In the matter of:	Clause 8 of Schedule 1 – Resource Management Act 1991 – Submissions on publicly notified plan change and variation – Proposed Plan Change 1 and Variation 1 to Waikato Regional Plan – Waikato and Waipa River Catchments
And:	**Wairakei Pastoral Ltd** Submitter
And:	**Waikato Regional Council** Local Authority

Statement of evidence of Dwayne Connell-Mckay

Block 1 Hearing Topics

Dated: 15 February 2019

STATEMENT OF EVIDENCE OF DWAYNE MCKAY

BLOCK 1 HEARING TOPICS

SUMMARY AND CONCLUSIONS

ISSUES WITH PLAN CHANGE 1

1 PC1 as notified contains defects significant enough to prevent it from being able to be implemented as currently drafted.

2 Bolded text (in paragraphs) highlights the provisions that I recommend to be changed.

3 These defects can be grouped under four general headings;

3.1 Science and Modelling;

3.2 Table 3.11-1;

3.3 Economics and Modelling; and

3.4 Plan Provisions.

4 Within this Hearing Block, I consider the following points of evidence critical to supporting WPL's submissions and to ensuring PC1 can be implemented.

4.1 **Issues with science and modelling**:

- The losses in concentration of N in groundwater relative to groundwater age due to nitrate reduction are different from those used in PC1;
- The inconsistency of N losses to groundwater relative to spatial variability across sub-catchment's is not recognised within PC1;
- The majority of the groundwater that actually reaches surface waters within the PC1 area is relatively young.

4.2 **Issues with Table 3.11-1**:

- The use of climatically biased data to determine the current state (2010-2014) has caused errors within **Table 3.11-1**;
- As notified **Table 3.11-1** contains significant defects, these include:
  - The numerical values in the **Short-Term Freshwater Objectives**;
  - The numerical values in the **80-year Freshwater Objectives**;
- **Table 3.11-1** lacks the ability to cross reference easily to **Table 3.11-2** and **Map 3.11-2;**
- The errors in data and resultant parameters affect the ability to achieve the date **in Objective 3** and to implement PC1;
- There are benefits in managing sub-catchments at scale, and this should be retained; and

- The ability to use alternative models to predict water quality outcomes with some level of confidence should be provided for.

4.3 **Issues with Economics and Modelling:**

- The use of climatically biased data to determine the current state (2010-2014); and
- In turn, its use to run the CLUES model to inform CSG as to the preferred policy mix and likely economic outcomes.

4.4 **Issues with Plan Provisions:**

- The need to use NPS-FM terms – 'Improve' or 'Maintain' and 'Freshwater Objectives' within **Table 3.11-1** and PC1 **Objectives**;
- Fix Table 3.11-1;
- Amended wording of **Objectives 1-6**;
- **Objective 3** as currently written and supported via **Table 3.11-1** and the plan provisions cannot be implemented by 2026;
- Retaining adaptive management as a tool to achieve sustainable management;
- Increased emphasis on implementation of **FEP**, and managing discharges of P in place of N;
- Map **3.11-2** needs amending to include sub-catchments 66A and 66B;
- Table **3.11-2** needs amending to include sub-catchments 66A and 66B;
- Table **3.11-2** needs amending to include Sub-catchment numbers; and
- Definition of 'Springs' needs to be included into **Part C.**

5 Collectively the issues raised in these points of evidence create significant uncertainty in **Table 3.11-1** and its ability to be implemented via the provisions of PC1 as notified.

RECOMMENDED SOLUTIONS

6 In order to correct the uncertainty around **Table 3.11-1**, I have concluded from evidence presented that the following as a minimum should be undertaken:

6.1 Correcting the water quality data used to determine the current state (2010-2014) so as to remove the climatic bias, and to ensure parameters calculated can be replicated.

6.2 Correcting the **Short-Term** and **80-year Freshwater Objectives** in **Table 3.11-1**.

7 **Table 3.11-1** needs to be repopulated;

7.1 Using corrected current state values, derived as per Dr Neale's evidence;

7.2 By adding a column to include 'current state' values;

7.3 By adding row to include Sub-catchments 66A and 66B;

7.4 By adding a column (or new Table 3.11-3) to include 'load' values, derived as per Dr Neale's evidence; and

7.5 By adding a column to include ‘Sub-catchment number’.

8 Given the complexity of the task to correct the ‘current state’ data and **Table 3.11-1** I recommend that the Commissioners:

8.1 Direct the WRC to release the 10 years of data as recommended by Dr Neale to all relevant technical experts; and

8.2 Initiate conferencing with all relevant technical experts immediately, to be concluded by the end of Hearing Block 2, including the production of a revised Table.

9 To enable Objective 3 to be implemented, in addition to correcting **Table 3.11-1**, amendments will also be required to the policies, methods and rules in PC1; these will be addressed in Block 2.

10 **Appendix 1** contains the changes requested by WPL to the provisions of PC1, including my recommendations (in the right-hand column) showing underlined additions and strikethrough deletions to the text in red.

11 **Appendix 2** contains my proposed wording for **Objectives 1, 2, 3, 4, 5 and 6**.

12 **Appendix 3** contains the summary of provision changes in Block 1, and the same provisions as notified.

Conclusions

13 Correcting the data and parameters contained within **Table 3.11-1** and by including the Supplementary table to Table 3.11-1 to address contaminant loads recommended by Dr Neale (pending further amendments to the policies, methods and rules) will allow the plan provisions to better achieve the Objectives.

14 Based on Mr Williamsons’ evidence, adding the definition of ‘Springs’ and splitting Sub-catchment 66 into 66A and 66B assists in achieving the Objectives

15 Amending **Map 3.11-2** and **Table 3.11-2** to allow for sub-catchments 66A and 66B further supports the achievement of the Objectives

16 Amending **Objectives 1, 2, 3, 4, 5 and 6** as per Appendix 3 of my evidence gives effect to both the NPS-FM and the Vision and Strategy

17 My support of **Policy 14** (as amended in my evidence) is provisional until further evidence is available on Policies in Block 2.

18 In conclusion, the plan provisions as amended in my evidence (**Appendix 3**) are in my opinion an appropriate way to achieve sustainable management.

EVIDENCE

BACKGROUND

1 My name is **Dwayne Connell-McKay**. I hold the qualification of Bachelor of Applied Science, Natural Resource Management from Deakin University Melbourne. I have completed the Making Good Decision Course, as well as the Sustainable Nutrient Management in NZ Agriculture certificate. I am the founding Director of Thornton Environmental.

2 Previously I worked for the Bay of Plenty Regional Council, where over ten years I held the following positions, Regulatory Solutions Specialist, Consents Team Leader and Senior Consents Officer.

3 I have experience in both drafting and the implementation of first and second generation 'Overseer' based Regional Plans. Along with numerous other Regional Plans.

4 My principal areas of experience involve providing resource management advice within the public and private sectors, facilitating consultation processes, undertaking planning analysis and developing resource consent conditions.

Focus of my evidence

5 My evidence will cover the Block 1 Hearing Topics identified by the Commissioners:

5.1 I will rely on the evidence of Mr Green regarding the company background about Wairakei Pastoral Ltd (**WPL**).

5.2 I will rely on the evidence of Mr Conland regarding the description of the Wairakei Estate, the description of the activities occurring on the Wairakei Estate as at 22 October 2016 (Plan Change 1 (**PC1**) notification date), and the history of the Ruahuwai Decision Support Tool (**RDST**).

5.3 I will rely on the legal submissions of counsel for WPL regarding any relevant questions of law.

5.4 I will rely on the factual and opinion evidence of the science and economic expert witnesses called by WPL.

5.5 Based on my own analysis of the relevant statutory planning documents, the Section 32 Evaluation Report, and the matters referred to above, I will provide my own expert planning analysis of PC1 and the WPL submissions, and recommend amendments that I consider necessary to ensure that PC1 will promote sustainable management as required by the Resource Management Act 1991 (**RMA**).

Involvement in the Process

6 I was engaged by WPL to provide planning advice in September 2018 in relation to PC1.

7 In preparing my evidence I have reviewed the evidence prepared by WPL's other expert witnesses as well as the following:

7.1 WPL's primary submissions on PC1 and Variation 1 (**Var1**) referenced by WRC as submitter ID: 74095;

7.2 WPL's further submissions;

7.3 The Section 32 Evaluation Report;

7.4 The Section 42A Report for Hearing Block 1.

Code of Conduct

8 My evidence has been prepared in accordance with the Code of Conduct for expert witnesses as set out in Section 7 of the Environment Court of New Zealand Practice Note 2014.

Part A

1. INTRODUCTION

9 Introduction, structure, assumptions and abbreviations:

9.1 PC1 was publicly notified on the 22 October 2016, following this notification WRC withdrew part of PC1 on the 3 December 2016.

9.2 Var1 to PC1 was publicly notified on the 10 April 2018.

9.3 For ease of reference I adopt the list of abbreviations as referenced under heading 1.2, para 9 in the Section 42A Report for Parts A and Part B and will use the same abbreviations within my following evidence.

2. Summary of PC1 and its development

10 The development and components of PC1 are well described in WPL's legal submission, and I adopt this summary. In addition, I note that PC1 as notified sets out two stages in its implementation:

10.1 Stage 1 of PC1 provides for the first ten years (2016-2026), this includes actions such as the establishment of the Nitrogen Reference Point (**NRP**) for properties and enterprises and the creation of Farm Environment Plans (**FEP's**) and the adoption of the practices required within this stage to achieve 10% of the overall required change in freshwater quality.

10.2 The second stage of PC1 relates to the subsequent period up to the end of the 80-year period (2026-2096), this second stage is likely to require a further plan changes where further reductions in Phosphorus (**P**), Nitrogen (**N**), Sediment and Microbial Pathogen discharges will likely be required.

3. Legal and statutory framework

11 I have read and agree with all statements of evidence presented by the technical experts for WPL, and legal submissions on behalf of WPL that summarise the legal and statutory framework relevant to PC1. I will address any specific points in the context of my evidence below.

4. Part B Outcomes

4.1 Scope

12 I consider there to be four general headings under which my evidence in relation to Block 1 can be framed, these being;

12.1 Science and Modelling;

12.2 Table 3.11-1;

12.3 Economics and Modelling; and

12.4 Plan Provisions.

4.2 Science

13 All experts presenting evidence on behalf of WPL agree that there is an overall general decline in water quality within the Waikato and Waipa Rivers as identified within the Section 32 Report, the Section 42A Report and PC1 as notified.

14 Evidence given by WPL's expert witnesses raise issues with the science, modelling and economic assumptions that all underpin the s 32 evaluation and the subsequent policy mix that was derived.

4.2.1 Groundwater

15 PC1 is founded on the principle that a majority of N not retained within the root zone resurfaces at some point in time and contaminates surface waters. Within PC1, the Section 32 Report and the Section 42A Report this is referred to as the 'load to come'. The time taken for the groundwater to resurface is referred to as the 'lag effect'. Mr Williamson addresses both the 'load to come' and the 'lag effect' in his evidence, concluding that both are over stated in PC1.

16 In Dr Neale's evidence he notes that the Section 42A Report fails to provide a complete description of the N cycle as it fails to recognise denitrification as a key step and as a process directly relevant to PC1. Dr Jordan and Mr Williamson also present evidence on this point.

17 I have read and agree with all statements of evidence presented by these technical experts and I adopt their conclusions in relation to N, groundwater and their interactions.

18 WPL opposed the use of ‘spring’ within the body of PC1. I note in para 173 of the Section 42A Report the Officers proffered a definition for ‘spring’ obtained from the Oxford dictionary.

19 The definition given does not remove the concern around seasonal interpretation of springs/soaks created from high water tables that can express themselves as a surface feature for a period of time before drying out and perhaps never existing again. Mr Williamson discusses this in his evidence.

20 Given that the inclusion of the word ‘springs’ is likely to result in further actions to be required it is my view that a suitable hydrological definition needs to be included within PC1 to ensure the plan is implemented as intended.

21 Mr Williamson in his evidence has proffered the following definition for the term:

> **“*Springs****: means a water body derived from an underground source that flows year-round at a minimum flow rate of 5 L/s*”.

