees)
			• Reduce N leaching and P loss
			  ○ Active and natural revegetation reduce to same degree
			  ○ Narrow 5m margins reduce N and P loss by %50 and 10m margins by 73% and wider margins achieve smaller additional improvements
			• Reduce sedimentation (due to overland or streambank erosion)
			  ○ 5m margins cause 80% decrease and wider margins contribute additional 15%
			• Gain biodiversity
			  ○ Gains from natural revegetation are limited, at 2% increase with 5m margins
			
			<u>Costs</u>
			• Fencing
			  ○ Not largely affected by margin width
			• Alternative stock water supplies
			• Planting
			• Opportunity costs
			  ○ Loss of agricultural revenues from reduction in area of productive land
			• Planting and opportunity costs rise non-linearly as the margin increases and more area is restored
			
			(p. 171, heading 3.2)

McKergow, L. A., Matheson, F. E., & Quinn, J. M. (2016). Riparian management: A restoration tool for New Zealand streams. *Ecological Management and Restoration, 17*(3), 218-227 New Zealand focussed paper	Streams and rivers	No specific set back recommended	<u>Benefits of livestock exclusion</u> • Sediment, nutrient and microbial mitigation • Streambank stabilisation <u>Benefits of riparian buffer (planted or remnant)</u> • Bank stabilisation and contaminant removal • Shade and temperature control • Fish and invertebrate habitat • Wood and litter input (p. 221: Table 1. Summary of findings from NZ studies of riparian management)

Document reference	Water body discussed	Setback recommendation and Reason	Identified costs or benefits
Ministry of Agriculture and Forestry (2004) *Review of Riparian Buffer Zone Effectiveness.* Technical Paper No: 2004/05. Wellington Includes both NZ and overseas examples	Mainly streams and rivers	Parkyn et al. recommended a buffer width of 10-20 m	Benefits of riparian buffers: • Sediment and phosphorus removal rates increase with increasing buffer width (4.6m to 27m) • Grass filter strips are effective at trapping sediment – most larger particles with a 5m grass buffer, but finer particles requiring up to 10m • Nitrate removal of almost 100% has been measured in forest buffers 20-30m wide, with 10m over 70% (due to uptake by plants and denitrification) • Multi-tier/combination buffers often advocated as they improve water quality. For example a 5m grass filter strip and 1m wide row of deciduous trees has been shown to reduce nitrate subsurface flows (p. 23)
NIWA (1995) *Managing riparian zones: a contribution to protecting New Zealand's rivers and streams.* Wellington, NZ. Department of Conservation New Zealand focussed paper	Streams and rivers	No specific set back recommended	Functions of riparian zone • Buffers banks from erosion • Buffers channels from localised changes in morphology • Buffers input of nutrients, soil, microbes and pesticides in overland flow • Denitrifies groundwater • Buffers energy inputs • Provides in-stream food supplies and habitat Buffers floodflows • Maintains microclimate • Provides habitat for terrestrial species • Maintains dispersal corridors Potential in-stream effects • Reduces fine sediment levels • Maintains water clarity • Reduces contaminant loads • Prevents nuisance plant growths • Encourages growth of bryophytes and thin periphyton films • Maintains lower summer maximum temperatures • Increases in-stream habitat features and terrestrial carbon inputs • Maintains food webs • Reduces floodflow effects • Increases biodiversity (p. 4, heading 1.6, Table 1 Summary of riparian zone functions that potentially buffer streams from various land use effects) More detail under:

