Allocation and use of water

Recommendations in response to submissions on the Proposed Regional Plan for Northland - Section 42A hearing report

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Northland REGIONAL COUNCIL

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Purpose and format of the report

1. This report was prepared in accordance with section 42A of the Resource Management Act 1991 (RMA). It addresses submissions made on the water quantity management provisions in the Proposed Regional Plan for Northland (the Proposed Plan) and makes recommendations on changes to the Proposed Plan.

2. In most cases, the recommended changes to the Proposed Plan are not set out verbatim in this report. The specific changes (including scope for changes) are shown in the document *Proposed Regional Plan for Northland – S42A recommended changes*.

3. If there is no recommendation to amend a provision in the Proposed Plan, then the presumption is that it should be retained as notified.

4. This report is structured with a focus on the key matters raised in submissions on the water quantity management provisions in the Proposed Plan, which are:
    - The appropriateness of the freshwater quantity objectives and limits (minimum flows, minimum levels and allocation limits);
    - Avoiding over-allocation and ensuring that minimum flows and levels are observed;
    - Managing RMA s14(3)(b) – (e) water takes;
    - Volumes of fresh water permitted to be taken and used;
    - Providing for unauthorised takes;
    - Priority of access to fresh water;
    - Improving and maximising the efficient allocation and efficient use of fresh water;
    - Metering and information requirements;
    - Supplementary allocations; and
    - Management of geothermal water.

5. Submissions that fall outside the key matters are addressed in the “Other matters” section in less detail.

6. The approach of addressing matters raised in submissions (rather than addressing submissions and/or and submission points individually) is consistent with Clause 10, Schedule 1 of the RMA.

7. I have endeavoured to address every submission on the provisions, but there may be cases where inadvertently I have not. Please note that all references to submissions in this report are in relation to primary submissions only.

Report author

8. My name is Ben Michael Tait and I have overall responsibility for this report. I am employed as a policy analyst by Northland Regional Council (regional council). For further details about my qualifications and experience, refer to the RMA section 42A report titled 'General approach'. The following council colleagues assisted me in the preparation of this report:
    - Justin Murfitt, Policy and Planning Manager, Northland Regional Council
    - Stuart Savill, Consents Manager, Northland Regional Council
    - Susie Osbaldiston, Groundwater Specialist, Northland Regional Council

9. Several independent experts provided information that underpinned the freshwater allocation framework in the Proposed Plan and recommended amendments to the framework. Their technical advice is in this report and the RMA section 32 evaluation report.

10. I have read the Code of Conduct for Expert Witnesses contained in the Practice Note issued by the Environment Court December 2014, and have complied with the code when preparing this report and agree to comply with it at the hearings.

11. The recommendations that I make in this report are not binding on the hearing panel, and I recognise that the hearing panel may not agree with my recommendations.

12. It is also important to note that I may change my recommendations in response to evidence presented by others to the hearing panel. I expect that the hearing panel will ask me to report any changes to my recommendations at the end of the hearing.

About the water quantity management provisions

13. The relevant water quantity management provisions in the Proposed Plan are listed below.

Definitions

- Allocation limit
- Catchment-specific allocation limit
- Direct or high connectivity aquifer
- Efficient use of water
- Minimum level
- Property

- Default allocation limit
- Dewatering
- Fully allocated
- Minimum flow
- Supplementary allocation

Rules

- Advice note at the beginning of C.5.1
- C.5.1.1 Minor takes – permitted activity
- C.5.1.2 Temporary take for road construction or maintenance – permitted activity
- C.5.1.3 Water take from an off-stream dam – permitted activity
- C.5.1.4 Water take from an artificial water course – permitted activity
- C.5.1.5 Water take associated with bore development, bore testing, or dewatering by pumping – permitted activity
- C.5.1.6 Replacement water permits for registered drinking water supplies – controlled activity
- C.5.1.7 Take existing at the notification date of the plan – controlled activity
- C.5.1.8 Supplementary allocation – restricted discretionary activity
- C.5.1.9 Takes existing at the notification date of this plan – discretionary activity
- C.5.1.10 Other water takes – discretionary activity
- C.5.1.11 Water take below a minimum flow or water level – non-complying activity
- C.5.1.12 Water take that will exceed an allocation limit – non-complying activity
- C.5.1.13 Water takes that will exceed an allocation limit – prohibited activity

Policies

- D.4.13 Achieving freshwater quantity related outcomes
- D.4.14 Minimum flows for rivers
- D.4.15 Minimum levels for lakes and wetlands
- D.4.16 Allocation limits for rivers
- D.4.17 Allocation limits for aquifers
- D.4.18 Conjunctive surface water and groundwater management
- D.4.19 Exceptions to minimum flows or levels
- D.4.20 Reasonable and efficient use of water – irrigation
- D.4.21 Reasonable and efficient use of water – group or community water supplies
- D.4.22 Reasonable and efficient use of water – other uses
- D.4.23 Conditions on water permits
- D.4.24 Transfer of water permits

Maps

- Water quantity management units

The appropriateness of the freshwater objectives and quantity limits

Background

14. The National Policy Statement for Freshwater Management 2017 (NPS-FM) directs regional councils to make or change regional plans to the extent needed to ensure the plans:[1]

[1] Policy B1, NPS-FM.

…establish freshwater objectives in accordance with Policies CA1-CA4 and set freshwater quantity flows and/or levels for all freshwater management units in its region (except ponds and naturally ephemeral water bodies) to give effect to the objectives in this policy statement, having regard to at least the following:

a) the reasonable foreseeable impacts of climate change;

b) the connection between water bodies; and

c) the connection between freshwater bodies and coastal water.

15. A freshwater objective describes an intended environmental outcome in a freshwater management unit.[2] Environmental flows and/or levels are defined in the NPS-FM as:[3]

> *…a type of limit which describes the amount of water in a freshwater management unit (except ponds and naturally ephemeral water bodies) which is required to meet freshwater objectives. Environmental flows for rivers and streams must include an allocation limit and a minimum flow (or other flow/s). Environmental levels for other management units must include an allocation limit and a minimum water level (or other level/s).*

16. The Proposed Plan contains a freshwater quantity objective, which is expressed as a policy as follows:

> ***D.4.13***
>
> ***Achieving freshwater quantity related outcomes***
>
> *Manage the taking, use, damming and diversion of fresh water so that:*
>
> *1) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh and coastal water are safeguarded, and*
>
> *2) the natural hydrological variation of outstanding freshwater bodies and natural wetlands are not altered, and*
>
> *3) rivers have sufficient flow variability to maintain habitat quality, including to flush rivers of deposited sediment and nuisance algae and macrophytes, and*
>
> *4) flows and water levels support sustainable mahinga kai, and*
>
> *5) saline intrusion in, and land subsidence above, aquifers is avoided, and*
>
> *6) recreational and amenity values associated with fresh water are maintained.*

[2] Interpretation, NPS-FM.
[3] Ibid.

17. The objective was expressed as a policy in keeping with council's intention to only have one objective in the plan[4]. Regardless of whether the direction is expressed as an objective or a policy the outcomes sought remain the same. I address this issue in more detail soon.

18. The objectives sought in the policy apply to Northland's rivers, lakes, wetlands and aquifers. That is, they provide for water quantity dependent values, which include the compulsory value in the NPS-FM (aquatic ecosystem health) and other values (mahinga kai, recreation and amenity, reliability of supply for water users).

19. The river water quantity management units, to which the water quantity objectives and associated limits apply, were defined based on broad differences in flow regimes and the influence of changes on hydraulic habitat and reliability of supply on water users, and ecological and natural character values.[5]

20. The two lake management units (lakes less than or equal to ten metres deep and lakes deeper than ten metres) were defined because lake depth is the single factor that best discriminates variation in lake water quality in Northland.[6] The units also align with technical recommendations on management lake water quantity.[7]

21. Regarding wetlands, we did not differentiate them for the purposes of setting minimum levels. That is, we are treating them as one unit for the purposes of managing water levels, consistent with the approach in the proposed National Environmental Standard on Ecological Flows and Water Levels (proposed NES).[8]

22. We grouped most of Northland's aquifers into two management units ('coastal aquifers' and 'other aquifers'), again which aligns with the proposed NES. The exception being the aquifers underlying the Pouto Peninsula, which were defined using more detailed information on their characteristics.[9]

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[4] See Objective F.0.1 and Section 42A Report: Plan Approach, procedural issues and Section 32

[5] See Snelder T. 2015. Defining Freshwater Management Units for Northland: A Recommended Approach. Prepared for Northland Regional Council by LWP Ltd.; Osbaldiston S. Proposed amendments to freshwater management unit boundaries for small and coastal rivers. Northland Regional Council.

[6] Snelder T., Hughes B., Kelly D., Stephens T. 2016. Lake FMUs for Northland: Recommendations for Policy Development. LWP Client Report Number: 2016-003.

[7] See Beca. 2008. Draft Guidelines for the Selection of Methods to Determine Ecological Flows and Water Levels. Report prepared by Beca Infrastructure Ltd for MfE. Wellington: Ministry for the Environment.

[8] Ministry for the Environment. 2008. Proposed National Environmental Standard on Ecological Flows and Water Levels: Discussion Document. p.26

[9] Wilson, S., Shokri, A. 2015. Aupouri Aquifer Review. Lincoln Agritech Ltd. Report 1056-1-R1

23. Our approach to setting environmental flows and levels (freshwater quantity limits) is documented in chapter 5.2 of the RMA section 32 evaluation report. Briefly, it involved:

- Using the Environmental Flows Strategic Allocation Platform (EFSAP) to simulate the consequences of various potential limits for all river and stream reaches in Northland with a mean flow greater than 10 litres per second (including scenarios from more environmental conservative to more resource-use enabling than the proposed NES).[10] Minimum flows and allocation limits were selected by Council based on an analysis of trade-offs between protecting in-stream values and enabling resource use;
- Basing minimum levels for lake on the risks for potential change to lake levels as defined in the Draft Guidelines for the Selection of Methods to Determine Ecological Flows and Water Levels[11];
- Adopting the interim limits for wetlands in the proposed NES[12]; and
- Adopting the allocation limits recommended by Wilson and Shokri (2015)[13] for the Aupouri aquifer management unit, and basing the limits for the two other aquifer management units on the interim limits in the proposed NES[14].

24. The proposed allocation limits for rivers and allocation limits in Policy D.4.16 and D.4.17, respectively, are structured like the interim limits in the proposed NES. That is, they state that the quantities of fresh water that can be taken from rivers and aquifers are whichever is the **greater** of default allocation limits or the quantities authorised by resource consents at the notification date of the plan, less any resource consents subsequently surrendered, lapsed, cancelled or not replaced. The main difference being however that takes permitted by the plan are also included in the core allocations.

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[10] Franklin, P., Diettrich, J., Booker, D. 2015. Options for default minimum flow and allocation limits in Northland. Part 2: Technical report. Prepared for Northland Regional Council. NIWA Client Report No: HAM2013-037

[11] Beca. 2008. Draft Guidelines for the Selection of Methods to Determine Ecological Flows and Water Levels. Report prepared by Beca Infrastructure Ltd for MfE. Wellington: Ministry for the Environment. p.49

[12] Ministry for the Environment. 2008. Proposed National Environmental Standard on Ecological Flows and Water Levels: Discussion Document. p.26

[13] Wilson, S., Shokri, A. 2015. Aupouri Aquifer Review. Lincoln Agritech Ltd. Report 1056-1-R1. p.40

[14] Ministry for the Environment. 2008. Proposed National Environmental Standard on Ecological Flows and Water Levels: Discussion Document. p.26

25. The proposed allocation limits have been challenged in submissions, some of which raise a couple of complex issues.

26. It is also useful to note that the Proposed Plan does not specify where the allocation limits and minimum flows for river apply (for example, at the point of take, terminal reaches of catchments, or at flow recorder sites). In this regard, there is a lack of certainty for resource users and the council about the spatial resolution at which the limits apply. I will return to this point later, as it was raised in submissions on the Proposed Plan.

Submissions and analysis

Freshwater management units

27. The council received five submissions on the freshwater management units defined in the Proposed Plan. Beef and Lamb NZ supported the approach of basing river water quantity management units on the values of water bodies and their sensitivity to extraction.[15]

28. However, Northland Fish and Game and the Royal Forest and Bird Protection Society of New Zealand consider that the proposed water quantity management units should be replaced with hydraulically discrete freshwater management units based on catchment and aquifer boundaries.[16] The Royal and Forest and Bird Protection Society of New Zealand submitted that:[17]

> *…the NPS-FM policies CA1-CA4 are not well addressed in the NRC Plan. Freshwater management units (FMUs) for freshwater quantity are zones as outstanding rivers, coastal rivers, small rivers and large rivers. However, it is unclear how this classification was made.*
>
> *Forest & Bird proposes that the Region should be split first into sub-catchments according to hydrological and topographical properties before it is categorised into outstanding, coastal, small or large rivers.*

[15] Beef and Lamb NZ. p.4
[16] Northland Fish and Game. p.34
[17] Royal Forest and Bird Protection Society of New Zealand. p.13

29. It is important to consider how the NPS-FM defines a freshwater management unit and how the river water quantity management units, as defined in the Proposed Plan, were derived.

30. Policy B1 of the NPS-FM directs the regional council to "establish freshwater objectives in accordance with Policies CA1-CA4". Policy CA1 states "[b]y every regional council identifying freshwater management units that include all freshwater bodies within its region."

31. The NPS-FM defines a freshwater management unit as "…the water body, multiple water bodies or any part of a water body determined by the regional council as the appropriate spatial scale for setting freshwater objectives and limits and for freshwater accounting and management purposes."

32. While not constituting legal advice, the Ministry for the Environment's guidance on identifying freshwater management units states:[18]

> *The concept of FMUs was added to the NPS-FM following recommendations by the Land and Water Forum to:*
>
> - *encourage a pragmatic approach to freshwater management by allowing water bodies to be grouped together where appropriate*
> - *allow a single objective to apply to freshwater bodies that are not connected*
> - *establish a spatial scale at which management activities are undertaken, including freshwater accounting and setting freshwater objectives and limits.*
>
> *The definition of FMUs is* ***intentionally flexible*** *so councils can determine the spatial scale best suited to managing fresh water in the specific circumstances of their region.* [my emphasis]

33. It is clear to me that regional councils have discretion to determine freshwater management units in any way that they deem appropriate.

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[18] Ministry for the Environment. 2016. A Guide to Identifying Freshwater Management Units Under the National Policy Statement for Freshwater Management 2014. Wellington: Ministry for the Environment.

34. The Proposed Plan groups similar rivers based on "broad differences in their flow regimes and the response of hydraulic habitat and reliability of supply to changes in flow"[19] and biodiversity values in the case of the coastal rivers management unit[20].

35. Different minimum flow and allocation limits are applied to each river water quantity management unit. However, the Proposed Plan does to specify the spatial resolution at which the limits are to apply. This is shortcoming that should be resolved by being clear in the Proposed Plan that minimum flows and allocation limits apply at the point of take (that is, the reach level).

36. I disagree with Northland Fish and Game and the Royal Forest and Bird Protection Society of New Zealand's submissions that the freshwater management units in the plan should be replaced with hydrologically discrete management units based on catchment and aquifer boundaries. There are over 1,500 source-to-sea surface water catchments in Northland. It is not practicable or indeed necessary to define river management units based on catchment boundaries. Besides, the Royal Forest and Bird Protection Society and Northland Fish and Game did not provide any substantive reasons why such as approach is appropriate.

37. The Royal Forest and Bird Protection Society of New Zealand and Vision Kerikeri submitted that the council should amend the maps of outstanding freshwater bodies so that they extend from mapped headwaters (in the Conservation estate) to the coastal marine area to fully protect their ecological values.

38. I understand that they made the request in the interests of ensuring that there is a high degree of connectivity between outstanding rivers in the conservation estate and coastal waters. However, the submitters did not provide any evidence of connectivity issues (for example, physical or chemical barriers).

Freshwater objectives

39. Policy CA2 of the NPS-FM, which was amended in August 2017 (just prior to the notification of the plan), provides the approach to establishing freshwater objectives. I

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[19] Snelder T. 2015. Defining Freshwater Management Units for Northland: A Recommended Approach. Prepared for Northland Regional Council by LWP Ltd., and Osbaldiston S. Proposed amendments to freshwater management unit boundaries for small and coastal rivers. Northland Regional Council. p.33

[20] Ibid

have reproduced it in full below for completeness (note that I have underlined text which was introduced in August 2017, the month before the Proposed Plan was notified):

> *By every regional council, through discussions with communities, including tangata whenua, applying the following process in developing freshwater objectives for all freshwater management units:*
>
> *a) considering all national values and how they apply to local and regional circumstances*
>
> *b) identifying the values for each freshwater management unit, which*
>
> *i. must include the compulsory values; and*
>
> *ii. may include any other national values or other values that the regional council considers appropriate (in either case having regard to local and regional circumstances); and*
>
> *c) identifying:*
>
> *i. for the compulsory values or any other national value for which relevant attributes are provided in Appendix 2:*
>
> *A. the attributes listed in Appendix 2 that are applicable to each value identified under Policy CA2(b) for the freshwater body type; and*
>
> *B. any other attributes that the regional council considers appropriate for each value identified under Policy CA2(b) for the freshwater body type; and*
>
> *ii. for any national value for which the attributes are not provided in Appendix 2 of any other value, the attributes that the regional council considers appropriate for each value identified under Policy CA2(b) for the freshwater body type.*
>
> *d) for those attributes specified in Appendix 2, assigning an attribute state at or above the minimum acceptable state for that attribute;*
>
> *e) formulating freshwater objectives:*
>
> *i. in those cases where an applicable numeric attribute state is specified in Appendix 2, in numeric terms by reference to that specified numeric attribute state; or*
>
> *ii. in those cases where the attribute is not listed in Appendix 2, in numeric terms where practicable, otherwise in narrative terms; and*
>
> *Iia. in those cases where a freshwater objective seeks to maintain overall water quality in accordance with Objective A2, by every regional council ensuring:*
>
> *A. where an attribute is listed in Appendix 2, that freshwater objectives are set at least within the same attribute state as existing freshwater quality; and*

B. *where an attribute is not listed in Appendix 2, that freshwater objectives are set so that values identified under Policy CA2(b) will not be worse off when compared to existing freshwater quality; and*

iii. *on the basis that, where an attribute applies to more than one value, the most stringent freshwater objective for that attribute is adopted; and*

f) *considering the following matters at all relevant points in the process described in Policy CA2(a)-(e):*

iaa. how to improve the quality of fresh water so it is suitable for primary contact more often, unless regional targets established under Policy A6(b) have been achieved or naturally occurring processes mean further improvement is not possible;

iab. how to enable communities to provide for their economic well-being, including productive economic opportunities, while managing within limits;

i. *the current state of the freshwater management unit, and its anticipated future state on the basis of past and current resource use, including community understandings of the health and well-being of the freshwater management unit;*

ii. *the spatial scale at which freshwater management units are defined;*

iii. *the limits that would be required to achieve the freshwater objectives;*

iv. *any choices between the values that the formulation of freshwater objectives and associated limits would require;*

v. *any implications for resource users, people and communities arising from the freshwater objectives and associated limits including implications for actions, investments, ongoing management changes and any social, cultural or economic implications;*

vi. *the timeframes required for achieving the freshwater objectives, including the ability of regional councils to set long timeframes for achieving targets; and*

vii. *such other matters relevant and reasonably necessary to give effect to the objectives and policies in this national policy statement, in particular Objective AA1 and Objective A2.*

40. The freshwater objectives sought in Policy D.4.13 address the compulsory national value of aquatic ecosystem health. The other national value 'human health for recreation' is more relevant to the management of water quality ("pathogens, visual clarity, deposited sediment, plant growth (from macrophytes to periphyton to phytoplankton), cyanobacteria and other toxicants." [21]). However, I am not suggesting that water quantity is not important when managing rivers and other water bodies for

[21] NPS-FM, Appendix 1

contact recreation. Indeed, flows influence periphyton accrual and are related to other attributes relevant to contact recreation (for example, visual clarity and microbiological water quality).

41. The council has scheduled a plan change for circa. to include numeric freshwater quality objectives for a range of water quality attributes including periphyton, dissolved oxygen, dissolved inorganic nitrogen and reactive phosphorus. Flows will be an important consideration when setting the objectives/standards.

42. Policy D.4.13, which I highlighted earlier, sets out the intended water quantity dependent outcomes for Northland's freshwater bodies. It is formulated in narrative terms because there are no directly applicable numeric attribute states in the NPS-FM.

43. The regional council considered formulating freshwater quantity objectives in numeric terms by reference to desired minimum levels of hydraulic habitat for sensitive fish species (for example, expressed as a Weighted Usable Area) and reliability of supply for water users (for example, the percentage of time that a certain volume water is available for extraction).

44. However, this proved difficult because habitat availability is related to width and flow conditions, which vary by river reach. This would mean that a very large number of minimum flow and allocation limits would be required to satisfy a particular numeric water quantity objective for habitat availability (for example). In other words, for any given minimum flow and allocation limit, habitat availability and reliability of supply will vary spatially and temporarily across a river network.

45. This matter is discussed in Franklin, et al. (2015):[22]

> *The observed variability will have implications for defining appropriate rules to meet objectives in all locations and for equitability between stakeholders. However, because the aim of this project is to support definition of regional scale default allocation limits, rather than catchment and site specific rules, we consider that this level of variability is acceptable.*

[22] Franklin, P., Diettrich, J., Booker, D. 2015. Options for default minimum flow and allocation limits in Northland. Part 2: Technical report. Prepared for Northland Regional Council. NIWA Client Report No: HAM2013-037. p.31

> *More detailed analyses at a higher spatial resolution or based on catchment boundaries could help to distinguish management sub-units with more uniform outcomes…*

46. Turning to submissions on the Proposed Plan, the Minister for Conservation and the Royal Forest and Bird Society of New Zealand believe that the Proposed Plan does not contain freshwater objectives required by the NPS-FM.[23] The Minister for Conservation stated that the Plan:[24]

> *… does not include any objectives, and in particular does not include objectives…to protect…freshwater ecosystems. Accordingly, in the Department's view, the Plan does not give effect to the National Policy Statement for Freshwater Management, or the New Zealand Coastal Policy Statement and is not accordance with the provisions of Part 2 of the RMA.*

47. The Minister also stated that "[i]t is not clear what the freshwater objectives are for…any of the…catchments in the Northland Region"[25], and considers that freshwater objectives should be included in the plan that:[26]

- *Safeguard the life supporting capacity and ecosystem health of freshwater;*
- *Describe freshwater outcomes to be achieved for the regions [sic] rivers, lakes, wetlands and the coastal environment*
- *Ensures that water quality is at a minimum, maintained and where degraded, is improved*
- *That all remaining wetland habitats are recognised as significant and protected from further degradation and loss and protect the values of outstanding wetlands*
- *recognise and provide for the intrinsic values in Freshwater Management Units in the Northland Region.*

48. Haititaimarangi Marae 339 Trust made a similar submission.

49. The submitters raise a valid point. That is, it is not evident that the Proposed Plan contains a freshwater objective in terms of the requirement of Policy B1 of the NPS-FM. I consider that the best way to address this issue is to recast Policy D.4.13 as an objective in section F of the Proposed Plan, including with several amendments.