22 I recommend that this definition should be adopted into Part C of PC1, under the title ‘Additions to Glossary of Terms/Nga Apitihanga kit e Rarangi Kupu’.

4.2.2. Surface Water

23 Dr Jordan in his evidence provides information that concludes that elevated concentrations of Total Phosphorus (**TP**) during the growing season is the most important causative driver for algal blooms. More so than N concentrations within the Waikato River.

24 As noted in para 131 of the Section 42A Report, N is not any more important that any of the other 3 constituents, and in fact P is likely to be the most limiting nutrient with water quality being the most sensitive to increases or reductions of P.

25 Mr Williamson provides evidence detailing the shortcomings of PC1 in how its blanketed approach to managing water quality does not address the nature of the landscape nor the connectivity to surface water.

26 I have read and agree with all statements of evidence presented by technical experts for WPL and adopt their conclusions in relation to N, P, surface water and their interactions.

4.2.3 Managing Nitrogen Vs Phosphate

27 Dr Jordan discusses in his evidence that the choice to control N within PC1 is due to it being a good indicator of farming intensity, not because of any causative link between N losses and any verifiable water quality outcomes.

28 Dr Jordan concludes that:

> *… the focus of limitation of nutrient discharges should be on changes in TP discharge.*

29 PC1 as notified has however concentrated more on controlling N as a proxy for land use intensity, rather than following the guidance of the background science that

should inform the plan preparation process. For example, if we want to maintain and improve in-stream water quality, then P is the limiting nutrient and should be the primary focus.

30 I have read and agree with all statements of evidence presented by technical experts for WPL and agree that placing more emphasis on managing P and implementing FEP's would likely achieve better outcomes in surface water quality.

4.3 Table 3.11-1

31 In Dr Neale's evidence he states a number of parameters used as freshwater objectives do not appear to have been developed using a method that he can replicate. His evidence steps through these issues, the primary point being that the 'current state' as defined in the Section 32 Report, which is further used to define the 'short term freshwater objectives', cannot be re-calculated by Dr Neale using the data set provided to him from WRC.

32 Dr Neale recommends that a '*common sense*' filter needs to be applied to the data. He states:

> … taking into account the detection limits, precision and accuracy of such laboratory tests. Setting freshwater objectives below detection limits and at unrealistic levels of precision means that the objectives do not meet the "measurable" or "achievable" test in the SMART objectives' framework (Specific-Measurable-Achievable-Relevant-Timely).

33 Dr Neale provides an amended example of Table 3.11-1 as Appendix 3 of his evidence, amending parameters for 11 sites in the Upper Waikato Freshwater Management Unit (**FMU**) and recommends that (as a minimum) the whole table should be amended in this way. He also recommends that the terminology from the National Policy Statement for Freshwater Management (**NPS-FM**) as amended in 2017, should be used to describe the numbers in Table 3.11-1 as 'freshwater objectives'.

4.3.1 Current State

34 Dr Neale's evidence also discusses the period used to determine the current state data (2010-2014), and notes that water quality data collected over this period coincided with a particular dry period. He concludes that the use of data obtained during this period without accounting for the below average rainfall may lead to a biased assessment of the current state, likely resulting in a bias – under estimating the current state of water quality in the catchment.

35 Dr Jordan considers the evidence supplied by Dr Neale, Mr Williamson and Dr Creswell and concludes that:

> … the drier than average period of 2010-14 is likely to have caused lower Nitrate and TN concentrations to be recorded in the monitoring data over 2010-14 due to reduced soil losses and enhanced catchment-wide biological N uptake than would have been the case over a period with rainfall more representative of current average conditions.

36 Dr Jordan further concludes:

> On the basis of Dr Neale's evidence, if we accept that the statistics of the constituents derived from monitoring data collected over the period 2010-14 underestimate the true current state of water quality statistics over a longer current period, then this will bias the calibrated parameter values for the CLUES model.

37 The effect of this bias is twofold:

37.1 Firstly, through the determination of the 'current state', which in turn is partly used to determine the short-term freshwater objectives.

37.2 Secondly, this data was then used within the CLUES model to inform CSG as to the preferred policy mix and likely economic outcomes.

38 Dr Neale proffers a solution in his evidence, recommending;

> … that the current state assessments are re-assessed with reference to rainfall variability to reduce any bias that may be introduced by unusually dry or wet periods. An obvious straightforward solution would be to extend the period used to determine current state to ten years, which would reduce the influence of the dry years during the period 2010-14.

39 Revisiting the data sets used, as recommended by Dr Neale, in my opinion is required to ensure that both the evidential platform that PC1 is built upon and the freshwater objectives set within Table 3.11-1, are appropriate and based on the latest available science as required by Strategy 3 of the Vision and Strategy.

40 Other conclusions in the s 32 evaluation in regards to the science behind the limits may also need to be revisited as a result.

41 I agree with the evidence presented by technical experts for WPL that the current state assessments need to be re-assessed.

42 In para 559 of the Section 42A Report the Officers comment:

> … that while it may be useful to include current state data for each sub catchment (i.e. 2010-2014 data) the current state is unlikely to provide any other benefits and have limited value in terms of plan implementation.

43 I am of the opinion that including the (corrected) current state in PC1 would have benefits when considering plan implementation. Any resource consent application under PC1 and subsequent decision will need to be able to identify suitable values and potential effects so as to enable an assessment under both s 95 and s 104 of the RMA.

44 To include the 'current state' data I recommend either:

44.1 Inserting another column before the short-term freshwater objective in Table 3.11-1 for each sub-catchment, labelled as 'Current State'; or

44.2 Create a new table (Table 3.11-3) and with two headings (columns): sub-catchments and 'Current State'.

4.3.2 Sub-Catchments

45 WPL submitted on PC1 Map 3.11-2 as notified, requesting that Map 3.11-2 should be amended by subdividing Sub-catchment 66 into Sub-catchments 66A and 66B as the boundaries shown are not hydrologically coherent with river sub-catchments included in Table 3.11-2.

46 Dr Jordan comments in his evidence that:

> The sub-catchment delineation adopted by WRC for PC1 appears to have mainly been determined by the method of data analysis and modelling approach adopted to support the CSG, instead of fundamental differences in hydrological or water quality response between sub-catchments.

47 He further concludes that as a result of the models chosen to develop PC1:

> *"The sub-catchment definition in PC1 was determined by limitations in the modelling approach and method of analysis adopted"*

48 Mr Williamson also confirms in his evidence that:

> … the proposed sub-catchment boundaries (66A and 66B) conform with fundamental catchment delineation principles with the boundary lines following topographic ridgelines or flow divides.

49 Mr Williamson includes in his evidence a detailed map showing the boundaries of sub-catchments 66A and 66B, titled **Figure 8. Subdivision of Sub-catchment 66.**

50 Dr Neale's evidence explains why managing Sub-catchments 66A and 66B (as per WPL's submission) separately is preferable:

50.1 Dr Neale explains the issues when applying "NPS-FM Lake Attributes to a section of the river that is functioning as a river, rather than a riverine lake";

50.2 By separating the catchment into two as recommended by Dr Neale the manner in which each sub-catchment responds to inputs can be better reflected in the freshwater objectives to be imposed; and

50.3 Dr Neale states;

> Analysis of the river in this area indicates that change occurs around Tahorakuri and therefore following the logic in PC1, it would be appropriate to manage the river upstream and downstream of this location differently.

51 In para 487 of the Section 42A Report the Officers note:

> Officers are concerned that shifting the regulatory focus to sub-catchments is not well supported by the higher-level planning documents.

52 In my opinion, neither the Vision and Strategy nor the NPS-FM contain any provisions that are contrary to the sub-catchment framework as notified in PC1.

53 The evidence given by experts on behalf of WPL has shown that the science behind the delineation of the sub-catchments and some of the data used to determine the freshwater objectives within those sub-catchments is lacking, however the evidence supports the sub-catchment approach as a framework to achieve sustainable management, and seeks to improve this framework.

54 When discussing the modelling undertaken to develop PC1 as notified and alternatives Dr Jordan's comments on the ability to:

> … develop an alternative modelling framework that would allow water quality outcomes to be predicted, with some level of confidence, at locations other than those with existing monitoring data. This would allow subdivision of the existing sub-catchments set out in Table 3.11-2 of PC1.

55 He further concludes:

> An alternative model could therefore produce defensible outcomes for PC1 to support an alternative arrangement of sub-catchments to those set out in Table 3.11-2 (e.g. by subdividing Sub-catchment 66 as requested by WPL).

56 I agree with the statements of evidence presented by technical experts for WPL and with the recommendation that Sub-catchment 66 be divided into 66A and 66B as per Figure 8 of Mr Williamson's evidence.

57 From Dr Jordan's evidence I adopt the view that there is sufficient ability to extrapolate the required freshwater objectives for the proposed sub-catchments (66A and 66B) from 'current state' data (once corrected).

58 As a result of WPL's submission to add Sub-catchments 66A and B, WPL also sought to amend Table 3.11-2 to provide for the new sub-catchments and for both sub-catchments to be identified as Priority 3 Sub-catchments.

59 As previously discussed, based upon evidence from Dr Neale, Mr Williamson and Dr Jordan, I support the creation of the two new sub-catchments and their subsequent inclusion as Priority 3 Sub-catchments.

4.3.3 Loads

60 Dr Neale has included a Supplementary table to Table 3.11-1 (Appendix 3 to his evidence) showing nutrient loads. Dr Neale considers:

> …the addition of loads to Table 3.11-1 would also provide for more effective management of nutrients.

61 I accept Dr Neale's evidence on this point and his criticism of the Section 42 Report rationale for not including 'loads'.

4.4. Economics

62 In his evidence Mr Ford has stated that the economic modelling undertaken to determine the policy mix contained within PC1 was inadequate.

63 I have read and accept Mr Ford's evidence as it describes these shortcomings and the subsequent impacts on the reliability of the economic analysis and potential effects.

64 It is clear through the intent of PC1 that there will be adverse economic effects within the catchment covered by PC1, however, given:

64.1 The uncertainty of the data (current state) used to determine these effects; and

64.2 The potential scale of these effects;

I believe the conclusions reached through the s 32 evaluation may need revisiting.

65 The current wording of policies, methods and rules within PC1 limits land use change unless, further reductions in N loss are achieved. This requirement to show further reduction is regardless of the current NRP and the water quality within the sub-catchment. WPL consider the economic consequence of this to be significant (in the absence of any adverse environmental effects) and will present further evidence on this for Block 2 of the Hearing.

66 WPL has submitted to allow N trading within PC1 (via transfer rules), and will also be providing further evidence on this in Block 2 of the Hearing.

4.5. Plan Provisions

67 WPL has made a number of submissions on the provisions of PC1. Appendix 1 of my evidence is a record of these submissions together with my recommendations.

68 As a summary to this Block, WPL seeks to:

68.1 Amend the PC1 provisions (objectives) to ensure the ability for consents to be granted at property, enterprise or sub-catchment level;

68.2 Ensure the objectives provide for the ability to *maintain* (or *protect)* when existing sub-catchment water quality is deemed to meet the short-term freshwater objectives as defined in Table 3.11-1;

68.3 Ensure adaptive management is enabled as an approach to managing land use and sub-catchment water quality through resource consents;

68.4 Maintain terminology that is consistent with the NPS-FM throughout PC1;

68.5 Identify the shortcomings in both the science and economic models used, and the likely influence these assumptions had on selecting the preferred policy package; and

68.6 Identify the shortcomings of the proposed provisions and data that would influence the success of PC1.

69 As per para 211 of the Section 42A Report, WPL submitted that PC1 should provide clarity around consultation with Iwi in relation to wai kino/harmful waters. WPL accepts the Officers comments on the basis that the amendments to the value relates purely to spiritual and cultural effects and has no public health implications.

70 Para 651 of the Section 42A Report includes proposed amendments to Policy 14 of PC1. WPL submitted that Policy 14 should be retained as notified or amended by similar wording to like effect:

70.1 The amendments proposed by the Officers are generally in keeping with WPL's submissions, except for, as previously discussed in my evidence, the wording to be adopted should reflect the NPS-FM.

70.2 To reflect the NPS-FM terminology Policy 14 should read as follows;

"Improve and maintain lakes by 2096 through the implementation of a tailored lake-by-lake approach……."