Document reference	Water body discussed	Setback recommendation and Reason	Identified costs or benefits
			Heading 2.2: How river and stream characteristics are influenced by riparian zones
NIWA (2010) *Riparian characteristics of pastoral streams in the Waikato region, 2002 and 2007*. Hamilton, NZ. Environment Waikato Waikato, NZ focused paper	Streams	No specific set back recommended	This report covers: % stream length fenced % stream length with riparian buffer of woody vegetation % pugging erosion % stock exclusion % woody buffer width But no analysis/discussion of effects of changing buffer widths (setbacks) Also no discussion of cost/benefits of buffer zones/setbacks
Greenwood, M. J., Harding, J. S., Niyogi, D. K., & McIntosh, A. R. (2012). Improving the effectiveness of riparian management for aquatic invertebrates in a degraded agricultural landscape: Stream size and land-use legacies. *Journal of Applied Ecology,* 213-222 Canterbury, NZ focussed paper	Streams	No specific set back recommended	Riparian management was generally poor in the Canterbury Plains. Many headwater streams have been deforested, diverted, channelized or buried in pipes to create more land area for agriculture. Streams that were closer to the headwaters or were smaller had: • poorer in-stream habitat as well as fewer pollution-sensitive taxa • slower water velocities and • more stream-bed sedimentation than larger or further downstream sites (possibly due to a reduced ability to dilute and flush out sediments) Generally, both small streams and those closer to the headwaters were the most impacted by agricultural land use on the Canterbury Plains. Streams characterised by riparian management (planting and stock exclusion): • were found to have more 'pollution-sensitive' communities, due to decreased stream temperature, narrower/deeper channels and greater organic matter resources in streams • may also provide corridors of habitat suitable for winged adult stages of aquatic and terrestrial insects (p. 219-220) Adding plantings or fences to sites already affected by poor in-stream habitat is unlikely to cause large local benefits but may reduce downstream effects. By adding riparian management to relatively unimpacted reaches, the decline of in-stream habitat can be reduced. (p. 221)

Document reference	Water body discussed	Setback recommendation and Reason	Identified costs or benefits
McDowell, Rich. W., Wilcock, B., Hamilton, David. P. (2013) *Assessment of Strategies to Mitigate the Impact or Loss of Contaminants from Agricultural Land to Fresh Waters.* AgResearch. Prepared for the Ministry for the Environment. New Zealand focussed paper	Lakes, streams and rivers	No specific set back recommended	Stream fencing – preventing livestock access to stream, decreases streambank damage (thus sediment inputs), bed disturbance of sediments (+ E. coli, N and P) and stops direct deposition of excreta into streams *Effectiveness* – P (high), Suspended Solids (low), E. coli (high) *Relative cost* – P (low), Suspended Solids (medium), E. coli (high) *Factors limiting uptake* – Price of permanent fencing vs temporary Vegetated buffer strips Vegetated buffer strips work to decrease contaminant loss in surface runoff by a combination of filtration, deposition, and improving infiltration. The upslope edge of the strip is where most large particles and particulates (sediment and entrained N, P and *E. coli*) are filtered-out, and the speed of surface runoff slows enough that deposition occurs. If the hydrology allows, a more important mechanism that decreases contaminant loss is infiltration (i.e. there is no water for transport overland into streams). This deposits of particulate material onto the soil surface or vegetation and increases the interaction and sorption of dissolved P with the soil. *Effectiveness* – P (high), Suspended Solids (high) E. coli (low) *Relative cost* – P (low), Suspended Solids (medium), E. coli) *Factors limiting uptake* – Land adjacent to stream my not be suitable/available for a buffer strip Buffer strips do have major flaws: 1) the strip can quickly become clogged with sediment; 2) they function poorly in areas that are often saturated due to limited infiltration; 3) they function best under sheet flow, whereas most surface runoff tends to converge into small channels that can bypass or inundate strips; and, 4) grassed buffer strips function best when the number of tillers is greatest, which generally occurs where biomass is harvested (i.e. under grazing). (p. 14, Table 4 Information applicable to the application of farm-scale technologies (strategies) to mitigate the loss of water quality contaminants to water)
Lehmann, M. K., Hamilton, D. P., Muraoka, K., Tempero, G. W., Collier, K. J., Hicks, B. J. 2017. *Waikato Shallow Lakes Modelling*. ERI Report 94. Environmental Research	Lakes	No specific set back recommended	• Estimated catchment response time is 10 to 30 years • Will take longer for N than P because there is greater groundwater delivery of N in the form of nitrate • Attempts to reduce nutrient loads by working towards meeting the catchment loads required to shift a lake above the bottom line (i.e. from D to C band in the NPSFM) may increase the length of time for meeting restoration goals