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[23] Minister for Conservation. p.58., Royal Forest and Bird Protection Society of New Zealand. p.13.
[24] Minister of Conservation. p.1
[25] Ibid. p.58
[26] Ibid. p.58

50. It is important to note that Policy D.4.13 (which describe the intended water quantity dependent outcomes) largely covers the freshwater objectives sought by the Minister of Conservation. That is:

- It states that the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh and coastal water are to be safeguarded;
- It describes other intended freshwater (quantity) outcomes to be achieved in Northland's freshwater bodies (covered by all management units);
- It provides for the protection of natural wetlands and the significant values of wetlands from hydrological modification; and
- It recognises and provides for other intrinsic values associated with Northland's freshwater bodies.

51. The Minister of Conservation is generally supportive of Policy D.4.13 "…to the extent that it aligns with s.5 of the Act and reflects good practice management for freshwater [quantity]" [27], but considers some minor amendments including a new clause that provides for extent of littoral zones in natural lakes to be maintained. I agree with the Minister's request.

52. Bay of Island's Maritime Park Inc. supported Policy D.4.13 but submitted that it should be expanded to include the protection and restoration of natural character.[28] Similarly, CEP Services Matauwhi Ltd submitted that the policy should be amended to address natural character considerations and:[29]

- Recognise tangata whenua values;
- Provide for the taking, use, diversion and damming of water in light of climate change; and
- Extend the protection of natural hydrological variation in outstanding freshwater bodies and wetlands to all waterbodies that meet the criteria for 'significance' in Appendix 5 of the Regional Policy Statement.

53. While I agree that the policy should be amended to provide for broader cultural values (than recreation and amenity values) and the preservation of the natural character of freshwater bodies, I am not persuaded that it should mention climate

[27] Minister of Conservation. p.51
[28] Bay of Islands Maritime Park Inc. p.5
[29] CEP Services Matauwhi Ltd. p.A18

change or be extended to protect any waterbody that meets the criteria of significance in Appendix 5 of the RPS.

54. First, it is not clear to me what mentioning climate change in the policy (or a new objective) would achieve. Second, I am not convinced that it is necessary to protect the natural hydrological variation in all waterbodies that meet the criteria for significance in Appendix 5 of the RPS. For the criteria in the appendix are seemingly very broad in application.

55. Appendix 5 contains criteria for identifying areas of significant indigenous vegetation and significant habitats of indigenous fauna for the purpose of providing for their protection under section 6(c) of the RMA. (I understand that it would capture most of Northland's rivers, natural wetlands and lakes.[30]) CEP Services Matauwhi Ltd did not provide any evidence that maintaining natural hydrological variation in all water bodies that meet the criteria in Appendix 5 is necessary to protect their ecological values.

56. Haititaimarangai Marae 339 Trust considers that clause 3 of Policy D.4.13 should be expanded to provide for the natural movement of indigenous fish in rivers.[31] I agree that this is environmental outcome that should be sought, particularly given barriers are a well-known threat to native fish species.

57. Patuharakeke Te Iwi Trust Board Inc submitted that clause 6 of Policy D.4.13 should be amended to provide for the enhancement, rather than maintenance, of recreational and amenity values associated with fresh water when managing the taking, use damming and diversion of fresh water.[32] The submission does not contain evidence to demonstrate that these activities are adversely affecting recreational and amenity values in all freshwater management units. In other words, that they are compromised to the extent that direction on enhancement is required.

58. Lastly, Refining New Zealand points out that "in certain circumstances, taking groundwater for water table depression purposes is an appropriate method to manage passive discharges (such resource consents are held by Refining NZ)"[33] but may cause saltwater to enter groundwater. Refining New Zealand considers that

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[30] See criterions 2 and 4 for example.
[31] Haititaimarangai Marae 339 Trust p.48
[32] Patuharakeke Te Iwi Trust Board Inc. p.15
[33] Refining New Zealand. p.33

clause 5 of Policy D.4.13 should be amended to recognise that saline intrusion may be warranted where it is necessary to manage passive discharges, which could have greater adverse environmental effects.

59. I consider that the objective to avoid saline intrusion in aquifers, set out in Policy D.4.13. is unduly restrictive with respect to the matter described by Refining New Zealand and that it should be amended (as an objective in section H of the Proposed Plans) to state "Manage the taking, use damming and diversion of fresh water so that:… adverse effects associated with saline intrusion are avoided…". In this respect, Refining New Zealand could argue that there are no adverse effects associated with saline intrusion because groundwater below its site is not valued for potable supply.

Freshwater quantity limits

60. The Royal Forest and Bird Protection Society of New Zealand and Northland Fish and Game highlighted in their submissions that regional councils are required to set environmental flows and/or levels for all freshwater management units in its region, and that it is not clear from the definitions section if the proposed minimum flows for river and minimum levels for lakes and wetlands are environmental flows. They consider that policies D.4.14 (Minimum flows for rivers) and D.4.15 (Minimum levels for lakes and wetlands) should be amended to give effect to Policy B1 of the NPS-FM.[34]

61. The NPS-FM defines the term environmental flow and/or level as:

> *…a type of limit which describes the amount of water in a freshwater management unit (except ponds and naturally ephemeral water bodies) which is required to meet freshwater objectives. Environmental flows for rivers and streams must include an* ***allocation limit*** *and a* ***minimum flow*** *(or other flow/s). Environmental levels for other freshwater management units must include an* ***allocation limit*** *and a* ***minimum water level*** *(or other level/s).* [My emphasis]

62. To me it is obvious that the minimum flows and levels set in policies D.4.14 and D.4.15, in combination with the allocation limits set in policies D.4.16 and D.4.17 are

[34] Royal Forest and Bird Protection Society of New Zealand. p.68 and Northland Fish and Game. p.56

environmental flows and levels as required by Policy B1 of the NPS-FM. That is, they give effect to the NPS-FM.

63. There were differing opinions on appropriateness of the minimum flows/levels and allocation limits in the Proposed Plan. For example, Northland Fish and Game submitted that the Plan should be amended:[35]

> *…to ensure that the natural flow patterns of the Regions Rivers, lakes, and wetlands are provided for and protected. This includes minimum flows, primary and supplementary allocations, and hydrological variability. Minimum flows should be set no lower than 80% of the naturalised Mean Annual Low Flow ('MALF') for rivers with median flow of 5 cumecs or more, and a minimum flow of 90% of MALF for those rivers with a median flow of 5 cumecs or less. Primary allocations should not exceed 30% of the natural MALF. Supplementary takes shall not cause departure from the natural hydrological regime;*

64. Northland Fish and Game did not state the reason(s) for the different minimum flows and allocation limits that it requested.

65. Haititaimarangai Marae 339 Trust submitted that "[m]inimum flows should be set no lower than 70% of the natural MALF [and] [c]ore allocations should not exceed 30% of the natural MALF."[36] The Trust did not provide any information to corroborate its position on minimum flows and allocation limits.

66. Furthermore, the Trust considers that Policy D.4.15 should be amended so that the water levels and natural fluctuations of levels in lakes and wetlands are maintained in a way that provides for their live-supporting capacity, mahinga kai, habitat values and mauri of those water bodies.

67. The Minister for Conservation also submitted that a more conservative approach is required in setting minimum flows for Northland's coastal rivers and small rivers. That is, the minimum flows for rivers with [mean] flows less than 5m^3/s should be 100% of MALF,[37] and the allocation limits for rivers should be 30% of MALF in the absence of river specific information, and, in the absence of lake specific assessments the

[35] Northland Fish and Game. p.8
[36] Haititaimarangai Marae 339 Trust. p.10
[37] Minister of Conservation. p.52

minimum levels for lakes should be changed to specify that there must be no change to lake levels.[38]

68. In contrast, DairyNZ submitted that the minimum flow for large rivers should be 70% of MALF not 80% of MALF.[39] Similarly, Federated Farmers of New Zealand submitted that the minimum flows for all rivers in Northland should be 70% of MALF.[40] Federated Farmers is also concerned that that there is insufficient data to set minimum levels for lakes and wetlands and the default levels in Policy D.4.15 may be set too conservatively. They submitted that they should be amended to address the concerns.[41]

69. The Proposed National Environmental Standard on Ecological Flows and Water Levels (proposed NES) contains proposed interim limits that mirror the limits in Northland Fish and Game's submission, which are as follows:[42]

> ***For rivers and streams with mean flows less than or equal to 5 m^3/s***
>
> *A minimum flow of 90% of the mean annual low flow (MALF) as calculated by the regional council and an allocation limit of, whichever is the greater of:*
> - *30% of MALF as calculated by the regional council*
> - *the total allocation from the catchment on the date that the national environmental standard comes into force less any resource consents surrendered, lapsed, cancelled or not replaced.*
>
> ***For rivers and streams with mean flows greater than 5 m^3/s***
>
> *A minimum flow of 80% of MALF as calculated by the regional councils and an allocation limit for, whichever is the greater of:*
> - *50% of MALF as calculated by the regional council*
> - *the total allocation from the catchment on the date that the Standard comes into force less any resource consents surrendered, lapsed, cancelled and not replaced.*

[38] Ibid. p.52
[39] DairyNZ. p.28
[40] Federated Farmers of New Zealand. p.28
[41] Ibid. p.29
[42] Ministry for the Environment. 2008. Proposed National Environmental Standard on Ecological Flows and Water Levels: Discussion Document. Ministry for the Environment: Wellington. p.27

70. The discussion document on the proposed NES states that "[t]he interim limits will apply until an alternative is established through regional plan process."[43] It also states:[44]

> *The setting of environmental flows or water levels requires a judgment to be made by a regional council on the management interventions required to provide for the values attributed to a water body, taking into account both natural and development values.* ***This judgement is made in accordance with the priorities set in Part II of the RMA, national policy statements, regional policy statements and regional plans, and is informed by technical and subjective assessment*** *of the likely consequences of changes to water flows or water levels to the values attributed to the water body.*
>
> *…*
>
> *It is important that the quantifiable and measurable parameters of a water body are clearly presented, separately from more subjective measures, so that all interested parties and decision makers can see and understand what the final flow limits have been based on.* [My emphasis]

71. The minimum flows and allocation limits in the Proposed Plan were based on information that is specific to Northland's rivers using technical and subjective assessment. The proposed minimum flow and allocation limits were agreed to by council following an assessment of different combinations of limits using EFSAP. While EFSAP, like all models, has limitations,[45] it "provides a defensible approach to evaluating the relative merits of different combinations of limits and therefore [allows] NRC to more transparently communicate and set water resource limits that meet their nominated objectives."[46]

72. However, it is also important to note that:[47]

> *EFSAP uses instream physical habitat as a measure of environmental state. The use of physical habitat is based on the assumption that habitat availability, rather than other factors such as water quality or migration barriers is the primary limiting factor on the target species.* ***Physical habitat is used as a surrogate for the suitability of a site to support the target species, but the availability of suitable habitat does***

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[43] Ministry for the Environment. 2008. p.25
[44] Ministry for the Environment. 2008. p.50
[45] Franklin, P., Dietrich, J., Booker, D. 2015. Options for default minimum flow & allocation limits in Northland. Part 2: Technical report. Prepared for Northland Regional Council. NIWA Client Report No: HAM2013-037. p.22
[46] Franklin, et al. 2015. p.8
[47] Franklin, et al. 2015. p.16

> ***not necessarily correlate with species abundance****. Factors such as water quality and migration barriers would be considered in a full and detailed analysis of the ecological impacts of flow setting scenarios.* [My emphasis]

73. Other important assumptions and limitations associated with the application of EFSAP are set out in Franklin, et al. (2015).

74. I consider that the minimum flows/levels and allocation limits sought by submitters are valid alternatives but I stand by the proposed limits because I consider that they strike an appropriate balance between enabling resource use and protecting in-stream ecological values, and by default other related values like natural character and mahinga kai.

75. CEP Services Matauwhi Ltd. submitted that the minimum flows, minimum levels and allocation limits for rivers should be amended so that they achieve the outcomes set out in Policy D.4.1.13.[48] However it did not provide evidence that the freshwater quantity limits are insufficient to ensure that the outcomes are achieved. Nor do they provide any detail on alternatives.

76. CEP Services Matauwhi Ltd.'s submission highlights, though, that the linkage between Policy D.4.13 and the limits in Policies D.4.14 – D.4.17 is not clear. I consider that the plan should state that the limits are for the purposes of assisting with the achievement of the intended water quantity related environmental outcomes (recast as an objective in section F of the Proposed Plan).

77. The Royal Forest and Bird Protection Society of New Zealand submitted that Policies D.4.16 and D.4.17 allow for the total volume of fresh water to be taken to exceed default allocation limits, and in doing so is inconsistent with Objective B2 of the NPS-FM. They also consider that the allocation limits for river and aquifers in Policy D.4.16 and D.4.17 should be "whichever is the lesser of [rather than greater of]"[49] the default allocation limits or the total quantities that are authorised to be taken by rules or consents.

78. Objective B2 of the NPS-FM is "[t]o avoid any further over-allocation of fresh water and phase out existing over-allocation." Over-allocation is defined as "the situation

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[48] CEP Services Matauwhi Ltd. p.A19
[49] Northland Fish and Game. p.56., The Royal Forest and Bird Protection Society of New Zealand. p.68

where the resource a) has been allocated to users beyond a limit; or b) is being used to a point where a freshwater objective is no longer being met."

79. As mentioned earlier in this report, Policies D.4.16 and D.4.17 are structured in an similar way to the interim limits in the proposed NES. That is, they specify that the allocation limits for rivers and aquifers are whichever is the greater of a default allocation limit (% of seven-day mean annual low flow and annual average recharge) or the total allocation authorised to be taken by permitted rules and resource consents at the date of public notification of the plan, less resource consents subsequently surrendered, lapsed, cancelled and not replaced, and resource consents for unauthorised takes that existed at the notification date of the plan.

80. I consider that the approach is valid and is consistent with the NPS-FM. However, to avoid confusion it would be useful to delete the term default allocation limit from both policies and refer directly to the relevant percentage of the seven-day mean annual low flow (for rivers) and annual average recharge (for aquifers). As an aside, the word default implies that the limits are an interim alternative to more specific limits. The regional council has yet to determine if it will develop freshwater objectives and limits that are specific (that is, tailored) to individual water bodies.

81. Fonterra considers that the policies in section D.4. of the plan are not the most appropriate way of managing water allocation in Northland because "[they] do not provide guidance on the environmental effects that are to be managed, nor do they guide how specific activities are to be treated, other than setting general allocation limits and identifying that a limited range of activities will or not be granted consent."[50]

82. I address Fonterra's concerns in other parts of this report, but of direct relevance here is its request for policies that specify allocation limits for each catchment in the region,[51] which is similar to Ngati Raumahue of Whangaroa's submission that district-specific allocations should be set for Northland rivers, rather than region-wide allocation limits.[52]

[50] Fonterra. p.29
[51] Ibid
[52] Ngāti Ruamahue of Whangaroa. p.3

83. It is not necessary to define specific allocation limits for approximately 1,500 source-to-sea catchments in Northland. The regional council does not have the resources or time to determine catchment-specific allocation limits for all rivers in Northland.

84. Submissions were also made on including RMA s14(3)(b) and permitted activity takes within the allocation limits. Haititaimarangai Marae 339 Trust also submitted that the allocation limits for river and aquifers need to take into account all of the water available to be taken – including RMA s14(3)(b) takes, minor takes and unauthorised takes. The Minister of Conservation also submitted that the allocation limits for river and aquifers should include RMA s14(3)(b) takes.[53]

85. The regional council sought legal advice from Wynn Williams on several issues relating to the freshwater quantity management requirements of the NPS-FM, including on the following question: "Must an allocation limit (part of an environmental flow) apply to fresh water for (a) existing or likely new RMA s14(3)(b) purposes, and (b) permitted minor use activities."

86. Wynn Williams had this to say (note that the full advice is attached to this report as appendix B):[54]

> *In summary, provided an allocation limit is set taking into account water that is likely to be taken pursuant to section 14(3)(b) and water that is likely to be taken by way of permitted activity rule(s) under the Proposed Plan, no separate allocation block is required within the overall allocation limit for those particular categories of take.*
>
> *An "environmental flow and/or level", which includes an allocation limit, describes the amount of water in a Freshwater Management Unit which is required to meet a freshwater objective. Therefore, the allocation block for consented takes must be set taking into account:*
>
> *a. water that is likely to be taken pursuant to section 14(3)(b) of the Act;*
> *b. water that is likely to be taken by way of permitted activity takes; and*
> *c. water that is available to be taken subject to resource consent whilst meeting a freshwater objective.*
>
> *We note that where there are uncertainties associated with the s14(3)(b) takes or the permitted activity takes, the NPS-FM provides that the proportion of the limit that has*

[53] Minister for Conservation. p.52
[54] Philip Maw, Kirstie Wyss. 12 June 2018. Memorandum to Ben Tait, Northland Regional Council. paras. 59 – 66.

been taken can be either measured, modelled, or estimated (see definition of "freshwater quantity accounting system").

In respect of section 14(3)(b) takes, the Council does not need to regulate a take under section 14(3)(b) in its regional plan, as these takes occur pursuant to the RMA. As such, it does not need to set a separate allocation block in respect of these takes, as part of the allocation limit, provided that the allocation block for consented takes is set taking into account the allocation estimated for s14(3)(b) takes.

Likewise, provided the Council has at least estimated the amount of water that may be taken pursuant to a permitted activity take rule, it does not need to set a separate allocation block within the allocation limit for these takes.

For completeness, we note that the Environment Court has previously held that the authorisation to take pursuant to section 14(3)(b) is not unlimited. The taking or use must not have, or be likely to have, an adverse effect on the environment. That is useful because it provides a platform for Council to estimate the volume of s14(3)(b) takes for the purpose of determining how much of the allocation limit is available to be taken subject to its permitted activity rule, or by way of resource consent.

87. The regional council has estimated that amount of water taken in each of Northland's catchments under RMA s14(3)(b) and for dairy shed use. In the vast majority of the approximately 1,500 surface water catchments such volumes represent a small proportion of the allocations available under policy D.4.16. This is discussed in more detail later in this report. I consider that the council did take into account the amount of water taken pursuant to RMA s14(3)(b) and water that is likely to be taken by way of permitted activity rule(s) when setting the allocation limits in the Proposed Plan.

88. Furthermore, it would also be problematic to include permitted activity takes and RMA s14(3)(b) takes within allocation limits. This is because it would require an applicant for a resource consent to take and use fresh water to determine, with a high degree of certainty, the amount of water being taken in the catchment under a permitted activity rule and RMA s14(3)(b), both spatially and temporally. Such information is known for consented takes but can only be estimated for permitted takes and RMA s14(3)(b) takes. While the council could require all water takes to be registered and metered, I consider that the benefits gained in terms of improved information would be far outweighed by the implementation costs.

89. It is important to note thought that permitted and RMA s14(3)(b) takes account for small amount of the total allocation in most Northland's catchments and, in my opinion, are not materially significant.

90. Fonterra submitted that policies D.4.14 – D.4.17 should be amended to clarify that the minimum flows/levels and allocation limits do not apply to non-consumptive takes.[55] I agree with Fonterra; it is not necessary to subject non-consumptive takes to minimum flows and allocation limits because, in effect, such takes do not remove water from water bodies. It also submitted that the allocation limits for rivers should not apply to takes permitted by Rule C.5.1.1.

91. Kaipara District Council and Whangarei District Council consider that replacement water permits for registered drinking water supplies should be expressly excluded from the allocation limits for rivers.[56]

92. In my opinion, that is not necessary because the Proposed Plan classifies replacement water permits for registered drinking-water supplies as a controlled activity. Policies D.4.16 and D.4.17 also provide for existing allocations that exceed default allocation limits.

93. Fonterra and DairyNZ raised valid concerns about the spatial distribution at which minimum flows and allocation limits for rivers are to be applied (for example, the point of take, the terminal reach of a river, or at a flow recorder site). Bryan Clements also considers that the plan lacks clarity on how the allocation limits will be implemented.[57] The concerns relate to Rule C.5.1.1, which permits the taking and use of water subject to conditions including requirements to observe minimum flows and allocation limits and Policies D.4.14 and D.4.16.

94. I am not aware of any national guidance on the spatial resolution at which freshwater quantity (and quality) limits required by the NPS-FM should be applied. The only authoritative direction is Booker et al. (2014), which looks at how differences in the

[55] Fonterra. p.31
[56] Far North District Council. p.22. Whangarei District Council. p.39
[57] Bryan Clements. p.2

implementation of minimum flow and allocation limits can result in vastly different outcomes for water users and the environment.[58] Booker et al. stated:[59]

> *…if limits are defined as proportions of hydrological indices (e.g., MALF as in the proposed National Environmental Standard for ecological flows and water levels; MfE, 2008), then the spatial resolution that limits could be applied at is only limited by the spatial resolution at which these hydrological indices can be observed or estimated. For example, estimates of MALF have been calculated for every reach in the New Zealand river network (Booker and Woods, 2014), which comprises 570,00 reaches with an average of length of ˜700 m (Snelder et al., 2005). Individual limits could therefore, in theory, be implemented at every location throughout the river network. However,* ***it is impractical to enforce limits at such fine spatial resolution, as this would require discharge to be continuously monitored at the location of each individual water take****. In practice it is far more likely that water resource limits implemented in regional water management plans would be enforced using hydrological data from particular locations (e.g., hydrological gauging stations) towards the downstream end of a catchment in order to aggregate water resource use across that catchment.*

95. Booker et al. neatly summarised the issue. That being, it is impractical to enforce limits at the point of take (particularly permitted activity takes). However, I do not think it is a big issue for consented takes because the consenting process provides an opportunity of site-specific hydrological indices to be modelled or measured. It is important to note that the regional council's hydrogical gauging network was not designed, per se, for the purposes of minimum flow and allocation limits, and the sites only cover a small number of the approximately 1,500 source-to-sea catchments in Northland.

96. I consider that permitted activity takes should not be subject to minimum flows and allocation limits because it would be very difficult, near impossible, to monitor and enforce limits on permitted takes with any certainty. For example, in the absence of a flow recorder site at the point of take or downstream of a take how would a water user know when to restrict or cease taking water? A water shortage direction under RMA s329 is more appropriate in my opinion for managing unconsented water takes.