70.3 Given that evidence in relation to policies, methods and rules is being presented and heard in Blocks 2, I wish to reserve my final position on Policy 14 until the evidence on the other policies, and methods and rules of PC1 is available.

4.5.1 Objectives

71 Debating the wording of Objectives void of their interpretation within the subsequent policies and rules/methods will in my opinion make it difficult to reach any form of final consensus at this stage.

72 Whilst I will present my view of the objectives as notified, I wish to reserve my position until such time that the subsequent policies, methods and rules are available to be heard and can be assessed together in Block 2.

73 If any form of caucusing on the objectives, policies, methods and rules is to be undertaken during the Hearing process I would request that this should occur in Block 2, after all the evidence on the provisions had been received.

74 WPL submitted on all 6 objectives requesting amendments to 1, 3 and 4 (and the principal reasons given for adopting objectives 1, 2, 3 and 4), and the submission points seek to:

74.1 Provide a suitable foundation for permitted activity rules;

74.2 Ensure PC1 provides an option for resource consent applications at a sub-catchment scale;

74.3 Enable enterprises capable of delivering the anticipated environmental outcomes at scale (via adaptive management and mitigation provisions included in FEP's) to apply for consent under PC1 from 2016 onwards to maximise compliance and regulatory efficiency; and

74.4 Make express provision for the transfer of land use consents and discharge permits.

75 The submission amendments requested by WPL seek to add and delete words contained within the notified objectives but to maintain the drafting style already present in the notified plan change.

76 The operative Waikato Regional Plan (**WRP**) already has a specific style in its drafting, that has been replicated within PC1 as notified.

77 Having read other submissions and the Section 42A Report, I concur that objectives written in accordance with current best practice would be more suitable than the style contained within PC1 as notified. Plan drafting style has improved since the WRP became operative.

78 In removing the reasons for adopting the objectives it is however important to ensure that the wording of the objectives is clear so as to ensure their intent can be interpreted.

79 I would proffer the guidance given via the Quality Planning (**QP**) website as being the authority on good practice when formulating plan provisions.

80 When writing objectives, the QP direction states it is good practice to:

- be specific
- write the objective in the form of a sentence that states what is to be achieved, where and when
- relate the objective to the issue (if included in the plan) in terms of subject matter and use of consistent terminology or phrases; or
- (where issues are not included in the plan) write the objective in such a way that readers can understand what the issue would have been
- write the objective in such a way that it is assessable (i.e. those people implementing and monitoring the plan will know when the objective has been met).

81 I have therefore recommended amendments to Objectives 1, 2, 3, 4, 5 and 6 and these are attached (in clean version) as Appendix 2 of my evidence. They are also shown in underline and strikethrough in my Appendix 1.

82 As a result of the issues previously identified with Table 3.11-1, unless rectified it is unlikely that the Short-Term freshwater objectives referenced within Objective 3 can be achieved by 2026.

Objective 1

83 WPL submitted on Objective 1 to include the word ‘maintain’, to supplement the terms ‘restoration’ and, ‘protection’. Within the Section 42A Report it seems a number of submitters contest the correct wording that should be used within this objective. Irrespective of which statutory document has legal precedence, it is my opinion that either pair of words from the NPS-FM (‘maintain’ and’ improve’) or from the Vision and Strategy (‘protect’ and ‘restore’) would be suitable for the purpose intended within PC1.

84 WPL's legal submissions address the question of law as to which document is to be given precedence to (Vision and Strategy or NPS-FM) in cases of conflict. Based on the view that the NPS-FM retains its normal place in the planning hierarchy, I adopt the wording of the NPS-FM within my evidence, that water quality should be 'maintained' or 'improved'. I also note that the NPS-FM amendments (2017) provide some guidance about when water quality may need to be improved.

85 The effect of the NPS-FM has ultimately been to create the limits for sub-catchments as defined in Table 3.11-1. From my understanding of PC1, 'maintain' relates to sub-catchments where the current state is already meeting the 2026 short term freshwater objectives, and/or where a sub-catchment is meeting its 80-year freshwater objective.

86 'Improve' relates to sub-catchments where the current state requires improvement to meet the 2026 short-term freshwater objectives, and/or sub-catchments where their state requires improvement in water quality so as to be able to meet the 80-year freshwater objectives.

87 Table 3.11-1 is the key to how PC1 gives effect to the terms 'maintain' and 'improve' from the NPS-FM, and should also serve to satisfy the requirements to 'protect' and 'restore' as required by the Vision and Strategy

88 The term 'reduction' as introduced into Objective 1 via the Section 42A Report does not come from either the NPS-FM or the Vision and Strategy. Any reduction required within the sub-catchments has already been specified via the parameters set in both the short term and 80-year freshwater objectives in Table 3.11-1.

89 Any reduction in my opinion fits best in the 'how' category of policies. Direction from the QP website states:

(a) *"Policies are the course of action to achieve or implement the objective'*

90 Various methods may be used to ensure that the freshwater objectives in Table 3.11-1 are achieved and the policies, methods and rules further explore these. The reduction of discharges from land use is one of the ways PC1 will be implemented.

Objective 2

91 WPL sought amendments to Objective 2 as notified. The Section 42A Report has recommended further changes to the wording.

92 The wording of Objective 2 as proposed in the Section 42A Report is an improvement and I generally support this with some minor amendments as included in Appendices 1 and 2 of my evidence.

93 I consider Mr Ford's evidence as previously discussed under 'Economics' to be relevant to this objective and especially the policies, methods and rules that seek to implement it. The manner in which these provisions give effect to Objective 2 significantly influences the benefits and consequences realised from PC1.

94 I agree with the following comments in the reasons for WPL's submission:

> *"there is a need to strengthen Objective 2 to ensure that the social and economic wellbeing of the community is recognised as important, and that the*

> *economic benefits experienced are measurable. This is consistent with Objective (j) in the Vision and Strategy, and is important to ensure the community is not burdened with costs it cannot sustain over the 80-year timeframe to achieve the Vision and Strategy outcomes. Should the costs be too great, a review of the outcomes would be required".*

95 Objective 2 picks up part of the 'Sustainable Management' theme from s 5(2) of the RMA, this theme is also adopted into Objective A4 and Policy CA2(f)v of the NPS-FM and both Objectives 3.1(e) and 3.2 of the Waikato Regional Policy Statement (**WRPS**). Policy 4.4 of the WRPS that seeks to recognise regionally significant industry and primary production also conveys a balanced approach to enabling people and communities to provide for their economic wellbeing, provided that environmental bottom lines (like the freshwater objectives) are met.

96 Objective 2 is therefore important in ensuring a balanced approach for PC1, more important will be how the policies, methods and rules of PC1, give effect to this objective which I will seek to address further in my evidence for Block 2.

Objective 3

97 WPL submitted on Objective 3 as notified, and I have again accepted the general changes proposed within the Section 42A Report with some minor amendments. The amended version can be found in Appendix 2 of my evidence.

98 My previous evidence on Objective 1 in relation to preferred wording, is also relevant to Objective 3, as such I have again recommended the NPS-FM words 'maintain' or 'improve' should be used.

99 Para 392 of the Section 42A Report states:

> As such, there is a need for all landowners to improve land use practice, regardless of whether their immediate sub-catchment is meeting water quality limits, to ensure that the targets are achieved at a wider catchment scale.

100 In my opinion direction from both the NPS-FM and the Vision and Strategy to PC1 is clearly either to;

- Maintain and Improve; or
- Protection and Reduction.

101 The inference from this direction is that for landowners/dischargers who currently exist in sub-catchments which are meeting the Short-Term freshwater objectives, are within the NRP-FM limits and operating using practices that equal or exceed the FEP requirements, then continuing to do the same ('*maintain*') will be appropriate.

102 Whilst the scale of practice contained within the FEP is still yet to be heard (BPO, GFP, etc.), the rules and associated schedules are clear that unless specifically identified by a rule in the plan a property operating at or below its NRP and adhering to its FEP is compliant. As such, not all landowners may be required to make reductions.

103 The WPL submissions sought clarification that existing discharges operating under resource consents and permitted activities under the WRP were able to continue to do so. The re-wording of Objective 3 as presented in Appendix 2 of my evidence removes this concern.

104 WPL's legal submission questions the ability of WRC via the policies, methods and rules as notified, to achieve Objective 3 by 1 July 2026. Mr Williamson notes in his evidence that meeting the short-term water quality objectives during the period 2016-2026 will be critical in terms of meeting the longer-term vision. I also note from my reading of the rules as amended by Var1 that there will be a real difficulty in both putting in place actions before 2026 and implementing them. This is because the rules now either provide a very short period (2022-2026) to achieve this or only require that FEP's be provided to WRC by 2026. As a consequence, the Section 42A Report notes that full implementation of PC1 will not be achieved by 2026 with only 50% of Priority 2 Sub-catchments complying and only 25% of Priority 3 Sub-catchments complying.

105 One solution as submitted by WPL is to allow properties and enterprises to apply for resource consents earlier. The proposed amendments within the policies, methods and rules of PC1 required to achieve this will be presented in Block 2. Given the importance attached to water quality by the Vision and Strategy, WPL does not seek to extend the compliance or implementation dates.

Objective 4

106 WPL submitted on Objective 4, deleting the words "in the short term".

107 WPL's submission notes that the reason for removing 'in the short term' was to ensure that adaptive management was also available for the long term.

108 I recommend amending Objective 4 to include 'adaptive management' and to further align the wording with other objectives as amended in my evidence and shown in Appendix 2.

109 WPL seek to retain adaptive management within the framework of PC1 as notified. Given the complexities of what the plan seeks to achieve, and the uncertainty surrounding the ability to actually achieve the desired outcomes and the science informing the plan-making process, adaptive management presents itself as the logical choice when seeking both short term and long-term environmental outcomes. It is also consistent with the precautionary approach embedded in the Vision and Strategy.

110 The Vision and Strategy introduces the precautionary principle via Objective 'f':

> "*In order to realise the Vision, the following Objectives will be pursued:*
>
> *f. The adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, and in particular those effects that threaten serious or irreversible damage to the Waikato River"*

111 The WRPS also anticipates the use of a precautionary approach through Objective 3.3 *Decision-making*.

> *"Resource Management decision making is holistic and consistent and:*
>
> *d) adopts a precautionary approach, including the use of adaptive management, where appropriate, towards any proposed activity whose effects may be significant or irreversible but are as yet uncertain, unknown or little understood";*

112 I understand that adaptive management is the method normally used to implement a precautionary approach.

113 Adaptive management will also be discussed in relation to FEP's and WPL's submission to allow for resource consents at a sub-catchment scale. Further evidence will be provided in Blocks 2 and 3.

114 Para 422 of the Section 42A report states:

> All landowners are required to take action to improve water quality, regardless of whether their particular sub-catchment meets water quality targets …

115 As discussed previously in my evidence, requiring further action/reduction from those already within the NRP limits and operating using practices that equal or exceed the FEP requirements is not, in my opinion, equitable.

116 I recommend adopting Objective 4 as presented in Appendix 2 of my evidence.

117 Having regard to the Vision and Strategy in my opinion it could be beneficial to add a further sub-paragraph to Objective 4 to 'identify unique locations and habitats for flora and fauna'.

Objective 5

118 WPL submitted on Objective 5, seeking that it should be retained as notified, or amended by wording of similar effect.

119 I have recommended the proposed wording for Objective 5 in the Section 42A Report be amended by including: 'and land returned via treaty settlements':

> b) new impediments to the flexibility of the use of <u>both</u> tangata whenua ancestral lands <u>and land returned via treaty settlements</u> are minimised; and

120 This is included in Appendix 2 of my evidence.

121 The removal of the '*Reasons for adopting*', as recommended within the Section 42A Report, removed a pivotal piece of information relevant to the objective, and through its removal Objective 5 no longer has 'a like effect'.

122 The removal of the sentence "*Land relevant to this objective is land returned through Treaty of Waitangi settlement, and land under Maori title that has multiple owners"* removes any reference to '*Treaty of Waitangi settlement*' land within Objective 5, which depending on how the objective is interpreted within the policies, methods and rules could have significant impacts for how the provisions of PC1 relate to owners of such land.