Document reference	Water body discussed	Setback recommendation and Reason	Identified costs or benefits
Institute, University of Waikato, Hamilton, New Zealand. pp. 223 New Zealand focussed paper			• That is not to say that there may not be some worthy outcomes from catchment management actions (e.g. plantings in riparian areas and other areas in lake catchments) • But they will likely be aesthetic, with little tangible outcome for water quality if they are not of sufficient scale and magnitude i.e. leading to at least a 50% reduction in nutrient loads required to shift the lakes out of the 'bottom line' (p. 153)
NIWA (2007) *Answers to frequently asked questions on riparian management.* Prepared for Hawkes Bay Regional Council. pp. 1-12 New Zealand focussed paper	Rivers and streams	The width required for trapping of particulate nutrients in surface runoff varies as a function of slope length, slope angle, clay type and drainage Generally, conditions that produce larger runoff volumes (such as higher rainfall, lower drainage, greater soil erodibility and steeper slopes) will decrease trapping efficiency Table 1 predicts the optimal filter width and performance for suspended sediment (as a function of slope, drainage and clay content) (p. 5-7)	For narrow buffers, it may be possible to allow cattle to browse the vegetation over the fence by adjusting the wires. For wider buffers, short periods of well-controlled mob grazing (to minimize faecal and urine inputs to the buffer) are expected to be better than longer periods of grazing at lower animal densities. This grazing also needs to be timed in a fine weather window to allow some regrowth before a rain event. (p. 4)
Francis, T. B., & Schindler, D. E. (2006). Degradation of Littoral Habitats by Residential Development: Woody Debris in Lakes of the Pacific Northwest and Midwest, United States. *Ambio: A Journal of the Human Environment, 35*. pp. 274-280 USA focused paper	Lakes	No specific set back recommended	Results found a strong relationship between riparian forest density and littoral course woody debris (a key input to aquatic systems) (p. 278) Active restoration practices, such as directly adding course woody debris to lakes where humans have interrupted the littoral cycle, may accelerate recovery, but such strategies would be financially costly. Rather, given the rapid pace of human development, the most prudent management actions should now focus on active protection of intact littoral habitat where it is still present. (p. 279)

Document reference	Water body discussed	Setback recommendation and Reason	Identified costs or benefits
Davis-Colley, R. J. and van Elswijk, M. (2000) Microclimate gradients across a forest edge. *New Zealand Journal of Ecology. 24(2).* pp. 111-121 New Zealand focused paper	Small streams (< 3.5 m wide and which have light exposure comparable to the low levels of surrounding forest)	The study found an edge influence on microclimate extending at least 40 m – which has implications for stream riparian buffers in NZ Our microclimate work suggests that forest buffers c. 40 m wide may be needed on both sides of small streams to protect riparian ecology where the surrounding land use is open pasture or cropland. Narrower buffers may be suitable in tree plantations where the adjoining land is only exposed for part of the timber crop rotation (i.e., after clear-cutting). Because microclimate variables asymptotically approach forest interior conditions with distance (e.g., Forest Ecosystem Management Assessment Team, 1993) there are diminishing returns for increased buffer width, however 40 m is proposed as a working guideline for protecting streams in New Zealand. (p. 120)	The study found: <u>Microclimate contrast: forest vs pasture</u> • Less light reached forest floor than pasture • Wind speed higher in pasture than forest • Temperature higher in pasture • Soil temperature in forest displayed little diurnal variation, whereas soil temperature in the pasture varied diurnally in a sinusoidal pattern (p. 115) <u>Microclimate gradients across forest edge</u> • Wind exposure generally decreased along the transect in pasture approaching the forest (steepest at fence line) • Temp and vapour pressure deficit (VPD) declined along the transect in pasture approaching forest • Soil temps decreased near the forest edge (Forest conditions of soil temp were generally reached within 5 m from the forest margin) • When wind was directed out of the forest, a 'sheltering' effect extended 40m into the pasture (p. 115-116) - Microclimate gradients are most significant on sunny and windy days - The soil temp gradient is abrupt near the forest edge (similar to that of light exposure) - Windspeed, air temp and VPD have more gentle spatial gradients than soil temp and light exposure (therefore the latter have greater control on microclimate) - Edge effect is observed with lack of ferns close to edge of forest, most likely as a result of desiccation (p. 118-119)