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[58] Doug J. Booker, Paul A. Franklin, Jan C. Diettrich and Helen Rouse. (2014) Implementing limits on water resource use: same rules, different outcomes. Journal of Hydrology (NZ) 53(2): 129-151.
[59] Booker et al. p.131

97. For these reasons, I recommend that Rule C.5.1.1 and Policies D.4.16 and D.4.17 be amended accordingly.

98. DairyNZ submitted that Policies D.4.16 and D.4.17 should be amended to include a new clause that states "Information on existing levels of surface water allocation will be introduced to the plan via a Plan Change on or before 1 January 2018 [sic]."[60] This is because:

> *It is not clear what the level of allocation is currently. Indicative maps have been supplied via the NRC website. However, these maps sit outside of the plan. This creates a level of uncertainty for farmers as the map could be changed in any time without the need for a legal process to be followed.*

99. Penny Smart submitted along the same lines.

100. GBC Winstone also asked for the Proposed Plan to be amended to include surface and ground water allocation maps "for ease of reference and certainty for users of the Plan".[61]

101. The Proposed Plan does not document existing levels of allocation from Northland's water bodies because allocation levels are not static. They change, spatially and temporally, when consents are granted, lapsed, surrendered, or not replaced and when animal numbers change, for example. The amount of water allocated for use will change over time, albeit within limits. Therefore, it is not appropriate to define existing levels of allocation within the plan.

102. Note that regional council depicts indicative surface and groundwater allocations on its website.[62]

103. The Egg Producers Federation of New Zealand also expressed concerns that the allocation limits are not easily understood because it is not clear if a proposed water take would breach the limits.[63] I believe that I have addressed this issue.

104. The Egg Producers Federation of New Zealand was also concerned that policies D.4.16 (Allocation limits for rivers) and D.4.17 (Allocation limits for aquifers) are

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[60] DairyNZ p.30
[61] GBC Winstone. p.11
[62] https://www.nrc.govt.nz/Your-Council/Council-Projects/New-Regional-Plan/indicative-water-quantity-allocation-maps/
[63] Egg Producer Federation of New Zealand. p.6

"expressed as [they place] a mandatory requirement (must) to not exceed water allocation limits."[64] I note that case law has established that a policy is "a course of action" that can "be either flexible or inflexible, either broad or narrow."[65]

105. Federated Farmers of New Zealand stated that they "are concerned that there is insufficient data to set allocation limits [for the regions rivers]"[66] but provided no evidence to substantiate their claim. Federated Farmers sought "a reasonable and reliable basis for allocating flows and would support a method that addresses its concerns."[67] However, again Federated Farmers did not detail such a method. Rather, it suggested:[68]

> *…a primary, secondary and harvesting allocation regime could be adopted whereby lower allocation limits are set for primary takes but higher limits are set for secondary and harvesting takes. This would encourage people to harvest water during times of high flow and encourage people to consider storage options, particularly in conjunction with other policies and rules in this plan.*

106. Federated Farmers, K & F King and Felicity Foy submitted that the allocation limits for aquifers (outside of the Aupouri aquifer management unit) are too conservative and should be increased. I am reluctant to recommend that they are amended without evidence to demonstrate that a higher allocation limit is sustainable (evidence was not provided by the submitters).

107. Several people[69] requested grater allocation limits for the Houhora, Motutangi, and Waiparera sub-units of the Aupouri aquifer management unit.

108. The allocation limits for the Aupouri aquifer management units are based on a report produced by Lincoln Agritech in 2015. Since then further work was done by Williamson Water Advisory for avocado growers belonging to the Motutangi Waiharara Water User Group and is based on the previous information and latest information, including additional bore drilling, aquifer pumping tests, and wetland water quality and isotope data.

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[64] Ibid
[65] *Auckland Regional Council v North Shore City Council* [11495] 3 NZLR 18.
[66] Federated Farmers of New Zealand. p.29
[67] Ibid
[68] Ibid
[69] S Shine, Hayward Family Trust, Honeytree Farms Ltd, KSL Ltd, Motutangi Waiharara Water Group, and Horticulture NZ

109. Hayward Family Trust, Horticulture New Zealand, Honeytree Farms Ltd, KSL Ltd, and Motutangi Waiharara submitted that Williamson Water Advisory found that the sustainable allocation limits for the Aupouri-Houhora, Aupouri-Motutangi and Aupouri-Waiparera aquifer sub-units are greater than proposed allocation limits.

110. The submitters requested that the allocation limits for all sub-units in the Aupouri aquifer management unit (including the Aupouri-Houhora, Aupouri-Motutangi and Aupouri-Waiparera sub-zones) be changed to 15% of mean annual recharge, where mean annual recharge is 38% of mean annual rainfall (1,250 mm/year).[70]

111. The regional council engaged LWP Ltd. to provide technical advice on the allocation limits for the Aupouri aquifer sub-units (among other things). LWP reviewed the submissions and information on the aquifer and recommended that:[71]

> *…NRC give consideration to submissions requesting that groundwater allocation for the Houhora, Motutangi and Waiparera sub-aquifers of the Aupouri aquifer management unit (listed in Table 12 of the pRPN) to the equivalent of 15% of annual average recharge. This volume of abstraction is well within 'envelope' of scenarios simulated by the [Williamson Water Advisory] model which indicate no significant increase in the potential risk of saline intrusion. Such an amendment would reflect additional hydrogeological investigations and groundwater modelling that has been recently undertaken for the [Motutangi-Waiharara Water User Group] application that address factors contributing to the low confidence in model predictions (and consequent conservative approach to allocation) in these sub-aquifers described in the Lincoln Agritech (2015) report.*
>
> *However, due to the complex subsurface geology and hydrogeology of the Aupouri aquifer system, it is recommended that any increase groundwater allocation for individual sub-aquifers of the Aupouri aquifer management unit should be supported by a corresponding amendment to Policy D.4.17 2) a) to include specific provision for groundwater levels along the coastal margin to be maintained above a minimum threshold required to prevent saline intrusion. This amendment would enable development of the groundwater resource while ensuring than residual uncertainty associated with the potential for saline intrusion is managed through the maintenance of coastal groundwater levels above minimum thresholds[72]. This would essentially formalise the management approach adopted for recent resource consent*

[70] Hayward Family Trust. p.3., Horticulture New Zealand. p.70., Honeytree Farms Ltd. p.3., KSL Ltd. p.3., Motutangi Waiharara Water User Group. p.4.,
[71] LWP Ltd.'s advice is attached to this report in Appendix C.
[72] Such thresholds have to be established on a site-specific basis as they may vary in different sub-aquifers.

applications (either granted or currently in process) in the Sweetwater, Houhora, Motutangi and Waiharara sub-areas.

112. I endorse LWP Ltd.'s recommendations.

113. Hayward Family Trust, Honeytree Farms Ltd, KSL Ltd, and Motutangi Waiharara also submitted that while Rule C.5.1.12 provides for groundwater takes than exceed allocation limits by up to 5% of the annual average recharge as a non-complying activity:[73]

> *…it still seems draconian to classify groundwater takes that exceed allocation limits by more than 5% as Prohibited [activities] in light of the current level of development or landuse change anticipated and the state of knowledge of the groundwater resources. That is, knowledge due to level of development is currently low to moderate compared to other areas, but developing rapidly as additional bores are drilled, hydraulic testing and groundwater level measurements undertaken.*
>
> *Acknowledg[ing], potential deficiencies in data and knowledge in some areas, it would seem more pragmatic and efficient to enable re-analysis of the allocation limits to be undertaken through resource consent application process, as the data becomes available through either Council or Applicant led investigations, rather than waiting for future Plan Changes. Again we acknoeldge [sic] that Rule C.5.1.12 allows for this to some degree, but we still consider it insufficient when taken in conjunction with the Prohibited Activity rule (C.5.1.13).*
>
> *The MWWUG case is a good example, where more information was gained through the testing undertaken by the applicants, and consequently the analysis was able to demonstrate a higher level of allocation is sustainable.*

114. I empathise with the submitters' concerns. However, the regional council is constrained by the direction in the NPS-FM to avoid over-allocation. I address submissions on the approach to avoid over-allocation in the next section of this report.

115. Refining New Zealand asked for Policy D.4.17 to be amended so that the allocation limits for aquifers do not apply to new resource consents to take water associated

[73] Hayward Family Trust. p.2., Honeytree Farms Ltd. p.2., KSL Ltd. p.2., Motutangi Waiharara Water User Group. p.3.,

with the management of passive discharges from regional significant infrastructure. It stated:[74]

> *Policy D.4.17 sets allocation limits for aquifers. The criterion of parts 2)b) and c) are, in the Company's opinion, overly restrictive, as they place an arbitrary cap on the taking of water that does not allow for a balanced assessment of the potential effects of the take to be considered. The default allocation limit for coastal aquifers has been set at 10 percent of the average annual recharge. It is noted that this is considerably lower than the 15 percent limit recommended in the Proposed National Environmental Standard on Ecological Flows and Water Levels 2008. As identified in the Company's submission regarding policy D.4.13, the Company currently holds a resource consent for the taking of water to manage other environmental effects. The proposed wording of the policy would limit the ability to increase such a take, even if the net environmental effects of taking the water are positive. Amendments to the policy are required to allow for the application of such measures.*

116. I think that Refining NZ's concerns are not warranted because Policy D.4.17 states that the allocation limits for aquifers are whichever is the greater of the existing consented allocation of a proportion of the annual average recharge for the aquifer. If the company's consent to take water has an allocation that exceeds the limit then that allocation in combination with any other consented takes becomes the limit. If the volume authorised to be taken is less than the proportion of the annual average recharge then there is more water available to be allocated. I also understand that Ruakaka aquifer underlying Refining New Zealand's site is under-allocated.

117. Lastly, I consider that the minimum flows, levels and allocation limits should be moved from Policies D.4.14 – D.4.17 to a new appendix. This is of minor effect.

Recommendation

118. I recommend:

- Recasting Policy D.4.13 as an objective in section F of the plan and amending it as discussed above.
- Moving the minimum flows, levels and allocation limits in Policies D.4.14 – D.4.17 to a new appendix (titled "Environmental flows and levels"), with amendments including:

[74] Refining New Zealand. p.33

- Specifying where minimum flows and allocation limits for rivers are to be applied;
- Clarifying how minimum flows and allocation limits can be determined as part of a resource consent process;
- Excluding non-consumptive takes and permitted volumes from the allocation limits for rivers and aquifers;
- Excluding temporary groundwater takes for dewatering purposes from the allocation limits for aquifers;
- Increasing the allocation limits for the Houhora, Motutangi and Waiparera sub-aquifers in the Aupouri aquifer management unit and expressing all allocation units for the Aupouri management unit only in cubic metres per year; and
- Adding a minimum groundwater level at the coastal margin for the Aupouri aquifer management unit.

- Including a new policy in section D of the plan that expressly creates a linkage between intended water quantity related environmental outcomes sought by the plan (new objective in section F) and the environmental flows and levels.

Evaluation of recommended changes

119. Section 32AA of the RMA requires an evaluation of any changes that have been made to, or a proposed for, the plan since the first RMA s32 evaluation was completed. I consider that my recommended changes will eliminate (a) the uncertainty about with how the Policy D.4.17 and the minimum flows, levels and allocation limits give effect to the NPS-FM, and (b) how the environmental flows and levels are to be applied by resource users and the regional council. Increasing the allocation limits for the Houhora, Motutangi and Waiparera sub-aquifers in the Aupouri aquifer management unit will provide for more water to be extracted for use without compromising the sustainability of the groundwater resources.

120. In summary, I consider that the changes are the most appropriate water to achieve the high-level objectives in the Section 32 Evaluation Report for the Proposed Plan and the recommended new freshwater quantity objective to be included in section F of the plan.

121. The other changes have minor effect and are within the scope of a change under clause 16, Schedule 1, RMA.

Avoiding over-allocation and ensuring that minimum flows and levels are observed

Background

122. As discussed in the previous section, the Proposed Plan sets environmental flows for the region's freshwater bodies[75]. Environmental flows and/or levels are defined in the NPS-FM as:[76]

> *…a type of limit which describes the amount of water in a freshwater management unit (except ponds and naturally ephemeral water bodies) which is required to meet freshwater objectives. Environmental flows for rivers and streams must include an allocation limit and a minimum flow (or other flow/s). Environmental levels for other freshwater management units must include an allocation limit and a minimum water level (or other level/s).*

123. A limit is defined as "the maximum amount of resource use available, which allows a freshwater objective to be met." Notably, the terms minimum flow and minimum level are not defined in the NPS-FM. While not constituting legal advice, the guide to the NPS-FM states:[77]

> *A minimum flow/level is the point at which consumptive takes would need to cease (regardless of whether the full allocation limit is being used at the time). Other flows/levels could be points above the minimum at which takes may be partially restricted, to reduce the frequency and duration of reaching the minimum flow/level.*

124. In practice, management flows (the minimum flow plus the allocation limit) and minimum flows and levels define thresholds where water abstraction is suspended or restricted to safeguard in-stream values and protect reliability of supply for other users.

125. Policy B5 of the NPS-FM directs every regional council to ensure that "no decision will likely result in future over-allocation – including managing fresh water **so that the aggregate of all amounts of fresh water** in a freshwater management unit that are

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[75] The Proposed Plan does not set allocation limits for lakes or wetlands or minimum water levels for aquifers. The plan may need to be amended in the future to include these requirements of the NPS-FM.

[76] Interpretation, NPS-FM

[77] Ministry for the Environment. 2017. A Guide to the National Policy Statement for Freshwater Management 2014 (as amended 2017). Wellington: Ministry for the Environment. p.21

authorised to be taken, used, dammed or diverted does not over-allocate the water in the freshwater management unit." [my emphasis]

126. Over-allocation is defined in the NPS-FM as "the situation where the resource: a) has been allocated to users beyond a limit; or b) is being used to the point where a freshwater objective is no longer being met. This applies to both water quantity and quality."

127. The direction in Policy B5 is explicit: water cannot be allocated if it will result in over-allocation. Yet, the policy will be difficult to implement with respect to permitted takes and RMA s14(3)(b) takes, an issue raised by several submitters.

128. At first glance, it seems that Policy B5 applies to RMA s14(3)(b) and potentially RMA s14(3)(e) takes. Section 14(3)(b) of the RMA allows fresh water and associated heat and energy to be taken for an individual's reasonable domestic needs or the reasonable needs of a person's animals for drinking water, provided the taking or use does not, or is not likely to, have an adverse effect on the environment.

129. It stands to reason that water could be taken for stock water or domestic needs and result in over-allocation without causing an adverse effect. That is because allocation limits are to a certain extent subjective and may not reflect a point beyond which an adverse effect will immediately occur.

130. Section 14(3)(e) allows water to be taken or used for emergency or training purposes in accordance with section 48 of the Fire and Emergency New Zealand Act 2017 with no constraints on amounts.

131. It is not apparent if RMA s14(3)(b) and (e) takes can be fettered by Policy B5 of the NPS-FM.

132. The Proposed Plan contains policies and rules to avoid over-allocation and ensure minimum flows are observed. The provisions are summarised as follows:

- Minor water takes are permitted by Rule C.5.1.1 provided that, inter alia, they are not from a fully allocated river of aquifer[78], will not cause over-allocation or occur when the flow in a river is below a minimum flow or water level in a lake is below a minimum level.

[78] Takes that were permitted at the date of the notification date of the plan are exempt from this requirement.

- Rule C.5.1.13 specifies that the taking of water that would cause (a) a catchment-specific allocation limit to be exceed, or (b) a default allocation limit for a river to be exceeded by more than 10 percent of the seven-day mean annual low flow, or (c) a default allocation for an aquifer to be exceeded by more than five percent of the annual average recharge is a prohibited activity.

133. Prohibited activity rule C.5.1.13 and corresponding non-complying activity rule C.5.1.12 were included in the plan to provide some tolerance around the default allocation limits due to uncertainties associated with measured and modelled mean annual low flows, the presence or absence of sensitive in-stream values, and the importance of reliability of supply to communities in different areas.

134. The minimum flows and allocation limits are designed to ensure that there is: suitable hydraulic habitat (expressed as Weighted Usable Area, m^2 per 1000m of river channel) for flow sensitive and culturally important fish species (banded kokopu, common bully, shortfin eel, and longfin eel); high reliability of supply for water users; no artificial 'flat-lining' of rivers for extended periods of time[79]. It is important to note that the limits do not explicitly provide for all water quantity dependent values.

135. It is reasonable to assume however that there are streams and rivers in Northland that may not have flow sensitive fish species in them due to natural fish barriers for example or are not sensitive to flat-lining, albeit over the time periods suggested in the Draft Guidelines for the Selection of Methods to Determine Ecological Flows and Water Levels, or may not be valued as reliable water supplies. In which case, the allocation limits may not be appropriate.

136. The council is not currently in a position to be able to develop specfic (that is, tailored) limits for all of Northland catchments[80] by 2025 because of the huge resourcing requirements. Nor would it be necessary for that matter given that water quantity dependent values are often similar in different locations and waterbodies

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[79] Beca. 2008. Draft Guidelines for the Selection of Methods to Determine Ecological Flows and Water Levels. Report prepared by Beca Infrastructure Ltd for MfE. Wellington: Ministry for the Environment states:

The extent to which abstraction affects the duration of low flows is a useful measure of the degree of hydrological alteration. A high degree of hydrological alteration is assumed to occur when abstraction increases the duration of low-flow conditions to 30 days or more, with moderate and low levels of hydrological alteration corresponding to increases of about 20 days and 10 days, respectively.

[80] There are approximately 1,500 source-to-sea catchments in Northland

have similar characteristics, which enables grouping them for the purposes of management.

137. The Proposed Plan does provide for some activities to take water below minimum flows and levels. Policy D.4.19 states that an application for a water permit made pursuant to non-complying activity rule C.5.1.11 that would allow water to be taken when flows or levels are below a minimum flow or level will generally not be granted unless the water is to be taken for:

- The health of people as part of registered drinking water supply;
- The sole purpose of preventing the death of permanent viticulture or horticulture crops (excluding pasture species, animal fodder crops, and maize); or
- Where a different minimum flow or minimum level has been set for the water body in a resource consent application.

138. The exemptions are common in regional plans. As stated in the RMA section 32 evaluation report, I believe that it is not realistic or appropriate to take a hard-line approach by not allowing water to be taken below minimum flows or levels for certain activities. That is, activities that are necessary for the basic needs of animals and humans and for preventing the death of permanent crops, when alternative water supplies are prohibitively expensive or not available.

139. The matter of freshwater quantity limits and their implementation is complicated and in certain respects vexed, which is not helped by a lack of case law and substantive guidance from the Ministry for the Environment.

Submissions and analysis

Policy D.4.19 Exceptions to minimum flows

140. Haititaimarangai Marae 339 Trust considers that Policy D.4.19 should be amended to ensure that RMA s14(3)(b) takes below the minimum flow do not result in adverse effects on aquatic life and ensure that all takes below minimum flows and levels are not able to occur.

141. The Trust also considers that the rules for the taking and use of water should be amended to ensure that water saving measures are undertaken before minimum

flows are reached, and to significantly reduce takes which cause minimum flows to be exceeded and the river to flatline.[81]

142. Northland Fish and Game and the Royal Forest and Bird Society of New Zealand submitted that Clause 2 of Policy D.4.19 should not allow different minimum flows to be set in resource consent, and that it should be deleted.

143. It appears that the submitters may have misconstrued Clause 2. The clause provides for the situation where an existing resource consent sets a lower or higher minimum flow for a water body, and a replacement consent is being sought for the activity or an application is being sought for the taking, damming or diverting of water upstream of downstream of the existing activity.

144. CEP Services Matauwhi Limited asked for Policy D.4.19 to be amended to include the following "qualifiers to limit and control the allowance of any exception to minimum flows and levels":[82]

- A less than minor temporary adverse effect on aquatic ecosystems and instream values;
- To avoid or minimise the need for applying for a further exception to minimum flows and levels; and
- Adaption measures where the reason for the water shortage is due to climate change.

145. Margaret Hicks, Haititaimarangai Marae 339 Trust and the Minister of Conservation submitted that Clause 1(b) of Policy D.4.19 should be deleted. The Minister stated: [83]

> *The issue in relation to Policy D.4.19 is that rootstock protection is afforded a similar level of protection to uses which have a statutory recognition in s 14(3) (i.e. firefighting, human health and animal drinking water). This issue should be addressed by incorporating rootstock protection into the setting of minimum flows or water levels.*

146. Haititaimarangai Marae 339 Trust stated that water saving and storage options should be encouraged rather than providing exemptions for takes for preventing the death of permanent viticulture or horticultural crops.[84]

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[81] Haititaimarangai Marae 339 Trust. p.52
[82] CEP Services Matauwhi Limited. p.A19
[83] Minister for Conservation. p.52
[84] Haititaimarangai Marae 339 Trust. p.52

147. On the other hand, several submitters asked for Policy D.4.19 to be amended to provide for the following activities to be able to apply for water permits to take water below minimum flows and levels:

- Any viticulture and water sensitive horticultural crops;[85]
- Non-consumptive takes;[86]
- Temporary and short term takes associated with dewatering purposes;[87] and
- Fire-fighting purposes and s14(3)(b) takes. [88]

148. I am not persuaded that exemptions should be provided for any water sensitive horticultural crops, because one could argue that all plants are water sensitive. I consider that non-consumptive takes, temporary takes (not limited to dewatering purposes) and RMA s14(3)(b) takes should be provided for in Policy D.4.19. However, there is no reason for addressing RMA s14(3)(e) takes because they are not restricted under the RMA. In other words, it would be redundant to reference them in the policy.

149. The regional council sought legal advice from Wynn Williams on the following question: "Does Policy B5 of the NPS-FM preclude regional councils from allowing water to be taken (by a rule or resource consent) when a flow in a river is below a minimum flow set in a plan?"

150. Wynn Williams provided the following answer (refer to appendix B of this report for the full opinion):[89]

> *As discussed above, Objective B2 requires future over-allocation to be avoided and existing over-allocation to be phased out. Policy B5 requires the Council to ensure that no decision will likely result in future over-allocation. The decision in the context of the making of a plan would only likely result in future over-allocation if:*
>
> *a. the taking of water below a minimum flow was a permitted or controlled activity; or*
>
> *b. if the policy framework did not seek to avoid future over-allocation, such that applications for resource consents to take below a minimum flow might easily be granted.*

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[85] Horticulture NZ. p.71
[86] Fonterra. p.31
[87] The Oil Companies. p.63
[88] Federated Farmers of New Zealand. p30
[89] Philip Maw, Kirstie Wyss. 12 June 2018. Memorandum to Ben Tait, Northland Regional Council. paras. 40-44

We consider that Policy B5, in conjunction with other provisions in the NPS-FM provides strong direction that the Council should not allow water to be taken (by way of a permitted or controlled activity rule or when making decisions on resource consent application) when a flow in a river is below a minimum flow set in a plan.

However, in a planning context, a plan could only be said to do this if it authorised the taking of water below a minimum flow as a permitted or controlled activity, or if it did not contain directive policy guidance seeking to avoid future over-allocation.