123 I recommend the adopting Objective 5 as presented in Appendix 2 of my evidence.

Objective 6

124 WPL submitted on Objective 6 to retain as notified, or amend to like effect.

125 Given the internationally protected status of the Whangamarino Wetland, Objective 6 is justified and a suitable way to further implement s 6(a) of the RMA, the NPS-FM, and further implement Policy 8.3 (b)(i) of the WRPS:

> *"Manage the effects of activities to maintain or enhance the identified values of fresh water bodies and coastal water including by*
>
> *b) Where appropriate, protection and enhancement of:*
>
> *i) riparian and wetland habitat;"*

126 I recommend adopting Objective 6 as presented (slightly) amended in Appendix 2 of my evidence.

Conclusions

127 Correcting the data and parameters contained within Table 3.11-1 (pending further amendments to the policies, methods and rules) will allow the plan provisions to better achieve the Objectives.

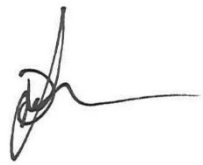
128 Based on Mr Williamsons' evidence, adding the definition of 'Springs' and splitting Sub-catchment 66 into 66A and 66B assists in achieving the Objectives

129 Amending Map 3.11-2 and Table 3.11-2 to allow for sub-catchments 66A and 66B further supports the achievement of the Objectives

130 Amending Objectives 1,2,3,4,5 and 6 as per Appendix 3 of my evidence gives effect to both the NPS-FM and the Vision and Strategy

131 My support of Policy 14 (as amended in my evidence) is provisional until further evidence is available on Policies in Block 2.

132 In conclusion, the plan provisions as amended in my evidence (Appendix 3) are in my opinion an appropriate way to achieve sustainable management.



Dwayne Mckay

Director, Thornton Environmental

15 February 2019

Appendix 1 - WPL Submission Summary for Block 1

APPENDIX 1

List of changes by Submission Point sought by Wairakei Pastoral Ltd to the provisions of Plan Change 1

Block 1 Hearing Topics

Changes are show in red in ~~strikethrough~~ and underline

Attachments:

Attachment 1 Dr Neale EIC Appendix 3 amendments to Table 3.11-1
Attachment 2 Mr Williamson EIC Figure 8 Map illustrating the amendments required to Map 3.11-2 to subdivide Sub-catchment 66 into Sub-catchments 66A and 66B
Attachment 3 Amendments required to Table 3.11-2 to subdivide Sub-catchment 66 into Sub-catchments 66A and 66B

Provision	Submitter ID	Submission Point ID	Decision Requested by Submitter	Hearing Changes sought to PC1 provisions within scope
	WPL ID: 74095	PC1-13165	ADD to PPC1, that the stretch of the Waikato River catchment between the Lake Taupo control gates and Ohaaki-Ohakuri should be typified as a 'river'.	Amend Table 3.11-2 and Map 3.11-2 as recommended in the EIC of Mr Williamson and Dr Neale Attachments 2 and 3
	WPL ID: 74095	PC1-13166	AMEND PPC1 so objectives, policies and methods (including rules) designed for managing water quality in the stretch of the Waikato River above Ohaaki-Ohakuri are focused on “maintaining” overall freshwater quality in the sub-catchment.	Amend Objectives 1 and 3 as requested below
	WPL ID: 74095	V1PC1-440	DELETE the references to "springs"	Insert definition of “springs” into the

			throughout V1 OR AMEND V1 to include an appropriate hydrological definition of "springs".	Glossary of Terms as recommended in the EIC of Mr Williamson (para 12) **Springs**: means a water body derived from an underground source that flows year-round at a minimum flow rate of 5 L/s.
	WPL ID: 74095	V1PC1-701	AMEND V1 so objectives, policies and methods (including rules) designed for managing water quality in the stretch of the Waikato River above Ohaaki-Ohakuri are focused on "maintaining" overall freshwater quality in the sub-catchment.	Amend Objectives 1 and 3 as requested below
Map 3.11-1	WPL ID: 74095	PC1-11253	AMEND Map 3.11-1 AND AMEND Table 3.11-1 accordingly Map 3.11-1 should be amended by subdividing Sub-catchment 66 into Sub-catchments 66A and 66B (as illustrated on the map in Appendix D **attached** to this submission) and by amending Table 3.11-1 accordingly.	Amend Table 3.11-2 and Map 3.11-2 as recommended in the EIC of Mr Williamson and Dr Neale Attachments 2 and 3
Water quality and National Policy Statement for Freshwater Management	WPL ID: 74095	PC1-11257	AMEND the second paragraph of Water Quality and National Policy Statement for Freshwater Management to read:	WPL maintains this submission point and requests that PC1 be amended accordingly

			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 (generally) from a water quality point of view, over-allocation has occurred within the FMU's while in some water bodies current water quality is high. Some water bodies in the Waikato and Waipa River catchments are therefore 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.	
	WPL ID: 74095	VIPC1-999	ADD to PPC1, that the stretch of the Waikato River catchment between the Lake Taupo control gates and Ohaaki-Ohakuri should be typified as a 'river'.	Amend Table 3.11-2 and Map 3.11-2 as recommended in the EIC of Mr Williamson and Dr Neale (subdivision of Sub-catchment 66 into 66A and 66B) Attachments 2 and 3
Full achievement of the Vision and Strategy will be	WPL ID: 74095	PC1-11259	AMEND the first paragraph of the Full achievement of the Vision and Strategy will be intergenerational section to	WPL maintains this submission point and requests that PC1 be amended accordingly

intergenerational			read: 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 potential 'innovation gap' that means full achievement of water quality requires technologies or practices that ~~are~~ may not ~~yet~~ be 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~~ mitigation) within high-risk sub-catchments. Whereas in other sub-catchments it will be more appropriate to focus on applying mitigation methods via consent conditions, rather than simply	

			preventing land use change. AND AMEND paragraph 4 and associated bullet points to read: The Stage 1 approach to reducing contaminant losses from pastoral farm land implemented by Chapter 3.11 requires: … ▪ a property or enterprise scale nitrogen reference point to be established by modelling current nutrient losses from each property or enterprise, with no property or enterprise being allowed to exceed its reference point in the future and higher dischargers being required to reduce their nutrient losses; or ▪ the introduction of a refined sub-catchment based nitrogen cap. AND AMEND paragraph 8 to read: In the short term (i.e. Stage 1 = 10 years), 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 (but not prohibited). 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 (i.e. 10 – 80 years), 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. AND AMEND PPC1: to consistently refer to "property or enterprise" throughout.	
3.11.1 Values and uses for the Waikato and Waipa Rivers	WPL ID: 74095	PC1-11260	AMEND PPC1 by inserting express links (via explanatory text or advice notes) between Section 3.11.1 and subsequent sections to explain the	WPL agrees with the Officers recommendation in the Section 42A Report (para 265) and requests that PC1 be amended accordingly

			specific relationship between particular values and uses and particular freshwater objectives (i.e. policies and rules).	
Te Mana o te Wai: Mana Atua, Mana Tangata	WPL ID: 74095	V1PC1-442	DELETE the references to “springs” throughout the Variation, or alternatively amend the Variation by including an appropriate hydrological definition of “springs”. The decision sought is without prejudice to the PC1 submission regarding Section 3.11.1 (as noted above) which is maintained.	Insert definition of “springs” into the Glossary of Terms as recommended in the EIC of Mr Williamson (para 12) **Springs**: means a water body derived from an underground source that flows year-round at a minimum flow rate of 5 L/s.
Horonga ki te wai, hononga ki te whenua	WPL ID: 74095	V1PC1-448	DELETE the references to “springs” throughout the Variation, or alternatively amend the Variation by including an appropriate hydrological definition of “springs”. The decision sought is without prejudice to the PC1 submission regarding Section 3.11.1 (as noted above) which is maintained.	Insert definition of “springs” into the Glossary of Terms as recommended in the EIC of Mr Williamson (para 12) **Springs**: means a water body derived from an underground source that flows year-round at a minimum flow rate of 5 L/s.
3.11.1.1 Mana Atua – intrinsic values		V1PC1-450	DELETE the references to “springs” throughout the Variation, or alternatively amend the Variation by including an appropriate hydrological definition of “springs”.	Insert definition of “springs” into the Glossary of Terms as recommended in the EIC of Mr Williamson (para 12) **Springs**: means a water body derived

			The decision sought is without prejudice to the PC1 submission regarding Section 3.11.1 (as noted above) which is maintained.	from an underground source that flows year-round at a minimum flow rate of 5 L/s.
3.11.1.2 Mana Tangata – Use Values	WPL ID: 74095	V1PC1-451	AMEND relevant rules by inserting an advice note providing resource consent applicants with guidance on how to engage with Maori to identify whether there are any "harmful" waters that may need to be respected in some way. The decision sought is without prejudice to the PC1 submission regarding Section 3.11.1 (as noted above) which is maintained.	WPL agrees with the Officers recommendation in the Section 42A Report (para 211), subject to WRC confirming in evidence that this matter is related solely to Maori cultural and spiritual matters and is not related to any public health matters
Objective 1	WPL ID: 74095	PC1-11261	AMEND Objective 1 to read: Objective 1: Long-term maintenance, restoration and/or protection of water quality as relevant 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, the management of discharges	WPL requests that Objective 1 should be amended as recommended in the EIC of Mr Mckay namely Objective 1 ~~By 2096 at the latest, a reduction in the discharges of nitrogen, phosphorus, sediment and microbial pathogens to land and water results in achievement of the restoration and protection of the Waikato and Waipa Rivers, such that of the~~ The 80-year ~~water quality~~

			of nitrogen, phosphorus, sediment and microbial pathogens to land and water result in achievement of the restoration and protection of the 80-year water quality attribute targets in Table 3.11-1.	freshwater ~~attribute targets states in~~ objectives from Table 3.11-1 are met~~.~~ by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2096.
Objective 2	WPL ID: 74095	PC1-11262	AMEND Objective 2 to read: Social, economic and cultural wellbeing is recognised and 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 experience measurable benefits from the maintenance, restoration and/or protection as relevant of water quality in the Waikato River catchment, which enables the people and communities to continue to provide for their social, economic and cultural wellbeing.	WPL requests that Objective 3 should be amended as recommended in the EIC of Mr Mckay namely Objective 2 Waikato and Waipa communities and their economy benefit from the ~~restoration and protection~~ maintenance or improvement of water quality in the Waikato and Waipa River catchments and their sub-catchments, which enables the people and communities to continue to provide for their, social, economic and cultural wellbeing.
Objective 3	WPL ID: 74095	PC1-11265	AMEND Objective 3 (second paragraph) to read: Actions put in place and implemented by 2026 to reduce discharges of nitrogen, phosphorus, sediment and microbial	WPL requests that Objective 3 should be amended as recommended in the EIC of Mr Mckay namely Objective 3

			pathogens, are sufficient to achieve an overall 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 within each sub-catchment.	~~Actions put in place and implemented by 2026 to reduce diffuse and point source discharges of nitrogen, phosphorus, sediment and microbial pathogens, are sufficient to achieve the~~ The short-term ~~water quality~~ freshwater ~~attribute states in~~ objectives from Table 3.11-1~~. ten per cent of the required change between current water quality and the 80-year water quality attribute targets in Table 3.11-1. A ten per cent change towards the long-term water quality improvements is indicated by the short-term water quality attribute targets in Table 3.11-1.~~ are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2026.
Objective 4	WPL ID: 74095	PC1-11266	AMEND Objective 4 (first paragraph) to read: 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:	WPL requests that Objective 4 should be amended as recommended in the EIC of Mr Mckay namely Objective 4 A staged approach to ~~reducing contaminant losses~~ change will be provided for via policies, methods, and rules that enables people and communities to undertake adaptive management to continue to provide for

				their social, economic and cultural wellbeing ~~in the short term~~ while: a. ~~considering the values and uses when~~ ~~taking action to achieve the attribute targets states for the Waikato and Waipa Rivers in~~ the short term and 80 year freshwater objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments; and b. recognising that further contaminant reductions will be required within some sub-catchments by subsequent regional plans ~~and signalling anticipated future management approaches that will be needed in order~~ and signalling anticipated future management approaches that will be needed to meet Objective 1.
Objective 5	WPL ID: 74095	PC1-11267	RETAIN Objective 5 as notified or amend by similar wording to like effect.	WPL notes that the amendments to Objective 5 recommended by the Officers in the Section 42A Report (para 442) delete the title and principal

				reasons for adopting this objective – this has the effect of narrowing the scope of this objective so that it now relates only to ancestral land, accordingly WPL seeks clarification from WRC as to whether this objective should also relate to Treaty settlement land (as appeared to be the case from the now deleted principal reasons for adopting this objective) WPL supports the revision of this objective to clarify that it is intended to relate to both ancestral land and Treaty settlement land as recommended in the EIC of Mr Mckay namely Tangata whenua values are integrated into the co-management of the rivers and other water bodies within the catchment such that: a. tangata whenau 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 both tangata whenua ancestral lands and land returned via Treaty settlements are minimised; and c. improvements in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of the iwi and their tribal and cultural identity.
Objective 6	WPL ID: 74095	V1PC1-460	RETAIN Objective 6 as reinserted by the Variation as notified or amend to like effect.	WPL requests that Objective 6 should be amended as recommended in the EIC of Mr Mckay namely Objective 6 ~~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~~ short term and 80 year freshwater objectives from Table 3.11-1 are met within the water entering the Whangamarino Wetland by 2026 and 2096 respectively.
	WPL ID: 74095	V1PC1-653	RETAIN the reasons for adopting Objective 6 (by Variation 1) as notified or amend to like effect.	WPL requests that Objective 6 should be amended as recommended in the EIC of Mr Mckay and as set out above
Principal Reasons for Adopting Objectives 1-6	WPL ID: 74095	PC1-11268	No specific decision sought for Principal Reasons for Adopting Objectives 1-6 [However refer changes to reasons for specific objectives]. [See reasons for adopting Objectives 3 and 4 below]	WPL requests that Objectives 1-6 should be amended as recommended in the EIC of Mr Mckay and as set out above
Reasons for adopting Objective 1	WPL ID: 74095	V1PC1-648	ADD the following words at the end of the reasons for adopting Objective 1: While all objectives are potentially relevant, individual objectives will only apply where they are relevant in the context of specific resource consent	WPL requests that Objective 1 should be amended as recommended in the EIC of Mr Mckay and as set out above

			applications. All six objectives will not apply in every case. The decision sought is without prejudice to the PC1 submission regarding the reasons for adopting the Objectives (as noted above) which is maintained.	
Reasons for adopting Objective 3	WPL ID: 74095	PC1-11270	AMEND the Reasons for adopting Objective 3 (paragraph two) to read: Point source discharges are currently managed through permitted activity rules and 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 (where relevant), guided by the targets and time limits set in Objective 1.	WPL requests that Objective 3 should be amended as recommended in the EIC of Mr Mckay and as set out above
Reasons for adopting Objective 4	WPL ID: 74095	PC1-11271	AMEND the Reasons for Adopting Objective 4 by adding the following paragraph: Encouraging enterprises to apply for sub-catchment management resource consent applications for farming activities and commercial vegetable production, associated diffuse discharges, and land use change, will	WPL requests that Objective 4 should be amended as recommended in the EIC of Mr Mckay and as set out above WPL will address sub-catchment planning further in evidence for Topic C8 in Hearing Block 3

			provide a key method (alongside participation in any relevant Certified Industry Schemes) for achieving clear and enduring improvements in water quality.	
	WPL ID: 74095	V1PC1-649	ADD the following words at the end of Reasons for adopting Objective 4: While adaptive management approaches will be relevant during the short-term, they will also remain equally relevant during the long-term for achieving anticipated environmental outcomes. Accordingly, Objective 4 speaks both to the current plan period and to the future beyond that, and is therefore not limited temporally by reference to a specific time period only. Effectively, the short-term should merge seamlessly with the long-term and adaptive management approaches should (where relevant) be used throughout. The decision sought is without prejudice to the PC1 submission regarding the reasons for adopting the Objectives (as noted above) which is maintained.	WPL requests that Objective 4 should be amended as recommended in the EIC of Mr Mckay and as set out above
Policy 14	WPL ID: 74095	PC1-11354	RETAIN Policy 14 as notified or amend	WPL agrees with the Officers

			by similar wording to like effect.	recommendation in the Section 42A Report (para 651) and requests that Policy 14 should be amended accordingly
Table 3.11-1	WPL ID: 74095	PC1-11391	AMEND PPC1 to use consistent cross-referencing to the freshwater objectives throughout. AND AMEND Table 3.11-1 by including a new first column which identifies and links the Sub-catchment name with the relevant Sub-catchment number as shown in manuscript on the copy of Table 3.11-1 in Appendix C **attached** to this submission. AND AMEND Table 3.11-1 by substituting the short-term and long-term numerical freshwater objectives for Sub-catchments 56, 58, 59, 62, 65, 66B, 72, 73 and 74 by the alternative freshwater objectives also shown in manuscript in the table in Appendix C referred to above. AND AMEND Table 3.11-1 by inserting an additional row to provide freshwater objectives for Sub-catchment 66A (Tahorakuri) also shown in manuscript in the table in Appendix C referred to above, as a consequence of	WPL requests that Table 3.11-1 should be thoroughly revised based on appropriate data and using appropriate methodology for the reasons set out in the EIC of Dr Neale, Dr Jordan, Dr Cresswell, and Mr Williamson Attachment 1

			subdividing Sub-catchment 66.	
	WPL ID: 74095	V1PC1-689	RETAIN Table 3.11-1, Table 3.11-2, and Map 3.11-2 as reinserted and amended by the Variation as notified or amend by similar text or mapping to like effect. The decision sought is without prejudice to the PC1 submission regarding Table 3.11-1, Table 3.11-2, and Map 3.11-2 (as noted above) which is maintained.	WPL requests that Table 3.11-1 should be thoroughly revised based on appropriate data and using appropriate methodology for the reasons set out in the EIC of Dr Neale, Dr Jordan, Dr Cresswell, and Mr Williamson Attachment 1
Table 3.11-1	Beef + Lamb New Zealand Ltd ID 73369	PC1-11158, V1PC1-675, V1PC1-1658	**Further Submissions** WPL made further submissions supporting the decisions requested by Beef + Lamb New Zealand Ltd ID 73369 in submission points PC1-11158, V1PC1-675, V1PC1-1658 That request the inclusion of allowable in-stream loads and maximum allowable zone loads (MAZL) for N in all sub-catchments and FMUs relating to current in-stream N concentrations, and the inclusion of numerical values in Table 3.11-1	WPL requests that Table 3.11-1 should be amended to include appropriate N loads as recommended in the EIC of Dr Neale Attachment 1
Table 3.11-2	WPL ID: 74095	PC1-11395	DELETE from Table 3.11-2 the row	Amend Table 3.11-2 and Map 3.11-2

			pertaining to sub-catchment 66 AND ADD two new rows to list sub-catchments 66A (Tahorakuri) and 66B (Ohakuri) as Priority 3 Sub-catchments.	as recommended in the EIC of Mr Williamson and Dr Neale (subdivision of Sub-catchment 66 into 66A and 66B) Attachments 2 and 3
	WPL ID: 74095	V1PC1-690	RETAIN Table 3.11-1, Table 3.11-2, and Map 3.11-2 as reinserted and amended by the Variation as notified or amend by similar text or mapping to like effect. The decision sought is without prejudice to the PC1 submission regarding Table 3.11-1, Table 3.11-2, and Map 3.11-2 (as noted above) which is maintained.	WPL requests that Table 3.11-1 should be thoroughly revised based on appropriate data and using appropriate methodology for the reasons set out in the EIC of Dr Neale, Dr Jordan, Dr Cresswell, and Mr Williamson Attachment 1 Amend Table 3.11-2 and Map 3.11-2 as recommended in the EIC of Mr Williamson and Dr Neale (subdivision of Sub-catchment 66 into 66A and 66B) Attachments 2 and 3
Map 3.11-2	WPL ID: 74095	PC1-11396	AMEND Map 3.11-2 to show the subdivision of Sub-catchment 66 into two new Sub-catchments 66A and 66B and coloured appropriately to reflect their priority level.	Amend Table 3.11-2 and Map 3.11-2 as recommended in the EIC of Mr Williamson and Dr Neale (subdivision of Sub-catchment 66 into 66A and 66B) Attachments 2 and 3

	WPL ID: 74095	V1PC1-691	RETAIN Table 3.11-1, Table 3.11-2, and Map 3.11-2 as reinserted and amended by the Variation as notified or amend by similar text or mapping to like effect. The decision sought is without prejudice to the PC1 submission regarding Table 3.11-1, Table 3.11-2, and Map 3.11-2 (as noted above) which is maintained.	WPL requests that Table 3.11-1 should be thoroughly revised based on appropriate data and using appropriate methodology for the reasons set out in the EIC of Dr Neale, Dr Jordan, Dr Cresswell, and Mr Williamson Attachment 1 Amend Table 3.11-2 and Map 3.11-2 as recommended in the EIC of Mr Williamson and Dr Neale (subdivision of Sub-catchment 66 into 66A and 66B) Attachments 2 and 3

ATTACHMENT 1

APPENDIX 3

An updated version of Table 3.11-1 for 11 sites in the Upper Waikato FMU, showing amended freshwater objectives and a supplementary table of nutrient loads for limit and target setting purposes.

Objectives are amended to account for discrepancies in current state and issues associated with precision and accuracy discussed in my evidence.

Table 3.11-1 Short and long-term freshwater objectives

		Attributes																													
	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 (mg NH_4-N/L)			Annual maximum ammonia (mg NH_4-N/L)			95th percentile E. coli (E. coli/100mL)			Clarity (m)		
		Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year
73	Waikato River (Ohaaki)	NA	NA	NA	NA	NA	NA	134	134	134	12	12	12	0.04	0.04	0.04	0.08	0.08	0.08	0.01	0.01	0.01	0.05	0.02	0.02	73	70	70	3.5	3.5	3.5
66a	Waikato River (Tahorakuri)	NA	NA	NA	NA	NA	NA	200	200	160	28	15	15	0.09	0.09	0.09	0.25	0.20	0.15	0.01	0.01	0.01	0.03	0.02	0.02	102	102	102	ND	3.0	3.5
66b	Waikato River (Ohakuri)	3.1	3.2	3.2	11	11	11	216	206	160	20	20	17	0.08	0.08	0.08	0.17	0.17	0.17	0.01	0.01	0.01	0.10	0.05	0.05	15	15	15	2.3	2.5	3.0
67	Waikato River (Whakamaru)	7	4	3	15	15	15	256	260	200	22	22	20	0.08	0.08	0.08	0.24	0.24	0.24	0.01	0.01	0.01	0.03	0.02	0.02	60	60	60	1.9	2.0	3.0
74	Pueto Stm Broadlands Rd Br	NA	NA	NA	NA	NA	NA	540	540	500	93	85	50	0.45	0.45	0.40	0.47	0.53	0.50	0.01	0.01	0.01	0.03	0.02	0.02	82	90	90	1.6	1.8	3.0
72	Torepatutahi Stm Vaile Rd Br	NA	NA	NA	NA	NA	NA	625	600	500	96	90	50	0.50	0.50	0.45	0.82	0.80	0.80	0.01	0.01	0.01	0.03	0.02	0.02	168	220	200	ND	2.0	3.0
65	Waiotapu Stm Homestead Br Rd	NA	NA	NA	NA	NA	NA	1860	1800	800	101	100	50	1.29	1.26	1.00	1.66	1.60	1.50	0.32	0.11	0.03	0.55	0.20	0.05	266	280	280	ND	2.0	3.0
69	Mangakara Stm (Reporoa) SH5	NA	NA	NA	NA	NA	NA	1580	1550	800	74	70	50	1.30	1.27	1.00	1.66	2.50	1.50	0.02	0.01	0.01	0.51	0.06	0.05	1630	1600	540	0.86	0.9	1.6
62	Kawanui Stm SH5 Br	NA	NA	NA	NA	NA	NA	2990	2500	800	82	80	50	2.60	2.60	2.40	3.01	2.90	1.50	0.02	0.01	0.01	0.50	0.10	0.05	1578	2000	540	1.23	1.4	1.6
58	Waiotapu Stm Campbell Rd Br	NA	NA	NA	NA	NA	NA	1955	1900	800	73	70	50	0.92	0.92	0.92	1.13	1.10	1.10	0.86	0.29	0.24	1.10	0.35	0.05	15	20	20	1.2	1.2	1.6
59	Otamakokore Stm Hossack Rd	NA	NA	NA	NA	NA	NA	990	950	800	144	140	50	0.74	0.74	0.74	1.33	1.30	1.30	0.01	0.01	0.01	0.08	0.03	0.02	437	540	540	1.1	1.2	1.6
56	Whirinaki Stm Corbett Rd	NA	NA	NA	NA	NA	NA	810	800	500	63	60	50	0.77	0.77	0.77	0.88	0.90	0.90	0.01	0.01	0.01	0.076	0.03	0.02	49	100	100	2.7	2.7	3.0

NA – Attribute is not applicable to the sub-catchment

ND – No data for the sub-catchment

Supplementary table to Table 3.11-1 showing nutrient loads for limit and target setting purposes.