In the context of an application for resource consent, ***there may be exceptional circumstances in which a consent which sought to take water below a minimum flow*** *for an allocation block could be granted, for example, a non-consumptive use. That is largely because the legal test in the context of an application for resource consent only requires the decision-maker to have regard to the NPS-FM, not to give effect to it. [Section 104(1)(b)(iii), Resource Management Act 1991.]*

We also note that a plan may set differential minimum flows for different activities, (for example, crop protection in limited circumstances) provided that the allocation limit in conjunction with those minimum flows still met the directions in the higher order policy documents (including the NPS-FM and the RPS). [My emphasis]

151. I consider that the exceptional circumstances referred to by Wynn Williams would include water taken for the health of people and for the sole purpose of preventing the death of permanent viticulture and horticulture, as well as the following purposes:
    - RMA s15(3)(b) takes
    - Takes for temporary and short term activities; and
    - Non-consumptive takes.

Rule C.5.1.1 Minor takes

152. To recap, Rule C.5.1.1 provides for the taking and use of small volumes of water (up to 20 m^3/day per property) subject to conditions including that the take must not exceed an allocation limit or occur when a flow in a river or level in a lake is below a minimum flow or level.

153. Northland Fish and Game and the Royal Forest and Bird Protection Society of New Zealand consider that Rule C.5.1.1 should specify that water permits are required to

take and use water from fully allocated rivers and aquifers.[90] I noted above that the rule does not permit such takes, unless they were authorised at the notification date of the plan. The plan classifies takes from a fully allocated water body as either non-complying (Rule C.5.1.12) or prohibited activities (Rule C.5.1.13).

154. DairyNZ stated that: [91]

> *Plan users must be able to determine if they can comply with conditions of permitted activities, without having to undertake further analysis and the use of specialists.*
>
> *In our view, conditions 3) & 4) are not sufficiently certain to constitute a permitted activity condition given it is not clear:*
> *i. Where minimum flows and allocation limits spatially apply*
> *ii. What the existing levels of allocation are.*

155. Fonterra also submitted along the same lines. That is:[92]

> *No method is provided in the plan to ensure that a person relying on these provisions could reasonably know when a minimum flow [or] level was being breached. Until better information is readily available clause (3) is uncertain and should be deleted.*

156. Man O'War Dairies Ltd is also "concerned that…the level of current allocation to the resources on our farms is not made clear within the Proposed Plan."[93] DairyNZ, Fonterra and Man O'War Dairies Ltd raise a significant issue, which I touched on in the previous section of this report.

157. The issue is that the minimum flows and allocation limits set in this plan are expressed as a percentage of the seven-day mean annual low flow, but not in the corresponding units of flow (litres per second or cubic metres per day). The plan does not specify where the limits should apply. (I recommended in the previous section that they should be applied at the point of take and downstream reaches.)

158. Flows have not been recorded in most of Northland's rivers and streams. Flow indices (for example, mean annual low flows, median flows, etc) can be estimated

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[90] Northland Fish and Game. p.34., Royal Forest and Bird Protection Society of New Zealand. p.47
[91] DairyNZ. p.10
[92] Fonterra. p.38
[93] Man O'War Dairies Limited. p.3

using various hydrological modelling methods or by interpolating flow gauging from another river reach. However, such estimates have varying degrees of uncertainty.

159. It is important to note that case law has established that permitted activities must:[94]

(a) Be comprehensible to a reasonably informed, but not necessarily expert, person;

(b) Not reserve to the council the discretion to decide by subjective formulation whether an activity is permitted or not; and

(c) Be sufficient certain to be capable of objective ascertainment.

160. In other words, permitted activity rules should:[95]

- Be clear and certain;
- Not contain subjective terms;
- Be capable of consistent interpretation and implementation by lay people without reference to council officers; and
- Not retain later discretions (decision making) to council officers.

161. Considering this, I believe that it is inappropriate to require people taking small volumes of water to comply with minimum flows/levels and allocation limits. This is because:

- It is not clear or certain where the minimum flows and allocation limits apply or what the minimum flows/levels and allocation limits are in terms of measurable volume (litres per second or cubic metres per day);
- Furthermore, the actual minimum flows, levels and allocation limits are subjective because they can be determined using different methods (for example, by gauging, modelling, interpolation);
- It is obvious that conditions 1, 3 and 4 of Rule C.5.1.1 are not capable of consistent interpretation and implementation by lay people without reference to council officers, and therefore will likely retain discretions to council officers.

162. I recommend that conditions 1, 3 and 4 of Rule C.5.1.1 be deleted. To avoid ambiguity, I also recommend that Policies D.4.16 and D.4.17 (relocated to an appendix in section H of the plan) are amended to remove all references to permitted activities.

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[94] Carter Holt Harvey vs Waikato Regional Council A123/08
[95] Ibid

163. However, I consider that Rule C.5.1.1 should contain a condition to prevent streams and rivers from being completely dewatered as a result of minor takes. Consistent with the advice of Wynn Williams (see appendix B of this report) it should state "the rate of take from a river does not exceed 30 percent of the instantaneous flow at the time of take. I think that this could be determined with relative ease by installing a staff gauge at the point of take.

Rules C.5.1.11, C.5.1.12, and C.5.1.13

164. DairyNZ and Federated Farmers of New Zealand submitted that Rule C.5.1.11 should be amended so that minimum flows and minimum levels are tied to flow gauging sites. That is:[96]

> *[They support a] non-complying activity status for taking of water below a minimum flow or water level providing the Mean Annual Low flow is a measured, rather than an estimated flow. In our view, an estimated MALF does not provide sufficient certainty to support a non-complying consent threshold.*

165. A non-complying activity status provides applicants with the ability to determine what the seven-day mean annual low flow is (in terms of litres per second) at the point of the proposed take and present their case to the regional council with an application for a resource consent.

166. Far North District Council, Kaipara District Council and Whangarei District Council oppose a non-complying activity status for the taking and use of water for registered drinking water supplies below a minimum flow or level (Rule C.5.11) or that would exceed an allocation limit (Rule C.5.1.12). They consider that the activities should have a discretionary status, particularly because the councils are required to continue to provide water services under Section 130 of the Local Government Act 2002. Section 130 states:

> *(1) This subpart relates to a local government organisation that provides water services to communities within its district or region–*
> *(a) at the commencement of this section:*
> *(b) at any time after the commencement of this section.*

[96] DairyNZ. p.12., Federated Farmers of New Zealand. p.19

(2) A local government organisation to which this section applies must continue to provide water services and maintain its capacity to meet its obligations under this subpart.

(3) In order to fulfil the obligations under this subpart, a local government organisation must–

…

(c) not, in relation to a property to which is supplies water, –

(i) restrict the water supply unless section 193 applies; or

(ii) stop the water supply unless section 69S of the Health Act 1956 applies.

167. I do not think that section 193 of the Local Government Act 2002 and section 96S of the Health Act 1956 prevail over the RMA.

168. Horticulture New Zealand also oppose a non-complying activity for the taking and use of water below a minimum flow or water level and the non-complying activity for the taking and use of water that would cause an allocation limit to be exceeded. It considers that the non-complying activity status "is inconsistent with the policy support provided in Policy D.4.19 for registered drinking water supplies and horticultural survival water…and that the activity status should be amended to be consistent with the policy framework."[97] Policy D.4.19 is for the purposes of directing a decision-maker when considering an application to take water below a minimum flow or level.

169. I am not convinced that the taking and use of water for registered drinking-water supplies and horticultural survival water below a minimum flow or level should have a less stringent activity status. I consider that Policy D.4.19 ("Exceptions to minimum flows or levels") provides sufficient support for applicants for such takes.

170. Horticulture New Zealand also considers that Rule C.5.1.13, which prohibits the taking and water that will exceed an allocation limit by a certain amount, "is overly restrictive and inconsistent with the policy support provided in Policy D.4.19.[98] It is important to note that Policy D.4.19 is specific to minimum flows, not allocation limits.

171. Federated Farmers of New Zealand stated that the non-complying and prohibited activity statutes of Rule C.5.1.12 and C.5.1.13 respectively are "too high and [do] not

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[97] Horticulture New Zealand. p.38
[98] Ibid

provide for conditions or activities such as existing over allocation, weather events, or other reasons"[99], and that the rules should be amended to discretionary activities.

172. I consider that their argument is deficient; the plan does not define existing over-allocation and it is unclear what is meant by "weather events, or other reasons."

173. Several submitters stated that Rule C.5.1.12 is:[100]

> *…useful in that it enables additional investigations to be undertaken by Council or applicants to demonstrate that takes than exceed the current default allocation limits may be sustainable. However…the activity status should be discretionary rather than non-complying".*

174. The submitters also submitted that Rule C.5.1.13 should be changed to a non-complying activity because it would enable additional investigations as stated above.

175. Irrigation New Zealand reiterates enabling, rather than, curtailing further investigations:[101]

> *INZ understands the challenges ahead for the setting of water quantity limits in Northland - multiple small catchments with very limited or no monitoring data. Due to this the plan has set default limits (minimum flows and allocations) and provided a non-complying activity status rule for water take and use consent applications that exceed the defaults. This allows applicants to undertake detailed investigations to demonstrate there is more water available than the default allocation, and if successful be granted a water take and use consent.*

176. Landcorp Farming Ltd considers that the prohibited activity status of Rule C.5.1.13 should be changed to a non-complying activity:[102]

> *…a prohibited activity is blunt and prevents any reconsideration of an appropriate flow regime for a stream and its associated water takes. Landcorp submits that the activity status be changed to a non-complying rule requiring a catchment specific assessment for the appropriate flow and allocation regime taking into account the cultural, ecological and physical requirements for that particular catchment.*

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[99] Federated Farmers of New Zealand. p.19
[100] Hayward Family Trust. p.6., Honeytree Farms Ltd. p.8., KSL. P.6., Motutangi Waiharara Water User Group. p.7.,
[101] Irrigation New Zealand. p.2
[102] Landcorp Farming Ltd. p.10

177. Tegel Foods Ltd also opposes Rule C.5.1.13 because it "relies on Council having accurate data on the allocation limits and also does not account for any change that may occur over time".[103]

178. Northland Fish and Game and the Royal Forest and Bird Protection Society of New Zealand consider that the status of Rule C.5.1.11 should be amended "so that water take below a minimum flow or level is a prohibited activity other than for emergency purposes (eg firefighting)."[104]

179. They also consider that it is not appropriate to provide for default allocation limits to be exceeded, and that the Proposed Plan should be amended to ensure that the management of allocation limits is consistent with the National Policy Statement for Freshwater Management, "such that further over-allocation is avoided and existing over-allocation is identified and phased out. Further, [the] rule should be amended so that allocation over the default allocation limit is a prohibited activity."[105]

180. The Ministry for the Environment's discussion document on the Proposed National Environmental Standard on Ecological Flows and Water Levels comments on non-complying versus prohibited activity rules for the purposes of avoiding over-allocation:[106]

> *Under [a prohibited activity rule], an applicant who wanted to apply for more water than allowed under the interim limits would either have to initiate a plan change or wait for one to occur. There is not necessarily an incentive to instigate a full data gathering and analysis process.*
>
> *Concerns have been raised about the use of 'non-complying' activity status, particularly in the absence of a* ***strong*** *planning framework. There is a perception that it is easy for an applicant to gain approval to abstract slightly more water because the effects of that individual application are unlikely to be considered more than minor. Concerns arise because of the cumulative effect of many such applications, the potential to undermine the environmental limits and, more importantly, the ecological and other values that the limit is intended to protect.* [My emphasis]

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[103] Tegel Foods Ltd. p.12
[104] Northland Fish and Game. p.36., Royal Forest and Bird Protection Society of New Zealand. p.49
[105] Northland Fish and Game. p.36., Royal Forest and Bird Protection Society of New Zealand. p.49
[106] Proposed National Environmental Standard on Ecological Flows and Water Levels: Discussion Document. 2008. Ministry for the Environment. Wellington.

181. The argument that a prohibited activity status is more appropriate than a non-complying activity status is sound if there is a high degree of certainty about the available allocation. But, as pointed out previously, where there is obvious lack of certainty then I consider that people should be able to apply to take and use water pursuant to a non-complying activity rule coupled with strong policy direction (for example, "avoid over-allocation").

182. The Land and Water Forum discussed the need for 'hard' limits:[107]

> *102. If limits are to be effective and provide certainty for all parties, they must be applied and enforced in a* ***transparent and predictable way****. When a limit is reached it will be necessary to restrict new activities (taking and discharging) to avoid adverse cumulative effects. This creates a number of challenges…* [My emphasis]
>
> *…*
>
> *104. The most effective means to directly control activities so that the total resource use is managed within a limit is through rules in a regional plan. Once a limit is met, or is close to being met, any activity that would further diminish the water resource should require a resource consent and it should not be possible to gain a resource consent if the activity would result in the limit being breached.*
>
> *105. In current practice there are exemptions from requiring consents for water use for certain purposes currently built into the RMA (s.14), and others that are allowed for as Permitted Activities in regional plans (both s.14 and s.15). These uses will need to be tracked and totals estimated by regional authorities so the available resource can be managed effectively. Some permitted uses may need to change status and become subject to consenting in catchments under pressure.*
>
> *106. At present, the most frequently used approach when limits are approached is to deem further resource use to be a non-complying activity. This allows further consents to be granted if the effect on the resource in each case is no more than minor or is consistent with the objectives and policies in a regional plan. In practice, non-complying status has often resulted in the limit being progressively breached with little ability for councils to control cumulative adverse effects on the environment ('death by a thousand cuts'). This has the effect of progressively increasing the "limit" on a consent by consent basis.*
>
> *107. An alternative is to deem further resource use to be a prohibited activity. In this case, no consent can be granted if the limits would be breached. Where they exist,*

107

> *limits are rules in a plan. The way to change a limit should be through a plan change, not through a resource consent. We recommend that prohibited activity status is made compulsory for any proposed resource use that would breach a limit.*

183. I note that LAWF's recommendations have not been implemented by the Government.

184. It is useful to distinguish Policy A1, which requires regional councils to "establish methods (**including rules**) to avoid over-allocation" in the context of water quality management, from Policy B5, which does not mention rules. That is, Policy B5 does not require the use of a prohibited activity rule(s) to avoid over-allocation.

185. The regional council sought advice from Wynn Williams on the following question:[108]

> *Does the direction [in Policy B5 of the NPS-FM] necessitate a prohibited activity rule for the taking and use of fresh water that may or would cause an allocation limit to be exceeded? Or could the council rely on a discretionary or non-complying activity rule coupled with strict policy in the plan on avoiding over-allocation to satisfy the direction in the NPS-FM.*

186. Wynn Williams provided for the following answer (see appendix B of this report for their detailed analyses):[109]

> *In summary, we consider that Policy B5 does not necessitate imposing prohibited activity status for the take and use of water that may or would cause an allocation limit to be exceeded. The Council could rely on either a discretionary or non-complying activity rule, coupled with clear and directive policies requiring the avoidance of likely future over-allocation of freshwater resources.*

187. In light of the legal advice and the submissions made on rules C.5.1.11, C.5.1.12, and C.5.1.13, I consider that Rule C.5.1.13 should be deleted from the Proposed Plan and Rule C.5.1.12 should be amended so that it applies to the taking and use of fresh water that would cause any allocation limit to be exceeded.

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[108] Philip Maw, Kirstie Wyss. 12 June 2018. Memorandum to Ben Tait, Northland Regional Council. para.11

[109] Philip Maw, Kirstie Wyss. 2018. para.12

Other matters

188. Fonterra submitted that policies should be included in the plan that provide a cascading response for:[110]

a) Over allocated catchments – by restricting further allocation
b) Catchments that are nearly at full allocation – by carefully managing further allocation
c) Under-allocated catchments – managing further allocation.

189. This appears to be unnecessary because the Proposed Plan does this already.

190. Lastly, Beef and Lamb New Zealand asked for the following policy to be included in the plan that specifies how and when water restrictions will apply when flows are at or approaching minimum flows:[111]

> *Water quantity and the take and use of water shall be managed by apportioning, restricting and suspending takes in times of minimum flow.*
>
> *When a waterbody is approaching, at, or below its minimum flow, takes from it must be managed in the following manner:*
> *(a) Permitted takes - Takes that are permitted by this Plan must be allowed to continue regardless of river flow, these includes takes for stock drinking water.*
> *(b) Supplementary takes - must cease at a flow specified in their consent conditions and that cessation flow must be higher than the minimum flow such that permitted takes essential takes, and takes within the core allocation are not adversely effected.*
> *(c) Essential takes - The following core water allocation takes are deemed essential and must be managed in the manner described:*
> *(i) takes that are required for reasonable domestic needs, reasonable needs of animals for drinking water, and reasonable dairy shed washdown water must be allowed to continue regardless of river flow.*
> *(ii) takes required to meet the reasonable needs of hospitals, other facilities providing medical treatment, marae, schools or other education facilities, must be allowed to continue regardless of river flow, but must be required to minimise the amount of water taken to the extent reasonably practicable.*
> *(iii) takes which were lawfully established at the time of Plan notification required for industries which, if their take were to cease, would significantly*

[110] Fonterra. p.29
[111] Beef and Lamb New Zealand. p.12

compromise a community's ability to provide for its social, economic or cultural wellbeing or for its health or safety (including the hygienic production and processing of perishable food), must be allowed to continue regardless of river flow, but must be required to minimise the amount of water taken to the extent reasonably practicable.

(iv) Consideration of best management practices for water efficiency in relation to public water supplies.

(v) Crop and rootstock survival water.

(d) Non-essential takes - Other core water allocation takes, including irrigation takes but excluding the essential takes described above, must be managed in the following manner:

(i) water takes must be required to cease when the river is at or below its minimum flow.

(ii) water takes must be allowed to recommence once the river flow has risen above its minimum flow.

191. I am not convinced that it is necessary to include such a policy in the plan, for several reasons. First, there may be times when it is necessary to restrict "essential takes" and permitted takes by way of a water shortage direction issued under Section 329 of the RMA. Second, the plan provides for exceptions to minimum flows and levels for certain activities. Third, Policy D.4.23 directs decision-makers to "clearly define when any restrictions and cessation of the water take must occur to ensure compliance with freshwater quantity limits set in this plan". Lastly, the implementation of the plan is an operational matter.

Recommendation

192. I recommend the following amendments are made to the Proposed Plan:

- Delete the conditions (1, 3 and 4) in Rule C.5.1.1, which require compliance with minimum flows, levels and allocation limits;
- Insert a new condition in Rule C.5.1.1 which states that the rate of take from a river must not exceed 30 percent of the instantaneous flow at the point and time of the take;
- Delete conditions 1 and 2 in Rule C.5.1.12, which provide for additional allocations over default allocation limits, so that it applies to any take that may cause an allocation limit to be exceeded;
- Delete Rule C.5.1.13;
- Include additional activities that may be authorised to take water below a minimum flow or level in Policy D.4.19; and

- Include a new policy in section D.4 of the Proposed Plan that links the freshwater quantity objectives (relocated to section F of the plan) with the freshwater quantity limits (relocated to section H of the plan), and directs decision-makers to ensure that a decision to grant a water permit will not likely result in over-allocation.

Evaluation of recommended changes

193. Section 32AA of the RMA requires an evaluation of any changes that have been made to, or a proposed for, the plan since the first RMA s32 evaluation was completed.

194. The s32 evaluation did not identify and assess options for requiring (or not requiring) people taking water under a permitted activity rule to comply with minimum flows, levels and allocation limits. Also, the evaluation did not identify all activities that may need to access fresh water when flows or levels are at or below minimum flows and levels set in the Proposed Plan. That is, it only addressed water takes for the health of people as part of a registered drinking-water supply and for the sole purpose of preventing the death of permanent viticulture of horticulture crops (excluding pasture species, animal fodder crops, and maize).

195. I consider that my recommendation to amend Rules C.5.1.12, and C.5.1.13 and Policy D.4.19 will eliminate the uncertainty associated with how minimum flows and allocation limits are to be applied, but not at the expense of the environment.

196. In summary, I consider that the changes are the most appropriate water to achieve the high-level objectives in the Section 32 Evaluation Report for the Proposed Plan and the recommended new freshwater quantity objective to be included in section F of the plan.

Managing RMA s14(3)(b) – (e) takes

Background

197. Section 14(3) of the RMA provides for certain water takes to be taken without the need for a resource consent or a national standard or rule to authorise them:

> *A person is not prohibited…from taking using, damming, or diverting any water, heat, or energy if –*

(a) *the taking, using, damming, or diverting is expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent; or*

(b) *in the case of fresh water, the water, heat, or energy is required to be taken or used for—*

(i) *an individual's reasonable domestic needs; or*

(ii) *the reasonable needs of a person's animals for drinking water,—*

and the taking and use does not, or is not likely to, have an adverse effect on the environment*; or* [My emphasis]

(c) *in the case of geothermal water, the water, heat, or energy is taken or used in accordance with tikanga Maori for the communal benefit of the tangata whenua of the area and does not have an adverse effect on the environment; or*

(d) *in the case of coastal water (other than open coastal water), the water, heat, or energy is required for an individual's reasonable domestic or recreational needs and the taking, use, or diversion does not, or is not likely to, have an adverse effect on the environment; or*

(e) *the water is required to be taken or used for emergency or training purposes in accordance with section 48 of the Fire and Emergency New Zealand Act 2017.*

198. While case law has established that regional councils can constrain RMA s14(3)(b) takes by way of rules and policy regional plans,[112] it is not widespread. The Regional Water and Soil Plan does not contain rules for such takes, nor does the Proposed Plan.

199. There are two reasons why the regional council decided against including rules for RMA s14(3)(b) takes in the Proposed Plan. First, in most of Northland's catchments the amount of water taken for stock drinking water purposes is relatively small relative to available allocation. I briefly expand on this as follows.

200. We estimated the amount of water taken that is likely to be taken for stock drinking water purposes in approximately 1,680 catchments in Northland, which range in size between approximately 5 hectares and 353,441 hectares (with an average and median size of 744 and 124 hectares respectively). We did this by:[113]

- Using dry stock numbers from the 2012 Agricultural Production Census and dairy herd sizes (provided by the council's farm dairy effluent monitoring department);

[112] *Carter Holt Harvey Ltd v Waikato Regional Council* [2011] NZENvC 380
[113] See chapter 5.3 of the RMA section 32 report for further details.

- Applying a rule that beef cattle and dairy cows drink 120 litres of water per day (based on peak summer demand).
- Assuming that the water is taken from rivers and streams in the catchment where the animals are located (rather than from storage, groundwater or a neighbouring catchment for example); and
- Subtracting the estimated daily volume from an allocation limit of 30% of the seven-day mean annual low flow discharging from each catchment.

201. The key finding is the amount of water estimated to be taken for stock drinking water purposes as a percentage of an available allocation (30% of the seven-day mean annual low flow) in most of Northland's catchments is not materially significant (see the following table).