	Site	TN load (t/yr)			TP load (t/yr)		
		Current state	Short term	80 year	Current state	Short term	80 year
73	Waikato River (Ohaaki)	760	TBC	TBC	68	TBC	TBC
66a	Waikato River (Tahorakuri)*	1600	TBC	TBC	170	TBC	TBC
66b	Waikato River (Ohakuri)	1200	TBC	TBC	120	TBC	TBC
67	Waikato River (Whakamaru)	1700	TBC	TBC	140	TBC	TBC
74	Pueto Stm Broadlands Rd Br	85	TBC	TBC	15	TBC	TBC
72	Torepatutahi Stm Vaile Rd Br	93	TBC	TBC	17	TBC	TBC
65	Waiotapu Stm Homestead Br Rd	470	TBC	TBC	25	TBC	TBC
69	Mangakara Stm (Reporoa) SH5	36	TBC	TBC	2	TBC	TBC
62	Kawanui Stm SH5 Br	38	TBC	TBC	2	TBC	TBC
58	Waiotapu Stm Campbell Rd Br	110	TBC	TBC	4	TBC	TBC
59	Otamakokore Stm Hossack Rd	35	TBC	TBC	5	TBC	TBC
56	Whirinaki Stm Corbett Rd	7	TBC	TBC	1	TBC	TBC

* Loads for Waikato River (Tahorakuri) based on best available data (i.e. not monitored by WRC).

TBC – to be confirmed in Block 3 evidence when an alternative approach is presented.

ATTACHMENT 2

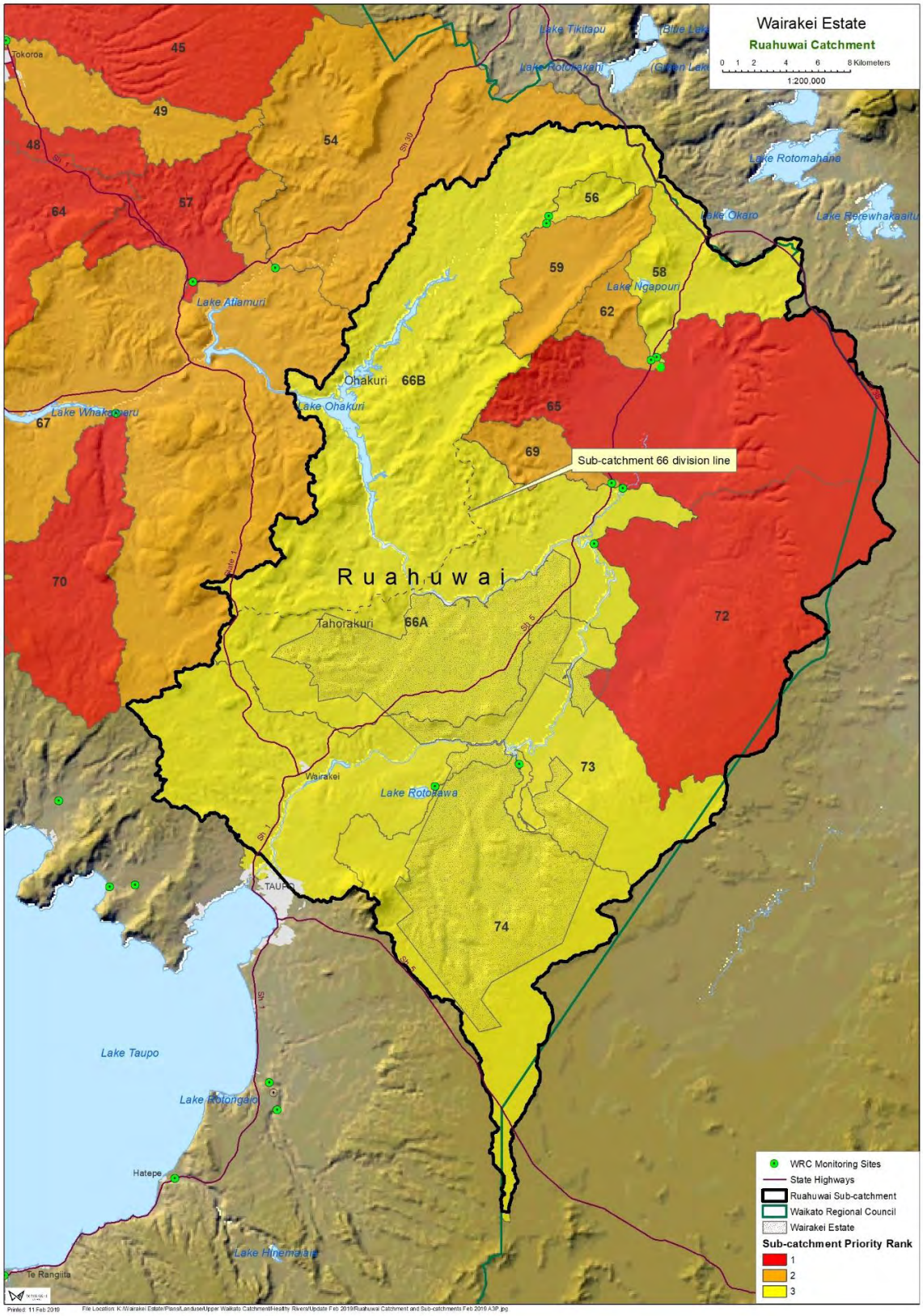


Figure 8. Subdivision of Sub-catchment 66.

ATTACHMENT 3

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
Waikato at Rangiriri	15	2
Awaroa (Rotowaro) at Sansons Br	19	2
Firewood	21	2
Komakorau	22	2
Waipa at Waingaro Rd Br	24	2
Mangaone	31	2
Waipa at SH23 Br Whatawhata	34	2
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
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
Waikato at Ohakuri	66	3
Waikato at Ohaaki	73	3
Pueto	74	3

Consequential amendment arising from the creation of sub-catchment 66A and 66B:

Waikato at Karapiro	41	3
Mangatutu	47	3
Puniu at Wharepapa	50	3
Whirinaki	56	3
Waiotapu at Campbell	58	3
Tahorakuri	66A	3
Ohakuri	66B	3
Waikato at Ohaaki	73	3
Pueto	74	3

Appendix 2 - Proposed Objectives

Appendix 2- Proposed Objectives

Planning Evidence – Dwayne McKay.

Objective 1

The 80-year freshwater objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2096.

Objective 2

Waikato and Waipa communities and their economy benefit from the maintenance or improvement of water quality in the Waikato and Waipa Rivers' sub-catchments and their sub-catchments, which enables the people and communities to continue to provide for their social, economic and cultural wellbeing.

Objective 3

The Short-Term freshwater objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2026.

Objective 4

A staged approach to change will be provided via policies, methods, and rules that enables people and communities to undertake adaptive management to continue to provide for their social, economic and cultural wellbeing while:

a. The Short Term and 80-year water quality objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments; and

b. Recognising that further contaminant reductions will be required within in some sub-catchments by subsequent regional plans and signalling anticipated future management approaches that will be needed to meet Objective 1.

Objective 5

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 both tangata whenua ancestral lands and land returned via Treaty settlements are minimised; and

c. improvements in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.

Objective 6

The Short Term and 80-year freshwater objectives from Table 3.11-1 are met within the water entering the Whangamarino Wetland by 2026 and 2096 respectively.

Appendix 3- Summary of Plan Provision Changes in Block 1

Appendix 3- Summary of Plan Provision Changes in Block 1

I. 3.11.2 OBJECTIVES/NGA WHAINGA

Objective 1

As Notified:

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

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

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.

Strike through changes:

Objective 1

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

~~By 2096 at the latest~~, ~~a reduction in the~~ ~~discharges of nitrogen, phosphorus, sediment and microbial pathogens to land and water results in achievement of the restoration and protection of the~~ Waikato and Waipa Rivers, ~~such that of the~~ The 80-year freshwater ~~quality attribute targets~~ states ~~in~~ objectives from Table 3.11-1 are met~~.~~ by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2096.

~~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.~~

As recommended in Planning Evidence:

The 80-year freshwater objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2096.

Objective 2

As Notified:

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

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

Strike through changes:

~~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 ~~restoration~~ maintenance and ~~protection~~ improvement of water quality in the Waikato and Waipa River sub-catchments which enables the people and communities to continue to provide for their, social, economic and cultural wellbeing.

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

As recommended in Planning Evidence:

Waikato and Waipa communities and their economy benefit from the maintenance and improvement of water quality in the Waikato and Waipa River sub-catchments, which enables the people and communities to continue to provide for their social, economic and cultural wellbeing.

Objective 3

As Notified:

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

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

Reasons for adopting Objective 3
Objective 3 sets short term goals for a 10-year period, to show the first step toward full achievement of water quality consistent with the Vision and Strategy.
The effort required to make the first step may not be fully reflected in water quality improvements that are measurable in the water in 10 years. For this reason, the achievement of the objective will rely on measurement and monitoring of actions taken on the land to reduce pressures on water quality. Point source discharges are currently managed through existing resource consents, and further action required to improve the quality of these discharges will occur on a case-by-case basis at the time of consent renewal, guided by the targets and limits set in Objective 1.

Strike through changes:

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

~~Actions put in place and implemented by 2026 to reduce~~ diffuse and point source ~~discharges of nitrogen, phosphorus, sediment and microbial pathogens, are sufficient to achieve the~~ The Short-term freshwater ~~quality attribute states in~~ objectives from Table 3.11-1~~. ten per cent of the required change between current water quality and the 80-year water quality attribute targets in Table 3.11-1. A ten per cent change~~

~~towards the long-term water quality improvements is indicated by the short-term water quality attribute targets in Table 3.11-1.~~ are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2026.

~~Reasons for adopting Objective 3~~
~~Objective 3 sets short term goals for a 10-year period, to show the first step toward full achievement of water quality consistent with the Vision and Strategy.~~
~~The effort required to make the first step may not be fully reflected in water quality improvements that are measurable in the water in 10 years. For this reason, the achievement of the objective will rely on measurement and monitoring of actions taken on the land to reduce pressures on water quality. Point source discharges are currently managed through existing resource consents, and further action required to improve the quality of these discharges will occur on a case-by-case basis at the time of consent renewal, guided by the targets and limits set in Objective 1.~~

As recommended in Planning Evidence:

The Short-Term freshwater objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments by 2026.

Objective 4

As Notified:

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.

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

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

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

Strike through changes:

Objective 4: ~~People and community resilience/Te Whāinga 4: Te manawa piharau o te tangata me te hapori~~
A staged approach to change will be provided via policies, methods, and rules that 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. The Short Term and 80-year freshwater ~~quality~~ objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within ~~considering the values and uses when taking action to achieve the attribute^ targets^ for~~ the Waikato and Waipa River~~s~~ catchments and their sub-catchments ~~in Table 3.11-1~~; and
b. recognising that further contaminant reductions will be required within some sub-catchments by subsequent regional plans and signalling anticipated future management approaches that will be needed to meet Objective 1.

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

~~In the future, a property-level allocation of contaminant discharges may be required. Chapter 3.11 sets out the framework for collecting the required information so that the most appropriate approach can be identified. Land use type or intensity at July 2016 will not be the basis for any future allocation of property-level contaminant discharges. Therefore, consideration is needed of how to manage impacts in the transition.~~
~~Objective 4 seeks to minimise social disruption in the short term, while encouraging preparation for possible future
requirements.~~

As recommended in Planning Evidence:

A staged approach to change will be provided via policies, methods, and rules that enables people and communities to undertake adaptive management to continue to provide for their social, economic and cultural wellbeing while:

a. The Short Term and 80-year freshwater objectives from Table 3.11-1 are met by maintaining or improving freshwater quality within the Waikato and Waipa River catchments and their sub-catchments; and
b. Recognising that further contaminant reductions will be required within in some sub-catchments by subsequent regional plans and signalling anticipated future management approaches that will be needed to meet Objective 1.

Objective 5

As Notified:

Objective 5: Mana Tangata – protecting and restoring tangata whenua values/Te Whāinga 5: Te Mana Tangata – te tiaki me te whakaora i ngā uara o te tangata whenua
Tangata whenua values are integrated into the co-management of the rivers and other water bodies within the catchment
such that:

a. tangata whenua have the ability to:
    i. manage their own lands and resources, by exercising mana whakahaere, for the benefit of their people; and
    ii. actively sustain a relationship with ancestral land and with the rivers and other water bodies in the catchment; and

b. new impediments to the flexibility of the use of tangata whenua ancestral lands are minimised; and

c. improvement in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.

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

Strike through changes:

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 both tangata whenua ancestral lands and land returned via Treaty settlements are minimised; and

c. improvement in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.

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

As recommended in Planning Evidence:

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 both tangata whenua ancestral lands and land returned via Treaty settlements are minimised; and

c. improvements in the rivers' water quality and the exercise of kaitiakitanga increase the spiritual and physical wellbeing of iwi and their tribal and cultural identity.

Objective 6

As Notified:

Objective 6: Whangamarino Wetland/Te Whāinga 6: Ngā Repo o Whangamarino
a. Nitrogen, phosphorus, sediment and microbial pathogen loads in the catchment of Whangamarino Wetland are reduced in the short term, to make progress towards the long term restoration of Whangamarino Wetland; and
b. The management of contaminant loads entering Whangamarino Wetland is consistent with the achievement of the water quality attribute^targets^ in Table 3.11-1.

Reasons for adopting Objective 6
Objective 6 seeks to recognise the significant value of Whangamarino Wetland, a Ramsar site of international importance, and the complexity of this wetland system. It

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

Strike through changes:

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~~ The ~~management of contaminant loads entering Whangamarino Wetland is consistent with the achievement of the water quality attribute targets in~~ short term and 80 year freshwater ~~quality~~ objectives from Table 3.11-1 are met within the water entering the Whangamarino Wetland by 2026 and 2096 respectively.

~~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.~~

As recommended in Planning Evidence:

The Short Term and 80-year freshwater objectives from Table 3.11-1 are met within the water entering the Whangamarino Wetland by 2026 and 2096 respectively.

II. 3.11.3 POLICIES/NGA KAUPAPA HERE

POLICY 14

As notified:

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

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

Strike through changes:

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

AS RECOMMENDED IN PLANNING EVIDENCE:

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

III. 3.11.6 LISTS OF TABLES AND MAPS/TE RARANGI O NGA RIIPANGA ME NGA MAHERE

TABLE 3.11-1 **As Notified:**

Upper Waikato River Freshwater Management Unit

Site	Attributes																
	Annual Median Chlorophyll a (mg/m^3)		Annual Maximum Chlorophyll a (mg/m^3)		Annual Median Total Nitrogen (mg/m^3)		Annual Median Total Phosphorus (mg/m^3)		Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia (mg NH_4-N/L)		Annual Maximum Ammonia (mg NH_4-N/L)		95th p *E. coli* (*E. coli*/1
	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
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
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
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
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
Pueto Stm																	

	Attributes													
	Annual Median Chlorophyll a (mg/m^3)	Annual Maximum Chlorophyll a (mg/m^3)	Annual Median Total Nitrogen (mg/m^3)	Annual Median Total Phosphorus (mg/m^3)	Annual Median Nitrate (mg NO_3-N/L)	Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia (mg NH_4-N/L)		Annual Maximum Ammonia (mg NH_4-N/L)		95th per *E. coli* (*E. coli*/10	
~~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 (mg NH_4-N/L)~~		~~Annual Maximum Ammonia (mg NH_4-N/L)~~		~~95th percentile *E. coli* (*E. coli*/100mL)~~		~~Clarity (m)~~	
				~~0.260~~	~~0.260~~	~~0.450~~	~~0.450~~	~~0.003~~	~~0.003~~	~~0.033~~	~~0.033~~	~~2106~~	~~540~~	~~0.8~~	~~1.0~~
				~~2.760~~	~~2.4~~	~~3.120~~	~~1.5~~	~~0.091~~	~~0.03~~	~~0.296~~	~~0.05~~	~~2151~~	~~540~~	~~0.8~~	~~1.0~~
				~~1.680~~	~~1.0~~	~~2.040~~	~~1.5~~	~~0.002~~	~~0.002~~	~~0.020~~	~~0.020~~	~~1383~~	~~540~~	~~1.3~~	~~1.8~~
				~~1.522~~	~~1.0~~	~~2.040~~	~~1.5~~	~~0.002~~	~~0.002~~	~~0.085~~	~~0.05~~	~~1377~~	~~540~~	~~1.5~~	~~1.8~~

1.0	1.590	1.5	0.008	0.008	0.062	0.05	1584
2.4	2.850	1.5	0.006	0.006	0.079	0.05	2335
0.915	1.100	1.100	0.291	0.24	0.315	0.05	18
0.740	1.190	1.190	0.006	0.006	0.024	0.024	680
0.770	0.870	0.870	0.002	0.002	0.012	0.012	98
0.555	0.830	0.830	0.003	0.003	0.015	0.015	783
0.525	0.750	0.750	0.003	0.003	0.015	0.015	684

Middle Waikato River Freshwater Management Unit

	Attributes													
	Annual Median Chlorophyll		Annual Maximum Chlorophyll		Annual Median Total Nitrogen		Annual Median Total Phosphorus		Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia (mg NH_4-N/L)		Annual Maximum Ammonia (mg NH_4-N/L)		95th percentile E. coli (E. coli/100mL)
											short term	80 year	short term	80 year	short term	80 year	short term
											0.500	0.500	0.009	0.009	0.018	0.018	3
											0.530	0.530	0.007	0.007	0.029	0.029	7
											1.689	1.5	0.008	0.008	0.031	0.031	4
Mangawhero Stm Cambridge-Ohaupo Rd									1.990	1.0	2.490	1.5	0.041	0.03	0.072	0.05	2

Attributes																	
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 (mg NH_4-N/L)		Annual Maximum Ammonia (mg NH_4-N/L)		95th percentile E. coli (E. coli/100mL)		Clarity (m)	
						0.880	0.880	1.240	1.24	0.256	0.24	0.318	0.05	5922	540	0.4	1.0
						0.815	0.815	1.572	1.5	0.096	0.03	0.183	0.05	2124	540	0.5	1.0

Lower Waikato River Freshwater Management Unit

Site	Attributes																
	Annual Median Chlorophyll a (mg/m^3)		Annual Maximum Chlorophyll a (mg/m^3)		Annual Median Total Nitrogen (mg/m^3)		Annual Median Total Phosphorus (mg/m^3)		Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia (mg NH_4-N/L)		Annual Maximum Ammonia (mg NH_4-N/L)		95 *E.* (*E.*
	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	sh te
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	1
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	1
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	1
Komakorau Stm Henry Rd																	

	Attributes																	
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 (mg NH_4-N/L)		Annual Maximum Ammonia (mg NH_4-N/L)		95th perce *E. coli* (*E. coli*/10	
Awaroa Stm (Rotowaro) Sansons Br @ Rotowaro-Huntly Rd									0.700	0.700	1.190	1.190	0.021	0.021	0.089	0.05	1800	
Matahuru Stm Waiterimu Road Below Confluence									0.715	0.715	1.689	1.5	0.016	0.016	0.059	0.05	6147	
Whangape Stm Rangiriri-Glen Murray Rd									0.004	0.004	0.690	0.690	0.006	0.006	0.134	0.05	584	
Waerenga Stm ~~SH2~~ Maramarua ~~Tauhoa Rd~~									0.820	0.820	1.410	1.410	0.005	0.005	0.022	0.022	5098	
Whangamarino River Jefferies Rd Br									0.625	0.625	1.842	1.5	0.012	0.012	0.147	0.05	4712	
Mangatangi River SH2 Maramarua									0.110	0.110	1.120	1.120	0.005	0.005	0.038	0.038	5567	
Mangatawhiri River Lyons Rd Buckingham Br									0.013	0.013	0.370	0.370	0.003	0.003	0.011	0.011	5108	

	Attributes											
	Annual Median Nitrate (mg NO_3-N/L)		Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia (mg NH_4-N/L)		Annual Maximum Ammonia (mg NH_4-N/L)		95th percentile *E. coli* (*E. coli*/100mL)		Clarity (m)	
	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year	short term	80 year
Rd	0.380	0.380	0.600	0.600	0.003	0.003	0.017	0.017	2417	540	1.5	1.6
	0.228	0.228	0.502	0.502	0.003	0.003	0.008	0.008	2036	540	2.1	2.1
ıga	0.370	0.370	1.050	1.050	0.004	0.004	0.020	0.020	3289	540	1.2	1.6
	0.565	0.565	1.270	1.270	0.008	0.008	0.023	0.023	4441	540	0.7	1.0
	0.673	0.673	1.319	1.319	0.009	0.009	0.026	0.026	3657	540	0.6	1.0
	0.495	0.495	1.370	1.370	0.023	0.023	0.052	0.05	2142	540	0.6	1.0
Rd	0.350	0.350	0.890	0.890	0.007	0.007	0.022	0.022	1917	540	0.9	1.0
tm	1.369	1.0	2.490	1.5	0.022	0.022	0.076	0.03	7074	540	0.6	1.0
ıch												

	Attributes				
an	Annual 95th percentile Nitrate (mg NO_3-N/L)		Annual Median Ammonia (mg NH_4-N/L)		Annual Ammon (mg NH
.4	5.120	3.5	0.006	0.006	0.081
.0	1.806	1.5	0.003	0.003	0.015
740	1.060	1.060	0.005	0.005	0.016
.0	2.310	1.5	0.021	0.021	0.135

Supplementary table to Table 3
(As recommended by Dr Neale

SAMPLE OF CORRECTED TAB
(As recommended by Dr Neale

Attributes																										
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 (mg NH_4-N/L)			Annual maximum ammonia (mg NH_4-N/L)			95th percentile E. coli (E. coli/100mL)			Clarity (m)		
Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year	Current state	Short term	80 year
13	NA	NA	134	134	134	12	12	12	0.04	0.04	0.04	0.08	0.08	0.08	TBC	0.01	0.01	TBC	0.02	0.02	73	70	70	3.5	3.5	3.5
ND	NA	NA	ND	200	160	ND	15	15	ND	0.10	0.08	ND	0.20	0.15	ND	0.01	0.01	ND	0.02	0.02	ND	50	50	ND	3.0	3.5
11	11	11	216	206	160	20	20	17	0.08	0.08	0.08	0.17	0.17	0.17	TBC	0.01	0.01	TBC	0.05	0.05	15	15	15	2.3	2.5	3.0
15	15	15	256	260	200	22	22	20	0.08	0.08	0.08	0.24	0.24	0.24	TBC	0.01	0.01	TBC	0.02	0.02	60	60	60	1.9	2.0	3.0
NA	NA	NA	500	540	500	100	85	50	0.40	0.45	0.40	0.47	0.53	0.50	TBC	0.01	0.01	TBC	0.02	0.02	30	90	90	1.7	1.8	3.0
NA	NA	NA	625	600	500	96	90	50	0.50	0.50	0.45	0.82	0.80	0.80	TBC	0.01	0.01	TBC	0.02	0.02	168	220	200	ND	2.0	3.0
NA	NA	NA	1865	1800	800	101	100	50	1.30	1.26	1.00	1.63	1.60	1.50	TBC	0.11	0.03	TBC	0.20	0.05	267	280	280	ND	2.0	3.0
NA	NA	NA	1580	1550	800	74	70	50	1.30	1.27	1.00	1.66	2.50	1.50	TBC	0.01	0.01	TBC	0.06	0.05	1630	1600	540	0.86	0.9	1.6
NA	NA	NA	2990	2500	800	82	80	50	2.60	2.60	2.40	3.01	2.90	1.50	TBC	0.01	0.01	TBC	0.10	0.05	1578	2000	540	1.23	1.4	1.6
NA	NA	NA	1955	1900	800	73	70	50	0.92	0.92	0.92	1.13	1.10	1.10	TBC	0.29	0.24	TBC	0.35	0.05	15	20	20	1.2	1.2	1.6