Table 1. Estimated volumes of water taken for stock drinking water purposes in approximately 1,680 surface water catchments in Northland

Statistic	**Percentage of the available allocation (30% of 7-day MALF) estimated to be taken for stock drinking water purposes**
10th percentile	0.6%
20th percentile	1.1%
30th percentile	1.4%
40th percentile	1.5%
Median	2.5%
60th percentile	3.3%
70th percentile	4.5%
80th percentile	6.8%
90th percentile	12.3%

202. The second reason for not including rules in the Proposed Plan for RMA s14(3)(b) takes is that there were no obvious practical benefits of doing so. That is, the council can monitor and enforce RMA s14(3)(b) takes without relying on a rule in a plan.

203. The council did consider including rules that would require such takes to comply with allocation limits (this is not detailed in the RMA section 32 evaluation report) but decided not to because:

- Stock drinking water takes are responsible for a small amount of the water taken in most of Northland's catchments;
- The rules would be difficult to implement, including because of uncertainties around the volumes taken (I discussed the issues associated with managing

RMA s14(3)(b) takes and minor takes within allocation limits in the first section of this report); and

- It is very unlikely that the number of dairy cows and beef cattle will increase significantly, a conclusion based on trends over the last 25 years and predictions for the future.[114]

204. Wynn Williams has provided legal advice on several matters relating to RMA s14(3)(b) and the NPS-FM, including that "[t]he take of water under section 14(3)(b) can occur under the RMA regardless of whether a FMU has been fully allocated, and such takes do not need to be separately authorised (or allowed) by the Council in a regional plan."[115] The advice is attached an appendix B to this report.

205. I address submissions relating to the taking and use of geothermal water later in this report.

Submissions and analysis

206. The Proposed Plan contains an advice note at the beginning of section 5.1, which provides an overview of the direction in 14(3)(b) of the RMA. DairyNZ and Fonterra submitted that the note should be amended to state that domestic water use and animal drinking water are not included in the total daily takes in the rules.[116] Similarly, Fire and Emergency New Zealand wants the advice note amended to acknowledge RMA s14(3)(e) takes are not the subject of the rules in the chapter.[117] It stated that "[f]or consistency reasons it is recommended that all matters identified within section 14(3) are identified within the [note]."

207. I agree that the advice note should be amended by clarifying that the taking and use of water that is done in accordance with sections 14(3)(b) – (d) of the RMA are not subject to the rules in the Proposed Plan.

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[114] See Darryl Jones. 5 June 2018. Recent developments in Northland agriculture. Northland Regional Council

[115] Philip Maw, Kirstie Wyss. 12 June 2018. Memorandum to Ben Tait, Northland Regional Council. para.70

[116] DairyNZ. p.9., Fonterra. p.37

[117] Fire and Emergency New Zealand. p.8

208. This should also satisfy DairyNZ and Federated Farmers request for the advice note at the beginning of Chapter C.5.1 of the Plan to be amended by stating that RMA s14(3)(b) takes are not included in the total daily takes in the rules. [118]

209. Haititaimarangai Marae 339 Trust and Northland Fish and Game submitted that the plan should be amended to state that "[w]ater use that is deemed essential and as such allowed to continue beyond water allocation limits is still required to meet the requirements of s14(b) RMA '*and the taking or use does not, or is not likely to, have an adverse effect on the environment*'.[119]

210. The advice not points out the RMA s14(3)(b) takes are not unfettered. That is, they can occur if the taking or use does not, or is not likely to, have an adverse effect on the environment.

211. Northport Ltd, the New Zealand Defence Force and the National Institute of Water and Atmospheric Research (NIWA) requested rules for the taking and use of seawater. Section 14 of the RMA does not restrict the taking of (a) open coastal water, which is defined the Act as "coastal water that is remote from estuaries, fiords, inlets, harbours, and embayments",[120] or (b) coastal water (other than open coastal water) for an individual's reasonable domestic or recreational needs provided the taking or use does not, or is not likely to, have an adverse effect on the environment. Therefore, there is a need to include a rule in the plan for the taking of coastal water (other than open coastal water) for other purposes than specified in RMA s14(3)(d).

212. I recommend that the taking and use of coastal water (other than open coastal water, which is not restricted by the RMA, and s14(3)(d)) takes is classed as a permitted activity in the plan without conditions. That is because there is no shortage of coastal water and I am unable to contemplate any adverse effects on the environment that may result from such takes.

213. Lastly, the Minister of Conservation stated that RMA s14(3)(b) takes should be included in allocation limits.[121] I recommended in the first section of this report that this is not practicable or indeed required.

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[118] Fonterra. pp.37-39
[119] Haititaimarangai Marae 339 Trust. p26., Northland Fish and Game. p.8
[120] RMA s2.
[121] Minister of Conservation. p.52

Recommendation

214. I recommend that:

- The advice not at the beginning of section 5.1 should be amended to clarify that the rules in the section do not apply to the taking and use of water in accordance with sections 14(3)(d) – (e) of the RMA; and
- A rule is included in section 5.1 of the plan to permit the taking of coastal water, without conditions.

Evaluation of the recommended changes

215. I consider that the changes are of minor effect.

Volumes of fresh water permitted to be taken and used

Background

216. In this section, I address submissions on the volumes of fresh water that are permitted to be taken and used in rules C.5.1.1 and C.5.1.5 of the Proposed Plan.

217. Chapter 5.3 of the RMA section 32 evaluation report for the Proposed Plan states the issue that prompted the council to amend the volumes of fresh water that are permitted to be taken from Northland's freshwater bodies. That is, it is not clear if the permitted volumes in the Regional Water and Soil Plan are too restrictive (in terms of costs to resource users) or conversely not restrictive enough (in terms of the need to protect in-stream values).

218. The RMA section 32 evaluation report assessed several options to address the issue:
- Retaining the volumes in the Regional Water and Soil Plan;
- Amending the volumes to reflect information about water availability in the region's catchments during low flow conditions, and

- Not permitting water to be taken (for example, classifying minor takes as a controlled or discretionary activity).[122]

219. For context, the Regional Water and Soil Plan for Northland permits the taking and use of water from most surface water bodies[123] subject to conditions, including that the total take from most surface waters does not exceed 10 cubic metres per day during the period 1 December to 31 May and 30 cubic metres per day during the period 1 June to 30 November. The plan restricts the maximum take to 100 cubic metres per week from some rivers[124]. The plan also permits the taking and use of up to 10 cubic metres of groundwater per day, unless the groundwater is in an aquifer with high or actual potential demand, an aquifer at risk of saline intrusion or a geothermal aquifer. In which case, the activity is a discretionary activity.

220. Rule C.5.1.1 in the Proposed Plan permits the taking and use of water from a river, lake or aquifer provided, inter alia, that the total daily take per property from all sources does not exceed:
    - one cubic metre from a coastal aquifer, or
    - from other water bodies:
        - 10 cubic metres, or
        - 200 litres per hectare, up to a maximum of 20 cubic metres.

221. The Proposed Plan defines property as "one or more allotments contained in a single certificate of title, and also includes all adjacent land that is in the same ownership but contained in separate certificates of title."

222. The one cubic metre per day limit from a coastal aquifer was included to protect them from saline intrusion. The ten cubic metres limits from other sources is consistent with the current permitted daily take volume from most surface waters during summer and autumn, when demand for water is normally the highest. Two hundred litres per hectare per day is based on a conservative estimate of water availability during drought conditions, which is documented from page 143 of the Section 32 evaluation report. It is important to note that council's decision to adopt 200 litres per hectare per

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[122] Section 32 analysis report: Proposed Regional Plan for Northland. September 2017. Northland Regional Council. Volume 1. p.138-154.

[123] The taking and use of water from a significant wetland, a scheduled dune lake, or an outstanding freshwater body is not permitted.

[124] Rule 24.1.2 Regional Water and Soil Plan for Northland

day, up to maximum of 20 cubic metres was, to a certain, extent subjective but generally consistent with volumes that other regional councils permit.

223. Against this background, it is important to note that the council believes that there are a considerable number of unauthorised water takes in Northland. Of which, most are takes for dairy shed use. (Of the approximately 900 dairy farms in Northland, only a couple have water permits for the taking and use of water.)

Submissions and analysis

Rule C.5.1.1 – Minor takes

224. Unsurprisingly, the maximum daily volumes in Rule C.5.1.1 attracted much attention. DairyNZ, for example, stated in its submission that it*:* [125]

> *…supports the linkage between the permissible amount of water use and the size of the land area where that water is to be used… [and they] acknowledge that an upper limit on total permitted takes is necessary. However, a 20 m^3 limit appears to be arbitrary when the intent of the rule appears to be to allow sufficient water for the land are to which the water take relates. DairyNZ seeks that up to 30m^3 metres be permitted as this would allow for greater consenting efficiency whilst still retaining the limit on usage per hectare.*

225. Federated Farmers of New Zealand take the same position. They consider that "[i]n absence of minimum flow and minimum level data for most of Northland's 1000+ catchments, the maximum permitted volume of 20m^3 is an arbitrary amount."[126] They submitted that they:[127]

> *…support the linkage between the water take limits (200L/ha) and the land area which will use the water, up to a maximum of 30m^3/day. This volume will cater for the shed take for an average to medium sized dairy herd and significantly reduce the administrative burden on the council.*

226. Terrence Brocx echoes Federated Farmers of New Zealand's submission. He considers that a "shift to 200L/ha allocation" will "likely have a nil to minimal impact on the catchment."[128] He also considers that the maximum daily volume per property

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[125] Dairy NZ. p.10
[126] Federated Farmers of New Zealand. p.17
[127] Ibid
[128] Terrence Brocx. p.1

be increased to 30 cubic metres because "[t]his would exclude the majority of smaller farms and NRC having the onerous and expensive consent process."[129]

227. I acknowledge processing many resource consent applications will likely have an administrative cost, but it would be short term and manageable, and most of the cost will be recoverable. In other words, I do not think that issue is important.

228. Arran Simpson submitted that the maximum permitted daily volume should be increased to 25 cubic metres. He considers that there is "insufficient data on water flows in northland [sic] and that the northland regional council [sic] appear to be very conservative on there [sic] estimated flows."[130]

229. Lister Farm (2012) Ltd wants the maximum permitted volume in Rule C.5.1.1 to be increased to 40 cubic metres per day. The company pointed out that some regions allow larger volumes such as 50 cubic metres per day.[131]

230. Other people want greater volumes to be permitted for use. For example, the Landowners Coalition submitted that the proposed permitted maximum daily volume of 10 cubic metres be increased to 100 cubic metres, and that 200 litres per hectare allowance up to a maximum of 20 cubic metres, be increased to 2000 litres up to a maximum of 200 cubic metres.[132]

231. The Egg Producers Federation of New Zealand considers that higher limits for water takes that are based on the size of the land parcel should be included in Rule C.5.1.1 and that separate water take volumes are included for surface water and groundwater.[133] However, the Federation did not state what the higher limits should be.

232. Others however believe that the rule should not cap the permitted activity volume and just have a flat allocation per hectare. For example, Leanne Browne and Gavin King submitted that: [134]

> *The limits for minor takes as described in paragraph 2)b) [of Rule C.5.1.1] seem odd. Why is there a minimum and maximum, such that it is only permitted to take 200 L*

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[129] Ibid
[130] Arran Simpson. p.21
[131] Lister Farm (2012) Ltd. p.4
[132] Landowners Coalition. p.2
[133] Egg Producers Federation of New Zealand. p.2
[134] Leanne Browne. p.2., Gavin King. p.2

per hectare for properties between 50 ha and 100 ha? Indeed, why should a small block or house section be permitted to take the same amount of water as a 50 ha block?

It would be preferable to have a flat limit of (say) 200 L per hectare regardless of the size of the property.

233. Bay of Plenty Regional Council's Section 42A Report for Proposed Plan Change 9 comments on a per hectare permitted volume rate:[135]

> *At first consideration, a per hectare rate does have some appeal and may appear to be fair, but because stock drinking water is already provided for by the RMA, there is already an allowance related to land area for livestock properties. Also, a per hectare allowance could create a risk that on very large properties very large takes are allowed without the oversight of a resource consent. It could also be inefficient where land was unsuitable and had no need. The risk of adverse effects and the need for accurate accounting information is related to the size of the take.*

234. However, I think that a per property allocation regardless of property size can be problematic in situations where two or more properties are amalgamated or a property subdivided. That is because the total permitted allocation for the same area of land would increase with the creation of new property titles. Having said that, this is likely to be an uncommon situation.

235. Landcorp Farming Ltd picked up on this issue. They submitted that the definitions of property and other property:

> *…would result in two or three large farms adjacent to one another [presumably under the same owenership] to be regarded as one property and be subject to the same permitted and controlled activity limits as a single site of a much smaller size, such as a household block. Many of the proposed rules do not recognise the relative size of the property to the activity. Landcorp considers that the definition of property should be amended to either delete reference to adjacent land in the same ownership or include an area limit – so that larger sites in the same ownership are not prejudiced.*

236. To that end, Landcorp Farming Ltd considers that the definition of property be amended as follows:

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[135] Bay of Plenty Regional Council. February 2018. Section 42A Report ~~Proposed Plan~~Proposed Plan Change 9: Region-Wide Water Quantity.

One or more allotments contained in a single certificate of title, and also includes all immediately adjacent land up to 1 ha in size that is in the same ownership but contained in separate certificate(s) of title.

237. I am not convinced this is necessary, but I will return to the matter soon.

238. Man O'War Dairies Ltd are concerned that the maximum permitted daily volumes in Rule C.5.1.1 may have "possible implications for the existing farming operations relation to the proposed maximum amount permitted (20m^3/day) apparently being reduced from the maximum amount permitted under the operative plan [30 m^3/day between 1 June to 30 November]."[136]

239. The Proposed Plan reduces the amount of water that can be taken as permitted activity between 1 June to 30 November from 30 m^3/day to up to 20m^3/day..

240. Under the Proposed Plan, people who currently take (as permitted activities under the Regional Water and Soil Plan) more than 20 m^3/day but not more than 30 m^3/day of surface water or up to an additional 10 m^3/day from groundwater that is not in an aquifer with high or actual potential demand, an aquifer at risk of saline intrusion or a geothermal aquifer, will need to apply for resource consents to authorise their takes.

241. Whatitiri Resource Management Unit and Environment River Patrol-Aotearoa oppose Condition 2 of Rule C.5.1.1 for the reason that "people will take the 20 cubic metres if they want and NRC are not likely to ever know what they actually want."[137]

242. Northland Fish and Game and the Royal Forest and Bird Protection Society of New Zealand consider that the "volumes permitted do not include a rate of take and appear too large for a permitted activity given councils responsibilities under the [National Policy Statement for Freshwater Management 2017] … [and that the council should] reduce the permitted take…to what is required for domestic use and animal drinking water needs."[138]

243. Northland Fish and Game also considers "[t]hat a cumulative effects analysis of the total likely quantity of water available to be abstracted under [Rule C.5.1.1] is undertaken and that this is assessed against the existing naturalised flow regime in

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[136] Man O'War Dairies Limited. p.3
[137] Whatitiri Resource Management Unit and Environment River Patrol-Aotearoa. p.27
[138] Northland Fish and Game. p.34., Royal Forest and Bird Protection Society of New Zealand. p.47

each of the catchments or aquifers."[139] I note that we compared the estimated existing permitted take volumes (including RMA s14(3)(b) takes) and consented take volumes in approximately 1,680 surface water catchments in Northland to a relatively conservative allocation limit of 30% of the seven-day mean annual low flow (see page 145 of the Section 32 Evaluation Report). The results suggest that in most catchments permitted takes are not materially significant.

244. Whangarei District Council expressed concerns that "the generous take allowances could be used to support a number of properties and such takes would may [sic] be regulated or monitored if the water supply is not registered."[140] They submitted that an additional condition should be included in the rule that restricts takes for personal use only. It appears though that Whangarei District Council may have mistakenly interpreted that Rule C.5.1.1 applies to RMA s14(3)(b) takes, when it does not.

245. The Minister of Conservation submitted in relation to permitted takes from coastal aquifers that:[141]

> *Because many of Northland's coastal aquifers are relatively small and existing domestic demand is high, there is a risk of saltwater intrusion. There should be no permitted takes aside from domestic use under section 14(3)(b). A consent process is required to establish where there is sufficient water available to allocate additional takes on top of the existing domestic and stock water use.*

246. The Minister of Conservation also considers that Rule C.5.1.1 should be amended to reduce the amount of water that can be taken from outstanding freshwater bodies as a permitted activity to two cubic metres per day.[142]

247. Northland Fish and Game points out that "Rule 24.1.1 of the operative Regional Water and Soil Plan does not allow takes from Outstanding Rivers as a permitted activity and [there] is no justification to change this."[143] This point was also made by the Royal Forest and Bird Protection Society of New Zealand.

248. I consider that Rule C.5.1.1 should be amended so that it does not permit the taking of water from a coastal aquifer or an outstanding freshwater body I also consider that

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[139] Northland Fish and Game. p.34
[140] Whangarei District Council. p.18
[141] Minister of Conservation. p.25
[142] Minister of Conservation. p.24
[143] Northland Fish and Game. p.34

the maximum volume of freshwater that can be taken per property, per day from a river, lake or aquifer should be 10 cubic metres. This involves deleting Condition 2(b)(ii), which permits 200 litres per hectare, up to a maximum of 20 cubic metres of fresh water, to be taken per property per day.

249. I give three reasons for this recommendation. First, I recommended earlier in this report that permitted takes should not be subject to allocation limits and minimum flows. Therefore, it is important that permitted volumes should be small, so that individually and cumulatively they do not account for a materially significant proportion of water allocated. Second, 10 cubic metres is the same volume that is permitted by the Regional Water and Soil Plan to be taken and used from surface water bodies between 1 December and 31 May. Third, allocating water on a hectare basis, while theoretically sound, is likely to be difficult to implement. I also reiterate that the Proposed Plan, if amended as per my recommendations above, provides for takes that are permitted by the Regional Water and Soil Plan but exceed 10 cubic metres per property per day as a controlled activity (C.5.1.7). This provides certainty to resource users that their takes will be authorised and secure.

250. Lastly, Tegel Foods Ltd consider that C.5.1.1 should be split into two rules. One that permits groundwater takes and the second that permits surface water takes, as "putting them together makes it difficult for the users of the plan."[144] Simply put, I disagree; the rule is clear. It states that the maximum volume that can be taken from all sources (river, lake or aquifer) must not exceed certain volumes.

C.5.1.5 – Water takes associated with bore development, bore testing or dewatering

251. Rule C.5.1.5 permits the taking of groundwater associated with bore development, bore testing or dewatering by pumping. It is largely based on Rule 25.1.2 in the Regional Water and Soil Plan for Northland. The main point of difference is that the new rule states a maximum permitted daily volume from non-coastal aquifers (1,000 cubic metres). Rule 25.1.2 of the Regional Water and Soil Plan does not set a maximum volume. Instead it requires the activity to be completed within seven days of commencement.

252. Five submitters consider that the volume is unlikely to be adequate for large horticultural bores, particularly in the Aupouri aquifer management unit. They

[144] Tegel Foods Ltd. p.10

suggested increasing the limit to 2,500 cubic metres per day, which is more appropriate to obtain hydraulic data to confirm bore yields, groundwater sustainability and enable design of the pumping, headworks and reticulation requirements. [145]

253. The regional council sought advice on this matter from LWP Ltd. The advice[146] (attached as Appendix C) supports the recommendation to increase the limit to 2,500 cubic metres per day, and I endorse it.

Recommendation

254. I recommend that the following amendments are made to the Proposed Plan:
    - Change Condition 1 of Rule C.5.1.1 so that the taking of water from a coastal aquifer and outstanding freshwater bodies is not permitted;
    - Change Condition 2 of Rule C.5.1.1 so that the maximum volume of fresh water that is permitted to be taken per property, per day is 10 cubic metres;
    - Change Rule C.5.1.5

255. I also recommend that Rule C.5.1.5 as per the advice of LWP Ltd. (see Appendix C).

Evaluation of recommended changes

256. Section 32AA of the RMA requires an evaluation of any changes that have been made to, or are proposed for, the plan since the first RMA s32 evaluation was completed. I consider that the recommended amendments will reduce the likelihood that permitted takes will have an adverse effect on in-stream values and other water users. They will also increase the ability for the council to administer permitted takes from rivers, lakes and aquifers.

257. I acknowledge that the amendments will result in costs associated with applying for water permits. However, with the costs come security in terms of access to water.

258. In summary, I consider that the changes are the most appropriate water to achieve the high-level objectives in the Section 32 Evaluation Report for the Proposed Plan and the recommended new freshwater quantity objective to be included in section F of the plan.

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[145] Hayward Family Trust. p.5, Honeytree Farms Ltd. p.6, Horticulture New Zealand. p.35, KSL Ltd. p.5, Motutangi Waiharara Water Group. p.5

[146] Brydon Hughes. April 2018. Technical advice from LWP Ltd. to inform decisions on the Proposed Regional Plan for Northland. Project Ref: NRC0010.

Evaluation of recommended changes

259. I consider that the changes to the advice note have minor effect and are within the scope of a change under clause 16, Schedule 1, RMA.

260. Section 32AA of the RMA requires an evaluation of any changes that have been made to, or a proposed for, the plan since the first RMA s32 evaluation was completed. The inclusion of a rule to permit the taking of coastal water will mean that resource users will not have to apply for resource consents for the activity, and therefore will not incur costs. I also consider that the activity will not have any noteworthy adverse effects on the environment. In other words, the economic benefits will outweigh any adverse environmental effects.

261. In summary, I consider that the changes are the most appropriate way to achieve the high-level objectives in the Section 32 Evaluation Report for the Proposed Plan and the recommended new freshwater quantity objective to be included in section F of the plan.

Providing for unauthorised takes

Background

262. Rules C.5.1.7 and C.5.1.9 provide a way for existing takes that are not authorised by resource consents or permitted by rules in the Regional Water and Soil Plan or the Proposed Plan to be authorised. It is in the interests of people taking water illegally (for want of a better term) to seek authorisation because they face the risk of losing access to water in fully allocated catchments and catchments approaching full allocation.

263. As mentioned previously, the council believes that there are many unauthorised water takes in Northland, most of which are thought to be takes for dairy shed use. At the time of writing of this report there were approximately 880 dairy farms in Northland, down from approximately 940 in 2016, of which many are thought to be exceeding the current permitted volume thresholds. Around the time of writing this report the council was made aware of five unauthorised groundwater takes for orchards on the Aupouri Peninsula.