Attributes			
ual Median Ammonia (NH$_4$-N/L)		Annual Maximum Ammonia (mg NH$_4$-N/L)	
.007	0.007	0.029	0.029
.003	0.003	0.012	0.012
.008	0.008	0.025	0.025
.015	0.015	0.057	0.05
.004	0.004	0.013	0.013
.004	0.004	0.013	0.013

	Site	TN load (t/yr)			TP load (t/yr)		
		Current state	Short term	80 year	Current state	Short term	80 year
73	Waikato River (Ohaaki)	760	TBC	TBC	68	TBC	TBC
66a	Waikato River (Tahorakuri)	1200	TBC	TBC	120	TBC	TBC
66b	Waikato River (Ohakuri)	1600	TBC	TBC	170	TBC	TBC
67	Waikato River (Whakamaru)		TBC	TBC		TBC	TBC
74	Pueto Stm Broadlands Rd Br	85	TBC	TBC	15	TBC	TBC
72	Torepatutahi Stm Vaile Rd Br	93	TBC	TBC	17	TBC	TBC
65	Waiotapu Stm Homestead Br Rd	470	TBC	TBC	25	TBC	TBC
69	Mangakara Stm (Reporoa) SH5	36	TBC	TBC	2	TBC	TBC
62	Kawanui Stm SH5 Br	38	TBC	TBC	2	TBC	TBC
58	Waiotapu Stm Campbell Rd Br	110	TBC	TBC	4	TBC	TBC
59	Otamakokore Stm Hossack Rd	35	TBC	TBC	5	TBC	TBC
56	Whirinaki Stm Corbett Rd	7	TBC	TBC	1	TBC	TBC

TBC – to be confirmed in Block 3 evidence when an alternative approach is presented.

TABLE 3.11-2 **As Notified:**

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
Waikato at Rangiriri	15	2
Awaroa (Rotowaro) at Sansons Br	19	2
Firewood	21	2
Komakorau	22	2
Waipa at Waingaro Rd Br	24	2
Mangaone	31	2
Waipa at SH23 Br Whatawhata	34	2
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

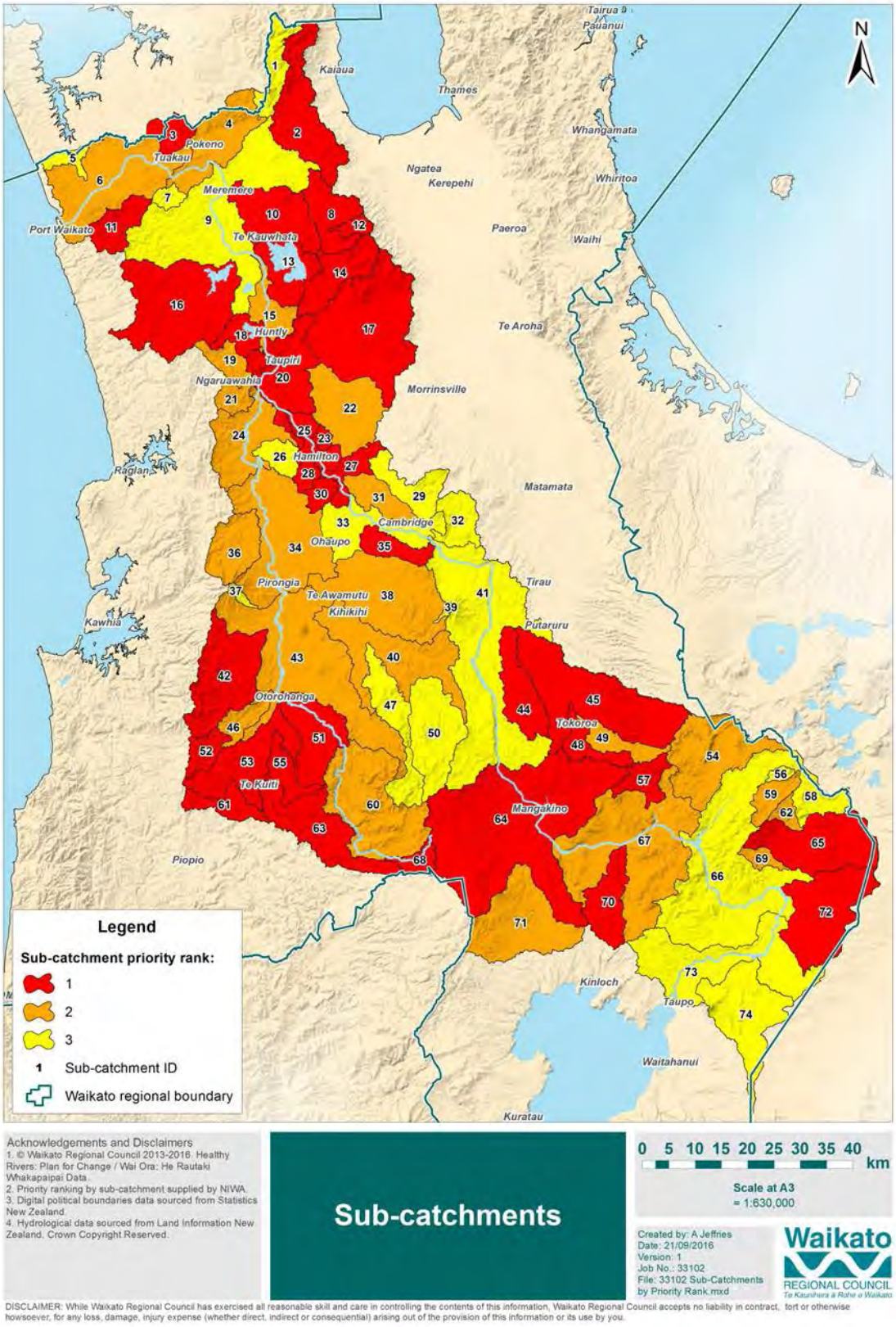
Ohote	26	3
Mangaonua	29	3
Karapiro	32	3
Waikato at Narrows	33	3
Mangauika	37	3
Mangaohoi	39	3
Waikato at Karapiro	41	3
Mangatutu	47	3
Puniu at Wharepapa	50	3
Whirinaki	56	3
Waiotapu at Campbell	58	3
Waikato at Ohakuri	66	3
Waikato at Ohaaki	73	3
Pueto	74	3

Consequential amendment arising from the creation of sub-catchment 66A and 66B:

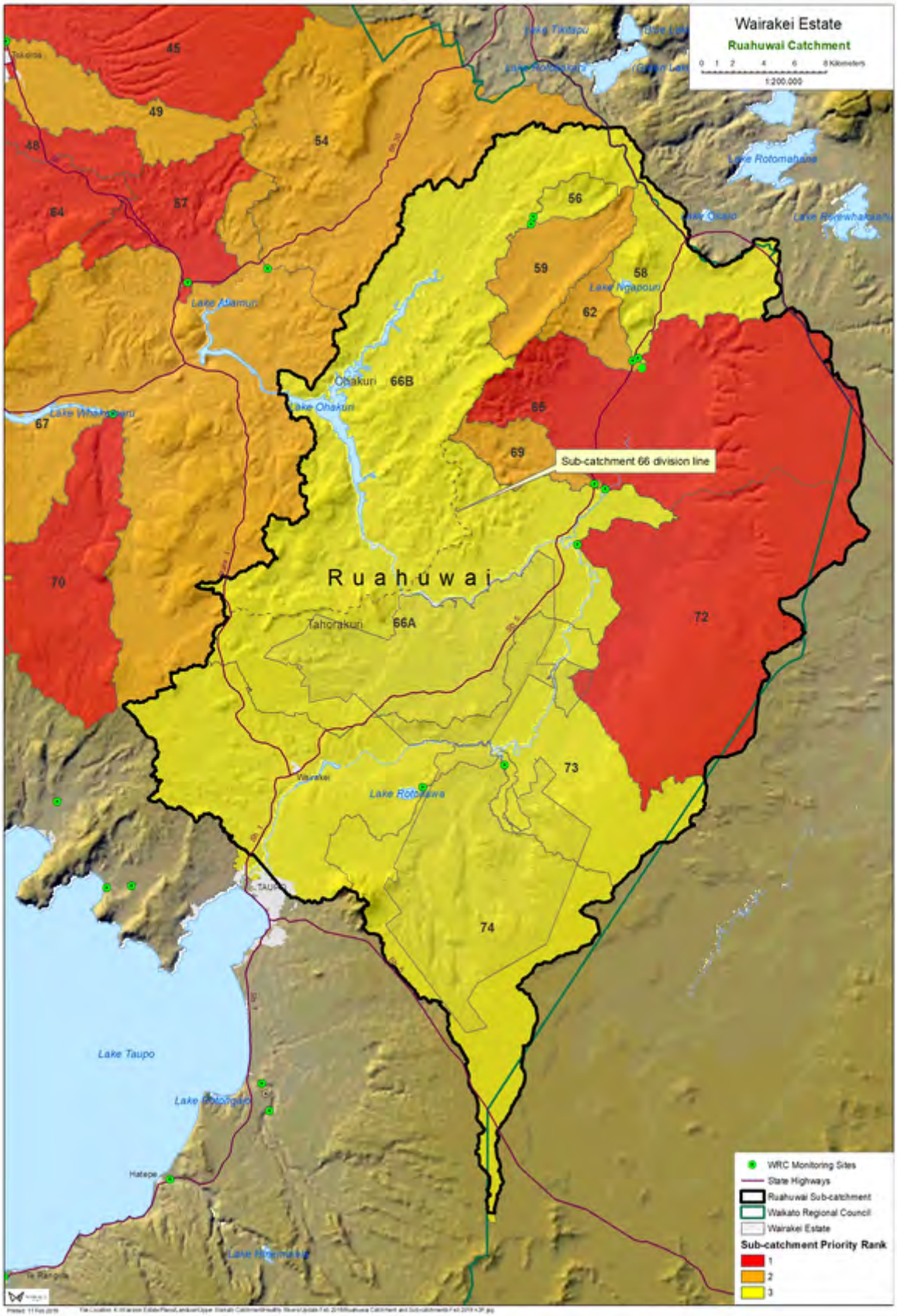
Waikato at Karapiro	41	3
Mangatutu	47	3
Puniu at Wharepapa	50	3
Whirinaki	56	3
Waiotapu at Campbell	58	3
Tahorakuri	66A	3
Ohakuri	66B	3
Waikato at Ohaaki	73	3
Pueto	74	3

MAP 3.11-2

As notified:



As recommended by Mr Williamson as Figure 8 in his evidence:


Wairakei Estate
Ruahuwai Catchment
0 1 2 4 6 8 Kilometers
1:200,000
Sub-catchment 66 division line
Ruahuwai
Ohakuri 66B
Tahorakuri 66A
Lake Ohakuri
Lake Atiamuri
Lake Whakamaru
Lake Rotomahana
Lake Ngapouri
Lake Rotoawa
Lake Taupo
45
49
48
54
64
57
56
59
58
62
65
69
67
70
72
73
74
WRC Monitoring Sites
State Highways
Ruahuwai Sub-catchment
Waikato Regional Council
Wairakei Estate
Sub-catchment Priority Rank
1
2
3

IV. PART C Additions to Glossary of Terms/Nga Apitihanga ki ti Rarangi Kupu

Insert the following definition;

> **Springs**: means a water body derived from an underground source that flows year-round at a minimum flow rate of 5 L/s.

Definition from Mr Williamsons evidence