264. Unauthorised takes were addressed by the Land and Water Forum in its third report (although I acknowledge that it was in the context of recommendations on a nationally consistent approach to freshwater allocation):[147]

> *174. There is also likely to be water that is currently used as part of commercial operations (significant or otherwise) that is not authorised either because it exceeds (knowingly or unknowingly) the current permitted take allowances, or is not specified as part of permitted activities (in a regional plan) or section 14(3)(b) authorisations but has either gone unnoticed or unquestioned by regional councils. These water takes (referred to in this report as unauthorised) need to be accounted for so that decisions can be made on how to transition to any new regime.*
>
> *…*
>
> *176. Accounting for all water [as required by Policy CC1 of the NPS-FM] will require a compliance system that monitors and enforces breaches of all types of authorisations and no longer accepts unauthorised use. This will require good quality data and councils will need to put more emphasis on monitoring and compliance.*

265. The Land and Water Forum goes on to recommend:

> *There should be a one-time process at the time of transition to the new allocation regime during which unauthorised takes (non-consented takes that may not comply with the provisions of section 14(3) or the rules in a plan) can be dealt with. Decisions on the treatment of unauthorised takes will need to be made through the planning process and should follow a principle that those who have been relying on unauthorised takes will be treated fairly and pragmatically during the transition to the new allocation regime but cannot necessarily expect to be treated on the same basis as authorised takes.*

266. Rules C.5.1.7 and C.5.1.9 and the allocation limits in Policies D.4.16 and D.4.17 (to be relocated to an appendix in Section H of the plan) provide for a one-time authorisation process.

267. Rule C.5.1.7 provides for unauthorised takes that existed at the notification date of the plan that exceed a volume in condition 2 of Rule C.5.1.1 as a controlled activity provided, inter alia, that the take does not exceed 50 m^3/day per property. Rule

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[147] Land and Water Forum, 2012. *Third Report of the Land and Water Forum: Managing Water Quality and Allocating Water.* pp. 40-41

C.5.1.9 provides for unauthorised takes that existed at the notification date of the plan and that exceed 50 m^3/day as a discretionary activity.

Submissions and analysis

268. DairyNZ and Federated Farmers of New Zealand consider that the daily per property volumetric limits in rules C.5.1.7 and C.5.1.9 should be amended. DairyNZ stated that while it strongly supports a controlled activity rule, given the significant investment that has already been made on dairy farms, a limit or 50 cubic metres per day seems somewhat arbitrary:

> *It will likely result in a number of farmers with more than 714 cows to need to obtain consent as a discretionary activity with no clear justification for a higher consent threshold for these takes. We instead seek that the amount allowed under a controlled activity status [and discretionary activity status] should be linked to the area of land upon which the water is to be used. This would better align with [Rule] C.5.1.1".*[148]

269. Federated Farmers of New Zealand goes further. It stated that the total daily volume in Rule C.5.1.7 should be increased from 50 cubic metres to 100 cubic metres because the former "arbitrary upper cut-off leaves approximately 48-50 farms requiring discretionary consent (C.5.1.9) to be processed".[149] (Federated Farmers also questioned if "the Regional Council have the staff and resources to process these existing use consents".[150])

270. I agree, 50 cubic metres is arbitrary, however a line must be drawn somewhere. It is important to note again that the taking of more than 10 cubic metres of surface water between 1 December and 31 May is a discretionary activity under the Regional Water and Soil Plan. My point is that most, but not all, of the takes that the submitters are concerned about currently require authorisation by way of resource consents under the Regional Water and Soil Plan.

271. Earlier in this report I recommended that the maximum permitted per property, daily volume that can be taken from a river, lake and/or aquifer should be reduced from 20 cubic metres to 10 cubic metres for several reasons. Under the Regional Water and

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[148] DairyNZ. p.11
[149] Federated Farmers of New Zealand. p18
[150] Ibid

Soil Plan for Northland, up to 40 cubic metres of water is permitted to be taken per property per day (from a combination of surface water and groundwater) between 1 June and 30 November, although in some parts of the region the maximum volume is limited to 30 cubic metres during the same period. While "arbitrary", the 50 cubic metre volume is similar to the maximum combined permitted volumes in the Regional Water and Soil Plan.

272. Against this background, Rule C.5.1.7 provides for the taking and use of water from a river, lake or aquifer that existed **but was not authorised** at the notification date of the plan. A consequence of my recommendation to reduce the maximum permitted take volume from 20 cubic metres per property per day to 10 cubic metres is some people that are permitted to take more than 10 cubic metres of water per day under the Regional Water and Soil Plan will require a water permit for the take under Rule C.5.1.10.

273. I consider that Rule C.5.1.7 should be amended to apply to any take that existed at the notification date of the proposed and is not permitted by the Proposed Plan but does not exceed 50 cubic metres of fresh water per property per day. This change will provide for existing permitted and unauthorised takes that are less than 50 cubic metres.

274. Man O'War Dairies Ltd "are concerned about the potential costs [associated with applying for water permits for unauthorised takes under rules C.5.1.7 and C.5.1.9] and that some of the matters of control [in Rule C.5.1.7 are not well defined may require significant consultation, or may be somewhat objective (e.g. '…effects on aquatic ecosystems and species, mahinga kai, indigenous biodiversity where it affects tangata whenua ability to carry out cultural and traditional activities, wāhi tapu)."[151]

275. I do not think that the cost of applying for resource consents for unauthorised takes is a relevant matter. The water takes are required to be authorised by existing rules. However, I empathise with the company's concerns about the matters of control.

276. The rule applies to water takes that existed at the notification date of the plan but are not authorised (to take between 10/20 and 50 cubic metres per day). I am of the opinion that it needs to provide a fair and pragmatic opportunity for existing permitted

[151] Man O'War Dairies Ltd. p.3

takes to become authorised under the Proposed Plan. I am not aware of any evidence that suggests that the takes that Rule C.5.1.7 provide for are having any adverse effects on mahinga kai, indigenous biodiversity where it affects tangata whenua ability to carry out cultural and tradition activities, wāhi tapu, or mapped sites and areas of significance to Tangata Whenua. I am not stating existing unauthorised takes are not having no adverse effects on these values. Rather, in the absence of evidence and considering the relatively small volume of the takes provided for by Rule C.5.1.7 I consider that the matters of control should be removed.

277. Haititaimarangai Marae 339 Trust submitted in relation to Rule C.5.1.7 that "[c]ontrolled activities are not an appropriate mechanism for authorizing illegal takes because the Council does not understand the magnitude of illegal takes, or the effects these takes are having on the environment."[152]

278. The Trust also stated:[153]

> *Amend the policies and rules of the Plan so that consideration of applications seeking consent for currently unauthorized takes are undertaken on a case-by-case basis to ensure the actual and potential effects on the environment are appropriately avoided, remedied or mitigated. Any consent granted to authorize these takes needs to be considered within the allocation limits set in the tables in Policies 4.16 and 4.17.*

279. I consider that it is not appropriate to apply the allocation limits for river and aquifers in Policies D.4.16 and D.4.17 to people applying for water permits to authorise takes permitted under the Regional Water and Soil Plan but not under the proposed regional plan, or unauthorised takes existing at the notification date of the plan. Without the exception people currently taking water, in a way described in the first sentence of this paragraph, from a water body that is fully allocated would be causing over-allocation. The NPS-FM states that this situation must be avoided. I am not any evidence that existing unauthorised takes are having significant adverse effects on the environment.

280. Heritage New Zealand, Northland Fish and Game and the Royal Forest and Bird Protection Society of New Zealand submitted that Rule C.5.1.7 should be changed to a restricted discretionary activity, with matters of discretion including "measures to avoid, remedy or mitigate effects on:

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[152] Haititaimarangai Marae 339 Trust. p.59
[153] Ibid

- Mapped Historic Heritage Are of Site (refer I 'Maps')[154]
- Historic heritage that has not yet been assessed for significance[155]
- Outstanding freshwater bodies[156]
- Indigenous biodiversity[157]

281. I disagree. I am not aware of any evidence that existing takes of the magnitude provided for by Rule C.5.1.7 are having adverse effects on these matters. I think a controlled activity is appropriate.

282. Billy Leonard however considers that the plan should not provide for unauthorised takes that existed at the notification date of the plan.[158] I disagree for reasons set out above.

283. Vicki Stevens expressed concerns about the time available for people to apply for a resource consent for the taking and use of water under Rule C.5.1.9:

> *For this provision to go through I believe there needs to be significant public awareness built into the provision. 12 months is a very short time to allow people to put together a resource consent application. I strongly believe that there needs to be an outreach program attached to this proposal which assists people to make the resource application for existing takes. I think that this should be a part of any new rule that impacts on current activities. The regional plan is about protecting our environment and resources not about making people criminals for normal activities. I do not believe that literacy issues should impact on a property owners ability to be compliant. This is a significant change and as such needs to have significant support put in place for all land owners.*

284. The council is cognisant of the issue and is willing to work with sector and industry bodies to ensure that people are aware of regional rules.

285. The Minister of Conservation and Irrigation New Zealand submitted that the intake structure specifications in Condition 3 of Rule C.5.1.7 should be amended to reduce the potential for fish to be sucked into intake structures. I consider it would be more appropriate to delete Condition 3 and to include a new clause in Policy D.4.23 ("Conditions on water permits") that directs decision-makers to include a condition in

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[154] Heritage New Zealand. p.59
[155] Ibid
[156] Northland Fish and Game. p.36., Royal Forest and Bird Protection Society of New Zealand. p.49
[157] Royal Forest and Bird Protection Society of New Zealand. p.49
[158] Billy Leonard. p.1

a water permit for the taking and use of water to "ensure intake structures are designed, constructed and maintained to minimise adverse effects on fish species in accordance with good practice guidelines."

286. Lastly, Horticulture New Zealand pointed out that "Clause 2) b) iii) 'resource consents for unauthorised takes' is confusing and should be reworded."[159] I agree with the organisation's suggestion that it should be amended to state: "unauthorised takes that existed at the notification date of this plan, which are now authorised by resource consent."

Recommendation

287. I recommend that the following amendments are made to the Proposed Plan:
    - Delete the words "but was not authorised" from Rule C.5.1.7, so that it provides for any take (authorised or not) from a river, lake or aquifer that existed at the notification date of the Proposed Plan and which exceeds 10 cubic metres per property per day but not 50 cubic metres;
    - Deleting Condition 3 and replacing it with direction in Policy D.4.23 that water permits for the taking and use of fresh water should include conditions that ensure intake structures are designed, constructed and maintained to minimise adverse effects on fish species in accordance with good practice guidelines;
    - Deleting matters of control 2(b) – (e) in Rule C.5.1.7;
    - Clarifying that rules C.5.1.7 and C.5.1.9 are specific to fresh water takes; and
    - Amend policies D.4.16 and D.4.17 (to be relocated to an appendix in Section H) to clarify that takes that existed at the notification date of the plan and that are subsequently authorised by resource consents are to be included in the allocation limits for water bodies that exceed default limits.

Evaluation of recommended changes

288. Section 32AA of the RMA requires an evaluation of any changes that have been made to, or a proposed for, the plan since the first RMA s32 evaluation was completed. I consider that the recommended changes are unlikely to result in new or additional environmental, economic, social, or cultural costs.

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[159] Horticulture New Zealand. p.69

289. I believe that the changes are the most appropriate water to achieve the high-level objectives in the Section 32 Evaluation Report for the Proposed Plan and the recommended new freshwater quantity objective to be included in section F of the plan.

Priority of access to fresh water

Background

290. The default setting under the RMA is that access to fresh water is on a first-in, first served basis, although some activities can take and use water without authorisation by way of a national regulation, regional rule or resource consent (see Section 14(3)(b) of the RMA). Section 124B of the RMA also provides a degree of certainty for people applying for replacement consents for existing consents that they will be granted.

291. That said, Section 30(1)(fa) of the RMA states that regional councils have the function, if appropriate, to establish rules in a regional plan to allocate the taking and use of water to different types of activities (subject to constraints Section 30(4) of the RMA). The Proposed Plan does not contain any rules that allocate water to an activity or activities pursuant to Section 30(1)(fa).

292. There is also another way to look at priority of access to water. That is, the priority given to permitted and consented takes to access water during low flow conditions. The plan does not contain policy direction on priority of access to water during low flows.

293. Policy D.4.23 requires decision-makers to include conditions in water permits that clearly define when any restrictions and cessation of the water take must occur to ensure compliance with freshwater quantity limits set in the Proposed Plan.

Submissions

Priority of access to water during low flows

294. Several people[160] requested the inclusion of policy in the plan to provide direction on access to water during low flow conditions. One of them, Fonterra, stated that policy direction is needed:[161]

> *…to ensure that clear direction is provided as to how water take restrictions are managed in the event of water shortages. An approach that identifies and prioritises water takes dependent on the natural of the use is appropriate.*

295. Fonterra and DairyNZ suggested the following policy:[162]

> *The level of priority to apply during water shortage conditions in surface water (SW) bodies, in descending level of importance is as follows:*
> *i) Priority SW-A activities: takes which have a zero net take, of for fire fighting*
> *ii) Priority SW-B activities: stock watering supplies, takes for animal welfare and sanitising (including shed wash down and milk cooling), takes for perishable food processing, takes associated with electricity generation, all permitted and s14(3)(b) RMA takes, and takes for domestic or municipal supply.*

296. Similarly, Haititaimarangai Marae 339 Trust submitted that policy direction should be included in the plan that would specify that in times of water shortage, takes are restricted to those that are essential to the health or safety of people, and communities, or for drinking water for animals and all other takes are ceased.[163]

297. Far North District Council submitted that Policy D.4.17 in the draft regional plan should be included in the Proposed Plan. That policy is reproduced as follows:

> *Water shortage direction*
> *When issuing a water shortage direction pursuant to section 329 of the RMA, give priority to the following needs (in order of priority from highest to lowest:*
> *1) takes for domestic or municipal supply and the maintenance of animal health, and*

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[160] Beef and Lamb New Zealand. p.12., DairyNZ. p.21., Federated Farmers of New Zealand. p.31., Fonterra. p.46
[161] Fonterra. p.46
[162] Fonterra. p.46., DairyNZ. p.21
[163] Haititaimarangai Marae 339 Trust. p.52-53

2) water required for the sole purpose of preventing the death of permanent viticulture or horticulture crops (excluding pasture species, animal fodder crops, and maize) provided a contingency plan is implemented, and
3) other takes.

298. Section 329 of the RMA, which provides for water shortage directions, states:

> *(1) Where a regional council considers that at any time there is a serious temporary shortage of water in its region or any part of its region, the regional council may issue a direction for either or both of the following:*
> *(a) that the taking, use, damming, diversion of water:*
> *…*
> *is to be apportioned, restricted, or suspended to the extent and in a manner set out in the direction.*
> *(2) A direction may relate to any specified water, to water in any specified area, or to water in any specified water body.*
> *(3) A direction may not last for more than 14 days but may be amended, revoked, or renewed by the regional council by a subsequent direction.*
> *(4) A direction comes into force on its issue and continues in force until it expires or is revoked.*
> *(5) A direction may be issued by any means the regional council thinks appropriate, but notice of the particulars of the direction shall be given to all persons required to apportion, restrict, or suspend—*
> *(a) the taking, use, damming, or diversion of water; or*
> *…*
> *as far as they can be ascertained, as soon as practicable after its issue.*
> *(6) For the purpose of this section, notice may be given to a person by serving it on the person or by publishing the notice in 1 or more daily newspapers circulating in the area where the person takes, uses, dams, or diverts the water, or discharges a contaminant into water.*

299. I appreciate that the submitters want clarity and certainty about how access to water will be managed during times of water shortage. However, Section 329 of the RMA does not mention regional plans. I consider that the issuing of water shortage directions is an operational matter.

Consent duration

300. Policy D.2.4 of the Proposed Plan sets out matters that decision-makers must have particular regard to when determining the expiry date for a resource consent term.

301. Irrigation New Zealand stated:[164]

> *For water take consent duration there should be a presumption of 20 years. This provides certainty and therefore enables investment in efficiency. This could either be a stand-alone policy or integrated into policy D2.4 above.*

302. While I recognise the importance of providing certainty for when making investment decisions, I consider that the Policy D.2.4 deals with the matter satisfactorily.

Applications for replacement consents

303. Rule C.5.1.6 classifies replacement permits for registered drinking water supplies as a controlled activity, provided the existing water take and use is authorised at the time of the resource consent application, and there is no increase in the rate or volume of the take. The rule provides certainty to drinking-water suppliers because of the importance of takes.

304. Irrigation New Zealand also submitted that existing consented users should be afforded greater security of supply by way of a new restricted discretionary activity rules for the replacement of existing water permits for the taking and use of water.[165]

305. Dairy NZ consider the following policy should be included in the Proposed Plan because water use under existing consents is accounted for in the accounting for allocation levels (D.4.16.2(b)(ii)), and because significant investment in infrastructure has been made:[166]

> *Applications for replacement water permits will generally be granted, and the matters for discretion limited in recognition of existing takes in catchment accounting and significant levels of investment associated with water permits.*

306. I disagree with the submitters requests; existing water permit holders already enjoy significant protection of their priority over other potential resource users under Section 124B of the RMA.

307. Refining New Zealand requested a new controlled activity rule for an application for a new resource consent to take and use water associated with Regionally Significant Infrastructure or an application for a new resource consent to take and use water that

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[164] Irrigation New Zealand. p.5
[165] Irrigation New Zealand. p.4
[166] DairyNZ. p.22

will replace an existing resource consent for Regionally Significant Infrastructure.[167] The company believes a "controlled activity rule for such circumstances is consistent with objectives 3.7 and 3.8 and policies 5.3.2 and 5.3.3 of the RPS."[168] It is not clear to be how the cited objectives and policies support Refining New Zealand's request.

Other

308. Victor Holloway considers that the council's 'first come, first served' approach to allocating water is out of date and it should start charging for excessive water takes.[169] Water pricing is an option for helping manage scare water resources,[170] but not one that regional councils can use because they do not have the ability to impose water charges.

309. In my opinion enabling the efficient transfer of water permits between users is the most appropriate way to improve the 'first-in, first-served' approach.

310. David Lourie submitted that applications for water permits to authorise the taking and use of water from springs under traditional and legal ownership must not be granted without written permission from the traditional and legal owners.[171] While I understand the context for submission, in New Zealand law fresh water in a water body is not owned by any person.

Recommendation

311. I recommend that the relief sought by the submitters is not granted.

[167] Refining New Zealand. p.17
[168] Refining New Zealand. p.
[169] Victor Holloway. p.2
[170] For example, see http://www.rmla.org.nz/wp-content/uploads/2018/04/Counsell_RMJ_April_2018-2.pdf
[171] David Lourie. p.3

Improving and maximising the efficient allocation and efficient use of fresh water

Background

312. The National Policy Statement for Freshwater Management 2017 (NPS-FM) contains an objective of improving and maximising the efficient allocation and use of water.[172] This is supported by three policies, which are reproduced below as follows:

> *Policy B2*
> *By every regional council making or changing regional plans to the extent needed to provide for the efficient allocation of fresh water to activities, within the limits set to give effect to Policy B1*
>
> *Policy B3*
> *By every regional council making or changing regional plans to the extent needed to ensure the plans state criteria by which applications for approval of transfers of water take permits are to be decided, including to improve and maximise the efficient allocation of water.*
>
> *Policy B4*
> *By every regional council identifying methods in regional plans to encourage the efficient use of water.*

313. Policy 4.3.3 of the Regional Policy Statement for Northland (RPS) provides very similar direction to policies B2 and B4 of the NPS-FM.

314. The term "efficient allocation" is defined in the NPS-FM to include economic, technical and dynamic efficiency. The three concepts are briefly explained in the first report of the Land and Water Forum:[173]

- ***Technical efficiency*** *– The amount (say, %) of water beneficially used in relation to that taken. It relates to the performance of a water use system, including avoiding wastage.*

[172] Objective B3
[173] Land and Water Forum, 2010. *Report of the Land and Water Forum: A Fresh Start for Fresh Water.* p.80

- ***Allocative efficiency/Economic efficiency*** *– Relates to water uses resulting in the optimum outcome for both the environment and community. Water is allocated to the use which has the highest value to society.*

- ***Dynamic efficiency*** *– Relates to the use of water adjusting over time, in order to maintain of achieve allocative efficiency.*

315. The Proposed Plan contains several provisions that implement the policy direction in the NPS-FM and RPS on the efficient allocation and use of fresh water. Regarding, technical efficiency, policies D.4.20, D.4.21, and D.4.22 require applicants for water permits to demonstrate reasonable and efficient use. Rule C.5.1.1 which permits small quantities of water to be taken and used requires reticulation systems and components to be maintained to minimise leakage and wastage. Rules C.5.1.6 and C.5.1.7 specify measures to ensure the reasonable and efficient user of water as a matter of control.

316. Regarding allocative efficiency, the plan does not depart from the default 'first-in, first-served' setting in the RMA. While regional councils can allocate fresh water among different types of activities,[174] it is not commonly done because it requires councils to make decisions about what activities provide the optimum outcome for both the environment and community, now and in the future.

317. The Proposed Plan provides for the transfer of water permits by way of Policy D.4.24 which sets out the criteria by which applications for approval of transfers of water take permits are to be decided under Section 136 of the RMA. This should improve allocative and dynamic efficiency.

Submissions and analysis

Policies D.4.20 – D.4.22

318. Beef and Lamb New Zealand submitted that the plan should be "amended to include policies and rules which establish the criteria to be applied when assessing whether the take and use of water is necessary, reasonable, and efficient."[175] I consider that

[174] RMA s30(4)(
[175] Beef and Lamb New Zealand. p.10

Policies D.4.19 – D.4.22 are sufficient, albeit with minor changes, to direct applicants for water permits and decision-makers on what is reasonable and efficient.

319. CEP Services Matauwhi Ltd. considers that Policy D.4.20 should explicitly require consideration of a water balance model using climate factors as expected in 2070 in order to account for the effects of climate change.[176] CEP Services also requested that Policy D.4.21 should require the following additional matters in water management plans: (a) how water demand will be managed, (b) water reuse, and (3) resilience in light of climate change.[177]

320. CEP Services Matauwhi Ltd. did not provide any evidence in support of its requests for amendments to account for the effects of climate change. It is also not clear what the sought changes to Policy D.4.21 would achieve.

321. Far North District Council and Horticulture New Zealand submitted that policies D.4.20, D.4.21 and D.4.22 should require applications for water takes that are not for municipal, community, horticultural or productive purposes to demonstrate that they will not adversely affect existing water users. The policies are for the purposes of establishing if proposed water takes are reasonable and efficient. I note that section 104(1) directs decision-makers considering applications for water permits and any submissions received have regard to any actual or potential effects on the environment of allowing the activity. Environment is broadly defined to include, among other things, people and communities.

322. GBC Winstone submitted that Policy D.4.22 should be relaxed so that an assessment of reasonable and efficient use is not a blanket requirement, and that an applicant for a water permit should consider (rather than demonstrate) possible wastage and opportunities for re-use or conservation.[178] I believe that the second part of the company's request is reasonable and that the policy should be amended accordingly.

323. Hayward Family Trust, Honeytree Farms Ltd, KSL Ltd and Motutangi Waiharara Water User Group (MWWUG) consider that Policy D.4.20 is theoretically sound but the requirement that a field-validated water balance model is used that can reliably predict annual irrigation volume within an accuracy of 15 percent potentially is unrealistic. MWWUG submitted that Policy D.4.20 is amended so that it is more

[176] CEP Services Matauwhi Ltd. p.A19
[177] CEP Services Matauwhi Ltd. p.A19
[178] GBC Winstone. p.11

specific about what is meant by “field-validated” and that “within an accuracy of 15 percent” is deleted, as it is impossible to measure.[179]

324. I discussed the submission points with Stuart Savill (Consents Manager, NRC) and Susie Osbaldiston (Groundwater Management Specialist, NRC) and they agreed with them. I consider that the relief sought should be granted.

325. Sweetwater Farms considers that Policy D.2.20 is not consistent with actual irrigation practice because it targets a reasonable use based solely on annual volume. Sweetwater Farms submitted that it should be replaced with an appendix in the plan that outlines reasonable and efficient use of water for irrigation because an appendix can be easily modified as new data is obtained to tweak the allocation test rather than have a fixed policy that cannot be changed without a plan change.[180]

326. I consider that the policy is consistent with how applications for water permits for irrigation are considered. It is also important to note an appendix to a plan is part of a plan and cannot be modified without using a process set out in Appendix 1 of the RMA.

Policy D.4.24

327. Patuharakeke Te Iwi Trust Board does not support Policy D.4.24. It considers that the transfer of water permits should be discouraged because it supports commodification of water.[181] Richard Van Alphen and Trina Upperton take a similar position and submitted that the plan should not allow the transfer of water permits and if water is not required water permits should be surrendered.[182]

328. The Land and Water Forum commented on the need to enable flexible transfer of resource consents:[183]

> *We think that water permits should be able to be transferred more easily. That could allow water to move to its “best use” over time, allow communities to transfer water more easily between their members, provide a quicker means of access to water for those who do not currently hold consents, and allow water to be reallocated without*

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[179] Hayward Family Trust. p.8., Honeytree Farms Ltd. p.8., KSL Ltd. p.8., Motutangi Waiharara Water User Group. p.8.,
[180] Sweetwater Farms. p.5
[181] Patuharakeke Te Iwi Trust Board. p.15
[182] Richard Van Alphen. p.1
[183]

creating winners and losers. It could also help to combat over-allocation through allowing more efficient use within communities.

329. Policy D.4.24 provides direction on transfer of water permits under Section 136 of the RMA. Sweetwater Farms pointed out that the plan only includes a policy on transferring water permits and that applications for transfers would therefore be assessed as a discretionary activity under Section 136(4) of the RMA. The council could grant or decline an application for a transfer.[184] Sweetwater Farms stated:

> *The ability to [transfer] water is critical to managing the coincidence of peaks of water takes. If a process is easily available to trade peaks within a community management groups then the occurrence of all peaks happening simultaneously can be avoided.*
>
> *Water efficiency relies on flexibility, on being able to shift water from one use to another to the most valuable use.*

330. Sweetwater Farms believes that the transfer of a water permit for the taking and use of water to another site, if both sites are in the same catchment (either upstream or downstream) or aquifer should be a controlled activity. Horticulture New Zealand is also concerned that a discretionary activity status is onerous and is not an enabling approach to an activity that can improve the efficient use of water. They consider that a restricted discretionary activity rule in included in the plan that provides for the transfer of water permits.[185]

331. I am of two minds. On one hand, I agree with the submitters' concerns that an innominate discretionary activity status[186] for the transfer a water permit may be inefficient and frustrate the improving the efficient allocation of water. However, I also consider that an application to transfer a water permit should be carefully considered and may need to be declined in a highly allocated catchment, for example. This is because a catchment may be approaching or at full allocation due to a water permit that is seldom used, or for short period of time. Transferring the water permit may result in the same volume of water being taken for extended periods of time with resulting increased adverse environmental effects.

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[184] Sweetwater Farms. p.3
[185] Horticulture New Zealand. p.76
[186] RMA s87B(1)(a)

332. However, consistent with the scheme of 136 of the RMA, I do not think that it is necessary to include specific rules for the transfer or water permits.

333. CEP Services Matuawhi Ltd consider that Policy D.4.24 overlooks several relevant factors with transfers of water permits. That being, the policy should state that the water transfer will not reduce the flow in a river below a minimum flow (after allowing for flow changes due to climate change 50 or more years from the date of transfer), and the applicant for the water permit should demonstrate reasonable and efficient use.[187] It would be very difficult, bordering on impossible, to determine the impact of climate change on minimum flows with any precision. Second, Policies D.4.20 – D.4.22 already require applicants for water permits to demonstrate reasonable and efficient use which would be applied to an application to transfer of a water permit.

334. Haititaimarangai Marae 339 Trust are generally supportive of Policy D.4.24 but believe that it needs to provide more direction on managing adverse effects on aquatic ecosystems associated with transferring water permits. Specifically, that it should be amended to require consideration of whether the extent of adverse effects differs from the adverse effects when the permit was originally granted.[188] I disagree. Section 104 of the Act provides sufficient direction to decision-makers on considering an application for resource consent.

335. Dianne Laurenson submitted that Policy D.4.24 should be amended or replaced with policy direction that all water permits are issued to land title and are not transferable with the sale of land. Dianne Laurenson also considers that the policy should state that a water permit lapses if it is not utilised within two years of the permit being issued.

336. It is important to note that water permits are not attached to land; they can be transferred pursuant to Section 136 of the RMA. Dianne Laurenson did not provide any evidence on why a water permit should lapse if it is not used within two years.

Rule C.5.1.7

337. Bryan Clements, Terence Brocx and Penny Smart raised concerns about the third matter of control ("Measures to ensure the reasonable and efficient use of water.") in Rule C.5.1.7. They consider that it could result in unreasonable conditions in water

[187] CEP Services Matuawhi Ltd. p.A20
[188] Haititaimarangai Marae 339 Trust. p.54

permits and that it should be amended by basing reasonable and efficient use requirements on recognised industry best practice. Andrew Booth is concerned that "consent conditions could possibly [require] a reduction in water use over time"[189].

338. I believe that their concerns relate to the amount of water needed for dairy shed use, which according to DairyNZ is approximately 70 litres per animal per day. In recent years, Northland Regional Council has looked at the potential for reducing water use in the dairy shed in the interests of reducing effluent volumes and reducing costs to farmers. I understand that the project has demonstrated that savings can be made.

339. I do not think that the submitters' request should be accepted because water use will likely vary between dairies because of system designs and therefore a case-by-case assessment of what is reasonable and efficient may be warranted.

Other

340. Irrigation New Zealand considers that the following new policy on water user groups should be included in the plan because "[w]ater sharing arrangements better allow for within season management of the water resource and thus greater allocative efficiency.":[190]

> *The formation of water user groups should be encouraged to allow permit holders who choose to work with other water permit holders in the same catchment or subcatchment to temporarily share all or part of the water take authorised by their water permit provided:*
>
> *a) all water permits are subject to conditions that specify a maximum rate of take, a daily volume, and a seasonal or annual volume;*
> *b) metering and telemetry of data is undertaken for all takes; and*
> *c) all water permits are subject to common restriction conditions, or any discrepancies in restriction conditions are addressed prior.*

341. I believe that it would be constructive move to include this policy in the plan.

342. Fonterra submitted that the policies in D.4 relating to water allocation are either replaced or amended to provide a suite of policies that, among other things:

- Establish annual volume and maximum rates on resource consents;

[189] Andrew Booth. p.1
[190] Irrigation New Zealand. p.2

- Provide that resource consent applications must demonstrate that the volume of water sought is reasonable and will be used efficiently;
- Encourage water storage to improve the reliability of supply;
- Enable the transfer of water permits; and
- Promote water metering.

343. I am not clear what the basis is for Fonterra's request given that the Proposed Plan already addresses these matters.

344. Several people want water use efficiency to be better defined and applied,[191] including by referencing good management practices. I consider that the Proposed Plan contains appropriate policy and rules requiring water takes to be reasonable and efficient.

345. Irrigation New Zealand believes that it would be beneficial for the plan to contain policies that encourage water storage options given the opportunities for Northland through water harvesting and storage.[192] I think that this is not necessary because the Regional Policy Statement for Northland contains a policy (4.3.4) that directs decision-makers to recognise and promote the benefits of water harvesting, storage and conservation methods.

Recommendation

346. I recommend that the following changes are made to Proposed Plan:
- Delete the requirement in Policy D.4.20 that water balance models must be field-validated and reliably predict annual irrigation volumes within an accuracy of 15 percent;
- Amend Policy D.4.22 so that applicants for water permits for the taking and use of water for "other uses" must consider possible wastage and opportunities for re-use or conservation, rather than demonstrate that the water will not be wasted; and
- Include a new policy in the plan on water user groups.

[191] Irrigation New Zealand, DairyNZ, Haititaimarangai Marae 339 Trust
[192] Irrigation New Zealand. p.2

Evaluation of recommended changes

347. Section 32AA of the RMA requires an evaluation of any changes that have been made to, or a proposed for, the plan since the first RMA s32 evaluation was completed. I consider that my recommended changes will improve the efficient allocation and use of water in a way that is unlikely to result in any adverse environmental, economic, social, and cultural effects.

348. I believe that the changes are the most appropriate water to achieve the high-level objectives in the Section 32 Evaluation Report for the Proposed Plan and the recommended new freshwater quantity objective to be included in section F of the plan.

Metering and information requirements

Background

349. The Proposed Plan requires authorised water users to provide the council with various information relating to their use of the resource. Good information about water use in Northland is needed to:

- Ensure the necessary information is available for freshwater objective and limit setting and freshwater management;[193]
- Ensure information on resource availability is available for current and potential resource users;[194]
- Protect existing users from reduced reliability of access to water due to lack of information on existing allocations; and
- Assist with monitoring progress towards, and the achievement of, freshwater objectives.[195]

350. Information on the use of fresh water is also needed to determine if a person is taking and using water in accordance with rules or conditions of resource consents.

[193] Objective CC1, NPS-FM
[194] Ibid
[195] Objective CB1, NPS-FM

351. Policy D.4.23 directs decision-makers to include conditions in water permits for the taking and use of water, including requirements for metering, information gathering and review of consent conditions.

352. Rule C.5.1.1 requires people taking the amount of water that is permitted by the rule to provide the council with the following information when requested:

- The location of the water takes;
- The volume of the water taken and the maximum rate of takes; and
- The purposes for which the water is used or is proposed to be used.

353. Rule C.5.1.1 also requires, at the written request of the council, a water meter(s) to be installed at the location(s) specified in the request and water use records provided to the council in a format and at the frequency specified in the request.

Submissions and analysis

Policy D.4.23

354. The Egg Producers Federation of New Zealand believes that Policy D.4.23 is, in effect, a rule because it sets out mandatory requirements. The Federation stated, "that requiring mandatory consent conditions is not appropriate as there is no nexus between the effects of the water take and the mitigation proposed by the condition."[196]

355. I disagree, Policy D.4.23 is consistent with Section 108(1) of the RMA, which provides direction on the nature of conditions of resource consents.

356. The Egg Producers Federation also considers that "not all conditions will be required for every consent" and that the "policy should be revised so it does not appear to be a rule and does not apply to all consents."

357. I point out, again, that case law has established that a policy is "a course of action" that can "be either flexible or inflexible, either broad or narrow."[197] I agree thought that the directives in Clauses 2 and 3 of the policy may not be applicable to all water

[196] The Egg Producers Federation of New Zealand. p.7
[197] *Auckland Regional Council v North Shore City Council* [11495] 3 NZLR 18.

permits and consider that the they should be caveated with the words “unless there are exceptional circumstances”.

358. Likewise, the Oil Companies consider that temporary takes associated with dewatering, which are typically non-consumptive, should not be required to be metered pursuant to Clause 2 and telemetered pursuant to Clause 3 of Policy D.4.23. Furthermore, the Oil Companies submitted that the policy should be amended to recognise that not all water takes need to be metered. I agree with the Oil Companies and make recommendations below on amendments to the policy.

359. Tegel Foods Ltd considers that Policy D.4.23 is unnecessary and inappropriate because conditions are determined at the time of the grant of consent and apply on a case-by-case basis in order to address potential environmental effects set out in Section 108AA of the RMA. Accordingly, they submitted that it should be deleted.

360. I disagree with Tegel Foods because Section 108 of the RMA provides for a regional council to include any condition in a resource consent that it considers appropriate, except as expressly provided in the section and subject to section 108AA of the Act. I consider that there is nothing in Section 108 or 108AA that precludes the direction in Policy D.4.23.

361. Diane Laurenson believes that Policy D.4.23 should be more specific about the timing of metering and provision of information to the council, and also that a new clause be added to the policy that requires trigger values for cessation of a take from an aquifer if the groundwater level drops below the predicted value in a monitoring bore in the aquifer.[198]

362. I do not think that it is necessary that the policy is more specific about metering requirements. The policy also contains sufficient direction on restrictions and cessation of water takes.

363. Horticulture New Zealand supports a measuring and reporting requirement for all consented takes. However, it considers that specific recognition should be given to use values of modified watercourses, which are often mainly used for land drainage and water supply and are in a highly modified state. To this end, they submitted that an additional clause be added to Policy D.4.23 that directs decision-makers to

[198] Diane Laurenson. p.3

include conditions in water permits that "recognise the particular functions of modified watercourses in rural production settings".[199] It is not clear to me what this condition would achieve.

Rules

364. Kaipara District Council submitted that the conditions for permitted activity rules and the consent process could include measures to ensure that the Northland District Health Board is informed of community supplies. This will allow for the maintenance of a register, which will be used to respond to health incidents. I do not think that this is necessary. Section 69K of the Health Act 1956 requires a person who supplies or intends to supply drinking water from a drinking-water supply to apply to the Director-General, in a manner approved by the Director-General, for registration on the drinking water register.

365. The Minister of Conservation submitted that a new policy should be included in the plan that requires all permitted water takes to be metered if, in combination with water taken for stock drinking water under section 14(3)(b) of the Act the total volume exceeds the permitted activity volume for the property. I consider that the costs of imposing such a requirement would outweigh the benefits and the Minister of Conservation provided no evidence to suggest otherwise.

366. Julianne Bainbridge considers that water metering requirements are adequately addressed by the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 and therefore Rule C.5.1.1, which permits the taking of water up to 20 cubic metres per day, should not provide the council with the ability to require the installation of water metres and the water use records.[200]

367. I disagree because in Northland takes of less than five litres per second can be significant due to the relatively small size of most of the regions rivers. Northland has approximately 18,000 kilometres of rivers and streams, of which approximately 70 percent of the rivers and streams have a mean annual low flow of less than 10 litres per second and 55 percent have a mean annual low flow of 5L/s.

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[199] Horticulture New Zealand. p.75
[200] Julianne Bainbridge. p.3

368. Leanne Browne submitted that conditions 9) and 10) of Rule C.5.1.1 should state the reasons that information would be requested for.[201] Fonterra share the same view:[202]

> *The water metering on request provision at (10) gives no indication of when or why the council would invoke this requirement. Depending on the nature of the council "request" there could be significant cost implications for farmers. To provide certainty the Plan should identify when the council might require metering and the type of metering and frequency of reporting should be commensurate to the scale of take.*

369. I do not think that is necessary to specify every reason why the council would request that a take be metered. I think that it is reasonable that a person taking water under a permitted activity rule should provide information on their use of the resource. The alternative is to apply for a resource consent.

370. Whangarei District Council considers "that all water takes [including permitted activity takes should] be metered to ensure that water use is accurately accounted for…or "[a]t the very least, meters should be a mandatory requirement in all high/over allocated water catchments."[203]

371. It is important to note that the majority of highly (including fully) allocated catchments are due to a small number of takes. While I agree that it would be beneficial to require all takes to be metered for the purposes of managing the taking and use of fresh water within limits, I am not convinced that the benefits of doing so outweigh the costs and practicalities (as discussed earlier in this report).

372. Northland District Health Board considers that C.5.1.1 should require all people taking water under the rule to notify council of their takes and meter their take, as it "will permit Council to efficiently and effectively ensure existing authorised takes are not adversely affected."[204]

373. I think that Condition 6 of Rule C.5.1.1 adequately addresses the issue.

Recommendation

374. I recommend that the following changes are made to Proposed Plan:

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[201] Leanne Browne. p.2
[202] Fonterra. p.38
[203] Whangarei District Council. p.18
[204] Northland District Health Board. p.14

- Amend Policy D.4.23 (“Conditions on water permits”) by providing exemptions to metering and information telemetering requirements if there are exceptional circumstances or the water permit is for a temporary or non-consumptive take;
- Make minor changes for grammatical purposes

Evaluation of recommended changes

375. Some of the recommended changes have minor effect and are within the scope of a change under clause 16, Schedule 1, RMA.

376. Section 32AA of the RMA requires an evaluation of any changes that have been made to, or a proposed for, the plan since the first RMA s32 evaluation was completed. I consider that the recommended changes will ensure that costs are not imposed on resource users for information gathering purposes that are not important for the sustainable management of Northland’s water resources.

377. I believe that the changes are the most appropriate water to achieve the high-level objectives in the Section 32 Evaluation Report for the Proposed Plan and the recommended new freshwater quantity objective to be included in section F of the plan.

Management of geothermal water

Background

378. Geothermal water is not fresh water as defined by the RMA. It is “water heated within the earth by natural phenomena to a temperature of 30 degrees Celsius or more; and includes all steam, water, and vapour, and every mixture of them that has been heated by natural phenomena.”[205]

379. The Proposed Plan does not contain rules and policy that explicitly apply to the taking and use of geothermal water and associated heat and energy. In this regard, it is similar to the Regional Water and Soil Plan, which contains only one provision (Policy 10.5.1(c)) expressly relevant to the management of geothermal water.

[205] RMA, s2

380. It is also useful to note that Section 14(3)(c) of the RMA states that a person is not prohibited from taking, using, damming, or diverting any water, heat, or energy if in the case of geothermal water, the water, heat, or energy is taken or used in accordance with tikanga Maori for the communal benefit of the tangata whenua of the area and does not have an adverse effect on the environment.

Submissions and analysis

381. The New Zealand Geothermal Association and Ngāwhā Generation Ltd requested specific provisions for the management of geothermal water and associated heat and energy, including by:

- Not subjecting the taking and use of geothermal water to freshwater quantity limits (note that fresh water does not include geothermal water, as defined by the RMA);
- A permitted activity rule for small scale takes of geothermal water and energy
- A restricted discretionary activity for taking water within 100 metres of significant geothermal features (including all geothermal features within a mapped ONF), with effects on the feature one matter of discretion.
- A discretionary activity rule for takes of geothermal water not falling within the permitted activity thresholds;
- Policies on how geothermal resources should be managed;

382. Rule C.5.1.1 provides for the taking of small volumes (less than 20 cubic metres per day) of geothermal water because it is not specific to fresh water. I consider that it should be amended though to provide for the use of the associated heat and energy of the geothermal water.

383. I also consider that a discretionary activity rule should be included in the Proposed Plan for the taking and use of geothermal and associated heat and energy that is not provided for by an amended permitted activity rule.

384. I am not convinced that new objectives and policies specific to the management of geothermal water should be included in the Proposed Plan. In my opinion, policy direction on the making and considering of application for resource consents for the taking and use of geothermal water and associated heat and energy is not necessary. Such applications are not common and can be dealt with on a case-by-case basis.

Recommendation

385. I recommend that:

- Rule C.5.1.1 should be amended to provide for the taking and use of heat and energy associated with geothermal water; and
- The taking and use of geothermal water and associated heat and energy that is not permitted by Rule C.5.1.1 should be classified as a discretionary activity.

Evaluation of recommended changes

386. The changes have minor effect and are within the scope of a change under clause 16, Schedule 1, RMA.

Other matters

387. Refer to Appendix A for the summary of submission points, analysis and recommendations made on the water quantity management provisions not addressed in the key matters sections of this report.

Appendix A – Response to other matters raised in submissions

The following table does not include the summary of submission points, analysis and recommendations made on the key matters in the main body of the report.

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
New or amended policy on water quantity and allocation	Beef and Lamb New Zealand considers that a new or amended policy should be included in the plan that does several things as follows:[206] • Identifies the values that environmental flows and levels should be set for, which include the life-supporting capacity and physical form and function of surface water bodies, community wellbeing, cultural values, economic values, existing use and investment, and potable groundwater supplies; and • Provides for security of supply for takes that are essential to the health or safety of people and communities, and drinking water for animals over other takes during times of water shortage.	I consider that the Proposed Plan already contains policy direction on the matters that Beef and Lamb New Zealand raise in its submission, but it would be appropriate to amend Policy D.4.13 to recognise that secure and reliable access to water is a fundamental water quality dependent value.	I recommend that Policy D.4.13 (which is to be relocated as an objective to Section F of the plan) should be amended so that its states that the taking, use, damming and diversion of fresh water should be managed so that it is a reliable resource for consumptive and non-consumptive purposes. This is consistent with my recommendation in relation to Horticulture New Zealand and the NZ Pork Industry Board's requests for reliable and secure access to water be recognised in Policy D.4.13.[207]

[206] Beef and Lamb NZ. p.10
[207] Horticulture New Zealand. p.69., NZ Pork Industry Board. p.8

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
			The amendment is appropriate because it provides for reliable water for consumptive and non-consumptive purposes. It is also of minor effect.
D.4.16	Northland Fish and Game and Royal and Bird Protection Society of NZ want a definition for 'median flow' to be included in the plan or Policy D.4.16 to be amended to clarify what is meant by the term median flow.	Defining the term 'median flow' in the plan would be useful to the plan reader. As an aside, it would also be useful to define the term 'seven-day mean annual low flow'.	I recommend 'median flow' and 'seven-day mean annual low flow' be defined in the Proposed Plan. The amendments are of minor effect.
D.4.17	R Sucich asked the council to clarify if the Aupouri Aquifer is a coastal aquifer.	The regional plan maps show that the Aupouri Aquifer management unit is not a coastal aquifer.	I do not think that the clarification sought by R Sucich is necessary.
D.4.18	Far North District Council recommended that the title of Policy D.4.18 should be renamed "Integrated surface water and groundwater management".	I agree that it is easier to understand.	I recommend that the title of Policy D.4.18 should be amended as per Far North District Council's submission. The amendment is of minor effect.
D.4.18	Policy D.4.18 directs applicants and decision-makers to manage groundwater and surface water in an integrated way within environmental flows and levels set in the plan.	Irrigation New Zealand's request is sensible and constructive. The council asked LWP Ltd to provide technical advice on integrated surface and groundwater management and comment on Irrigation	I recommend that a new appendix is included in the plan, to be referenced in an amended Policy D.4.18, that includes the methodology recommended by LWP Ltd for classifying and managing hydraulically

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	In its primary submission Irrigation New Zealand stated:[208] *There needs to be greater specificity as to how directly or highly connected takes are defined, and also how such takes are subsequently treated.* *This is best done through the addition of an appendix, although could also be integrated into the policy.* Irrigation New Zealand requests inclusion of a new appendix which would specify a method for determining hydraulic connection along with a method for determining allocation and minimum flow restrictions	New Zealand's request. LWP Ltd stated:[209] *Given the limited specificity in Policy D.4.18 as proposed, I consider there is merit in considering submissions from Horticulture New Zealand and Irrigation New Zealand which seek to provide greater certainty regarding to resource users and stakeholders regarding groundwater takes that may be subject to surface water allocation and minimum flow provisions.* LWP Ltd provided methodology that provides plan users with greater clarity regarding the classification and management of hydraulically connected groundwater abstraction. It is similar to methodology suggested by Irrigation New Zealand.	connected groundwater abstraction. The amendment will provide greater clarity with regard to the management of groundwater hydraulically connected to surface water. This will reduce costs associated with applying for and processing applications for water permits for the taking and use of groundwater. I consider that the amendment will not result in adverse environmental, social, and cultural effects.
Direct or high connectivity aquifer (new definition)	Policy D.4.18 applies to applications for water permits to authorise the taking and use of water from aquifers that are directly or highly connected to surface water. Horticulture New Zealand requested that the following definition be included in the	The council sought advice from LWP Ltd on an appropriate policy framework for managing surface and groundwater connectivity. The advice includes definitions for direct hydraulic connection and high hydraulic connection.[210] I consider that they should be included in the Proposed Plan.	I recommend that the definitions for direct hydraulic connection and high hydraulic connection recommended by LWP Ltd be included in the Proposed Plan, along with a definition

[208] Irrigation New Zealand. p.7
[209] Brydon Hughes. April 2018. Proposed Regional Plan for Northland. LWP Ltd. Project Ref: NRC0010
[210] Ibid

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	Proposed Plan for directly or highly connected aquifers: “An aquifer where river depletion after a period of 90 days at the maximum pumping rate is greater than 60 percent of the pumped groundwater volume.”		of moderate hydraulic connection. I consider that the amendments are of minor effect.
New rule	GBC Winstone has sought that a new rule is included in the Proposed Plan that is consistent with Rule 25.2.1 in the Regional Water and Soil Plan or existing quarry and mine site dewatering. The provides all ground dewatering of existing quarries and mine sites and ground dewatering by way of existing drainage sumps which do not draw water from at risk aquifers as controlled activities.	I agree that the management approach in the Proposed Plan for ground dewatering of existing quarries and mine sites and ground dewatering by way of existing drainage sumps should be consistent with the approach in the Regional Water and Soil Plan.	I recommend that Rule 25.2.1 in the Regional Water and Soil Plan be included in Section C.5.1 of the Proposed Plan. The amendment will mean that applicants for water permits for the activities will face lower costs associated with the applicants relative to the costs of applying under a discretionary activity rule. I also consider that amendment will not reduce the ability of the council to appropriately manage any adverse effects of the activity on the environment.
Other	Alan Perkinson considers that the council is issuing to many water permits for the taking and use of water from aquifers, which is likely to cause adverse environmental effects (for example, depletion of aquifers	While I appreciate Alan Perkinson’s concerns, it is not clear to me what amendments, if any, should be made to the Proposed Plan to address the concerns.	To not grant the relief sought.

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	and saline intrusion). Alan Perkinson's concerns appear to be in relation to an application for a water permit by the Motutangi Waiharara Water User Group.		
D.4.14	Policy D.4.14 sets minimum flows for rivers. Haititaimarangai Marae 339 Trust submitted in relation to the policy that the plan should be amended to ensure that supplementary takes do not cause departure from the natural hydrological regime.	The amount of water that can be allocated, and the way in which it is used, determines the degree to which the natural hydrological regime for a river could be potentially modified.[211] It is not clear to me what the Trust means by "departure from". For example, no alteration, low moderation, etc? Note that I recommended elsewhere in this report that Rule C.5.1.8, which classes supplementary (high flow) allocation as a restricted discretionary activity, should be changed to a discretionary activity. This will provide the council to consider any manner of effect that will or may result from a proposal to take water when the flow in a river is above its median flow.	To not grant the relief sought.
Other	Ngai Takoto Iwi, Te Aupouri Iwi, Te Hiku Iwi Collective and Te Rarawa Anga Mua have requested: 1. The regional council to commit to a collaborative long-term planning process	I understand that the iwi' concerns relate to opposition to a first-in, first-served approach for allocation water; "poor management of the water resource in the Far North is becoming critical, and the	To not grant the relief sought.

[211] Beca. 2008. *Draft Guidelines for the Selection of Methods to Determine Ecological Flows and Water Levels*. Report prepared by Beca Infrastructure Ltd for MfE. Wellington: Ministry for the Environment.

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	specifically for freshwater in the Far North; 2. The regional council to decide alongside key stakeholders and iwi whether the current policy meets the needs of the region and whether a plan change is required to meet those needs; 3. In the interim, controlled, restricted discretionary, discretionary and noncomplying activities must include an assessment on the benefits of the activity to the social, economic and cultural well being of the Far North Region. Cultural well being will be specifically linked to the Te Hiku Iwi Collective and iwi authorities of the Far North. 4. The regional council to work with key stakeholders and iwi in the Far North to determine appropriate consultants or companies that can provide accurate information to inform water quantity and limits and a specific list is approved for use by applicants.	cumulative effects of the open approach is not assisting the Far North to achieve their social and economic aspirations."[212] With respect to the iwi, I consider that with the exception of a requirement in the plan to assess the effects of controlled, restricted discretionary, discretionary and non-complying activities on the well-being their submission is not relevant to the Proposed Plan. I consider that the other matters raised by the iwi are best addressed outside of the RMA Schedule 1 process for the Proposed Plan. It is not clear to me what requiring an assessment of the benefits of controlled, restricted discretionary, discretionary and noncomplying activities the social, economic and cultural well-being of the Far North Region.	
New rule	Waiaua Bay Farm Ltd considers that the taking and use of groundwater that exceeds a volume in Rule C.5.1.1 but that will not exceed an allocation limit should be a	Waiaua Bay Farm Ltd raise a good question: should not the taking and use of groundwater where it is available for allocation be classified as a controlled activity?	To not grant the relief sought.

[212] Te Aupouri Iwi. p.9., NgaiTākoto Iwi. p.7., Te Hiku Iwi Collective. p.10., Te Rarawa Anga Mua. p.6.

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	controlled activity, rather than a discretionary activity (C.5.1.10).[213]	On the face of it, yes. However, groundwater can be hydraulically connected to surface waterbodies; the taking of the former can impact on the later. This is important because the plan contains environmental flows and levels that must be observed. Taking groundwater where it is available (within an allocation limit) may deplete flows or levels in a surface waterbody. For this reason, it is important that the council has the ability to decline an application for a water permit that, if granted, would result in the over-allocation of a river, for example.	
C.5.1.1	Bob Cathcart requested that the maximum daily take volumes in condition two of the rule should "be amended to better recognise the reasonable needs of stock drinking water on Northland farms."[214]	Rule C.5.1.1 does not apply to RMA s14(3)(b) takes. I have recommended earlier in this report that the advice note that the beginning of Section C.5.1 of the plan be amended to clarify this.	To not grant the relief sought.
C.5.1.1	Irrigation New Zealand requested that condition seven of Rule C.5.1.1 should be replaced with a requirement that, for surface water takes, the water intake structure is designed, constructed, operated and	I understand that the guidelines that Irrigation New Zealand refer to are called	I recommend that Condition 7 in Rule C.5.1.1 should be amended as discussed.

[213] Waiaua Bay Farm Ltd. p.4
[214] Bob Cathcart. p.5

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	maintained so that is consistent with chapter 4.1 of the NIWA Fish Screening: Good Practice Guidelines.	the Fish screening: good practice guidelines for Canterbury[215]. I consider that they are too broad in scope to be referenced in Rule C.5.1.1. Instead, I think that Condition 7 in Rule C.5.1.1 should be amended to require a smaller mesh size for intakes for water takes from coastal rivers (1.5 mm) to protect juvenile eels and a lower approach velocity of 0.12 metres per second, which is also consistent with the Guidelines.	I also recommend that the same condition (6) in Rule C.5.1.2 is also amended in the same way. I consider that the amendment may impose costs on some people taking water from coastal rivers but they are outweighed by the benefits of protecting juvenile longfin and shortfin eels.
C.5.1.1, C.5.1.2	Minister of Conservation also requested amendments to the fish intake structure and fish screening requirements in Rules C.5.1.1 and C.5.1.2.	I consider that my recommended amendments in relation to Irrigation New Zealand's submission (above) are sufficient.	To not grant the relief sought.
C.5.1.1	MLP LLC and Waiaua Bay Farm Ltd does not "address the situation…where part of the property is situated within the coastal aquifer and part is within another aquifer."[216] They submitted that the rule should be amended so that where there are multiple bores on a property located within different aquifers, the take from each aquifer shall not	I recommended earlier this report that Rule C.5.1.1 should be amended so that it does not provide for the taking and use of fresh water from a coastal aquifer. If my recommendation is accepted then the submitters requests are not relevant.	To not grant the relief sought.

[215] Dennis Jamieson, et al. 2007. Fish screening: good practice guidelines for Canterbury. Prepared for Fish Screen Working Party: Environment Canterbury, Fish & Game New Zealand, Irrigation New Zealand, Department of Conservation. NIWA Client Report: CHC2007-092.

[216] Waiaua Bay Farm Ltd. p.4

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	be greater than the maximum volumes in Condition 2..		
C.5.1.2	Mikaere Miru and Tinopai RMU Ltd requested that Rule C.5.1.2 should be amended so that if the activity occurs within an area of significance to tangata whenua, tangata whenua and the regional council's compliance manager are given at least 10 days notice.	The submitters did not provide any evidence that temporary takes for road construction or maintenance purposes are having adverse effects on sites of significance to tangata whenua.	To not grant the relief sought.
C.5.1.2	Northland Fish and Game and Royal Protection Society of NZ want a condition included in Rule C.5.1.2 that would not allow activities during bird breeding periods or trigger consent requirements in bird breeding areas.	The submitters did not provide any evidence that temporary takes for road construction or maintenance purposes are having adverse effects on birds in bird breeding areas.	To not grant the relief sought.
C.5.1.4	Northland Fish and Game submitted that Rule C.5.1.4 should be changed to a controlled or restricted discretionary activity, with the matters of control or discretion to include assessments of the proposed schedule of values. They stated that this is because it "is often challenging to define what an artificial watercourse is, and the blurry nature of the definition and existing subjective perceptions about what is and what isn't an artificial watercourse mean abstractions from these cannot be considered as [sic]"	I disagree. The RMA excludes artificial watercourses from the definition of a river.	To not grant the relief sought.
C.5.1.4	Forest and Bird wants Condition 2 in Rule C.5.1.4 deleted and replaced with a condition that states that the water must only	The reason for the request is not clear to me.	To not grant the relief sought.

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	be taken and used for animal drinking water purposes.		
C.5.1.5	The Oil Companies requested a note under Rule C.5.1.5 that the associate discharge of groundwater can be permitted under C.6.9.5.	The request is constructive and will help people use the plan more efficiently.	To not grant the relief sought.
C.5.1.5	The Royal Forest and Bird Protection Society of New Zealand want the words 'natural' and 'dewatering' from Rule C.5.1.5.	It is not clear to me why the Royal Forest and Bird Protection Society of New Zealand wants the rule amended.	To not grant the relief sought.
C.5.1.6	The Royal Forest and Bird Protection Society considers that "effects on indigenous biodiversity" should be included as an additional matter of control	I disagree. The RMA defines biological diversity as "the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems". The term is so broadly defined that it would be unreasonable to include it as a matter of control.	To not grant the relief sought.
C.5.1.10	The Egg Producers Federation of New Zealand requested "assessment matters" to be included in the plan "to identify matters requiring consideration when determining whether water takes [under C.5.1.10] are appropriate."[217]	It is not clear to me why assessment criteria are needed for a discretionary activity.	To not grant the relief sought.
C.5.1.10	Royal Forest and Bird Protection Society of New Zealand and Northland Fish and Game consider that the plan should be amended to set out how the use of water and any	I note that the plan contains policy on managing adverse effects on indigenous biodiversity.	To not grant the relief sought.

[217] Egg Producers of New Zealand. p.3

Matter/Provision	Summary of main submission points	Discussion	Recommendation and evaluation
	resulting effects on indigenous biodiversity are to be considered at the time of granting consent.		

Appendix B – Legal advice from Wynn Williams

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WYNNWILLIAMS
LAWYERS

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MEMORANDUM

Date: 12 June 2018

To: **Ben Tait**

From: **Philip Maw, Kirstie Wyss**

NPS-FM ADVICE

1. Northland Regional Council (**Council**) has notified its proposed Regional Plan for Northland (**Proposed Plan**). Submissions on the Proposed Plan closed in March 2018, with hearings commencing in August 2018. In considering the submissions for the purposes of preparing a section 42A report, a number of issues relating to the National Policy Statement for Freshwater Management 2014 (amended 2017) (**NPS-FM**) have arisen in respect of which you have asked for our advice.

2. In particular, issues have arisen in relation to:

   a. the activity status for takes that would exceed an allocation limit;

   b. minimum flows;

   c. allocation limits; and

   d. allowing section 14(3)(b) takes.

3. Our advice in relation to these issues is set out below, and is structured to include a summary of our opinion on each issue, followed by our detailed analysis.

4. As your questions all relate to the NPS-FM, we have first set out some background in respect of giving effect to the NPS-FM, before turning to your specific questions.

Background - Giving effect to the NPS-FM

5. Under section 67 of the RMA, the Proposed Plan must give effect to any New Zealand Coastal Policy Statement and national policy statement (including the NPS-FM and the National Policy Statement for Renewable Electricity Generation, among others).[1] The Proposed Plan must also give effect to the Regional Policy Statement for Northland (**RPS**).[2] The Proposed Plan must give effect to each of these documents. This means that the Council cannot avoid giving effect to one national policy statement on the basis that it is giving effect to another national policy statement.

6. The Supreme Court in *King Salmon* has made it clear that the phrase "give effect to" is a strong direction that creates a firm obligation on the part of those subject to it.[3]

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[1] RMA, s 67(3)(a).

[2] RMA, s 67(3)(c).

[3] *Environmental Defence Society Incorporated v New Zealand King Salmon Company Limited* [2014] NZSC 38 at [77].

In a practical sense, the requirement will be affected by what it relates to (i.e., what must be given effect to). The Supreme Court stated in *Environmental Defence Society Incorporated v New Zealand King Salmon Company Limited* that:[4]

> A requirement to give effect to a policy which is framed in a specific and unqualified way may, in a practical sense, be more prescriptive than a requirement to give effect to a policy which is worded at a higher level of abstraction.

7. "Give effect to" does not require repeating or "mimicking" each and every provision of the NPS-FM.[5] Rather, section 67(3) imports a requirement that the decision-maker considers the factors that are relevant in the particular case before making a decision.

8. We consider that an overall approach must be taken, rather than focussing on whether any one provision in isolation gives effect to the NPS-FM. We consider that the relevant legal test is whether the Proposed Plan, viewed as a whole, gives effect to the NPS-FM, as required under section 67(3).

9. In light of this background, we consider each of your questions in turn below.

Activity status for takes exceeding an allocation limit

10. Policy B5 of the NPS-FM states:

> By every regional council ensuring that no decision will likely result in future over-allocation – including managing fresh water so that the aggregate of all amounts of fresh water in a freshwater management unit that are authorised to be taken, used, dammed or diverted does not over-allocate the freshwater management unit.

11. In light of the direction in Policy B5, you have asked us:

> Does the direction necessitate a prohibited activity rule for the taking and use of fresh water that may or would cause an allocation limit to be exceeded? Or could the council rely on a discretionary or non-complying activity rule coupled with strict policy in the plan on avoiding over-allocation to satisfy the direction in the NPS-FM.

12. In summary, we consider that Policy B5 does not necessitate imposing prohibited activity status for the take and use of water that may or would cause an allocation limit to be exceeded. The Council could rely on either a discretionary or non-complying activity rule, coupled with clear and directive policies requiring the avoidance of likely future over-allocation of freshwater resources.

13. Our detailed analysis follows.

14. We understand that there are large uncertainties associated with flow statistics in Northland's rivers and streams (i.e., most of the network is ungauged and the Council relies to a large extent on hydrological modelling). The limits in the Proposed Plan are expressed as a percentage of Mean Annual Low Flow, rather than the corresponding L/s or m^3/day. There are also uncertainties associated with the levels of allocation.

15. Policy B5 contains strong direction that the Council must ensure that no decision will likely result in future over-allocation.

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[4] *Environmental Defence Society Incorporated v New Zealand King Salmon Company Limited* [2014] NZSC 38 at [80].

[5] *Ngati Kahungunu Iwi Inc v The Hawkes Bay Regional Council* [2015] NZEnvC 50 at [14].

16. The NPS-FM defines "over-allocation" as follows:

> "Over-allocation" is the situation where the resource:
>
> (a) has been allocated to users beyond a limit; or
>
> (b) is being used to a point where a freshwater objective is no longer being met.
>
> This applies to both water quantity and quality.

17. Accordingly, where a limit has been established, over-allocation will occur when:[6]

a. a resource consent is granted that causes a limit to be exceeded; or

b. a plan permits water to be taken, which in combination with all other takes, causes a limit to be exceeded.

18. There is no caselaw that we are aware of that expressly answers this question in the context of Policy B5 of the NPS-FM.

19. The Council should approach the task of assessing the appropriate activity status (i.e. discretionary, non-complying or prohibited activity status) in the light of the applicable legal tests,[7] including the requirement to give effect to other higher order documents and the assessment under section 32 of the RMA.

20. In relation to prohibited activity status, guidance as to whether a prohibited activity status is appropriate can be found in the Court of Appeal's decision in *Coromandel Watchdog*.[8]

21. In that case, the Court considered that a local authority did not need to decide that an activity be forbidden in all circumstances before prohibited activity status is appropriate. That case set out a range of circumstances in which prohibited activity status might be appropriate. The most relevant of those factors in this situation is where the Council is taking a precautionary approach. That case suggested that if a Council has insufficient information about an activity to determine what provision should be made for that activity in the local authority's plan, the most appropriate status for that activity may be prohibited activity. This would allow proper consideration of the likely effects of the activity at a future time during the currency of the plan when a particular proposal makes it necessary to consider the matter, but that can be done in the light of the information then available.

22. However, a lack of information in and of itself is not determinative of the appropriate activity status; there are numerous examples of discretionary activity rules which have been adopted by Councils in circumstances where the activity might be appropriate in some parts of a region, but not others. An activity status which enables an application to be lodged may be more appropriate in these circumstances as the additional information lodged with a consent application may demonstrate that objectives and policies are able to be complied with.

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[6] We note that over-allocation can also occur where water is being used to a point where a freshwater objective is no longer being met. However, this scenario is not relevant in the context of your question about the exceedance of allocation limits.

[7] *Coromandel Watchdog of Hauraki Inc v Chief Executive of the Ministry of Economic Development* [2008] 1 NZLR 562.

[8] *Coromandel Watchdog of Hauraki Inc v Chief Executive of the Ministry of Economic Development* [2008] 1 NZLR 562 at [34] and [36].

23. When considering the application of Policy B5 in a planning context, we note that a regional plan does not itself (except in relation to permitted or controlled activities) allocate water that will likely result in future over-allocation. Rather, it is the subsequent decisions of Council in its capacity as consent authority, that need to carefully consider whether applications before it might likely result in future over-allocation. As such, the policy framework within which those decisions are made is important to assessing whether the Proposed Plan does in fact give effect to the NPS-FM.

24. While Policy B5 requires a Council to ensure that no decision will likely result in future over-allocation, provided the plan rules are not allocating water by way of permitted activity or controlled activity, then that policy has limited relevance to determining the appropriate activity status (as opposed to the plan framework as a whole).

25. Either discretionary or non-complying activity status might be appropriate provided that the policy framework in the plan was sufficiently clear and direct, such that any applications for resource consent that may result in over-allocation, were able to be declined. For completeness, we note that a number of submitters have sought changes to the policy framework to strengthen it in this regard. Either activity status would also provide a gateway for some activities to obtain resource consents (e.g., some non-consumptive takes).

26. While we consider that Policy B5 does not necessitate imposing prohibited activity status for the take and use of water that may or would likely cause an allocation limit to be exceeded, the Council should approach the task of assessing the appropriate activity status (i.e. discretionary, non-complying or prohibited activity status) in the light of the applicable legal tests,[9] including the requirement to give effect to other higher order documents and the assessment under section 32 of the RMA.

Minimum flows

27. You have asked us to consider two questions relating to minimum flows, as follows:

    a. Is a minimum flow on its own (not in combination with an allocation limit) a limit in terms of the NPS-FM?

    b. If the answer to question (a) is yes, does Policy B5 of the NPS-FM preclude regional councils from allowing water to be taken when a flow in a river is below a minimum flow set in a plan? For example, by way of a rule or resource consent.

28. In summary:

    a. We consider that a minimum flow on its own is not a limit in the context of the NPS-FM; rather, it is part of a limit described by the NPS-FM as an environmental flow; and

    b. Even if a minimum flow was considered to be a limit on its own, the answer to the second question is yes in the context of a decision on a plan (but only to the extent takes below the minimum flow are classified as permitted or controlled activities), but not always in the context of a decision on a resource consent application.

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[9] *Coromandel Watchdog of Hauraki Inc v Chief Executive of the Ministry of Economic Development* [2008] 1 NZLR 562.

29. Our analysis of each issue is set out in turn below.

Is a minimum flow a limit in terms of the NPS-FM?

30. "Limit" is defined in the NPS-FM as:

> the maximum amount of resource use available, which allows a freshwater objective to be met.

31. "Environmental flows and/or levels" is also defined in the NPS-FM as:

> a **type of limit** which describes the amount of water in a freshwater management unit (except ponds and naturally ephemeral water bodies) which is required to meet freshwater objectives. Environmental flows for rivers and streams must include an allocation limit and a minimum flow (or other flow/s). Environmental levels for other freshwater management units must include an allocation limit and a minimum water level (or other level/s).
>
> (emphasis added)

32. From reading these definitions, it is clear that an environmental flow and/or levels include two components:

    a. an allocation limit; and

    b. a minimum flow (or minimum level, depending on the type of waterbody).

33. It is the combination of those two components that comprise the limit for the purposes of the NPS-FM; that limit being the amount of water in a freshwater management unit which is required to meet freshwater objectives.

34. The interpretation of a minimum flow as a component of a limit is also consistent with the policies regarding water quantity in the NPS-FM. For example, Policy B1 requires:

> every regional council making or changing regional plans to the extent needed to ensure the plans establish freshwater objectives in accordance with Policies CA1-CA4 and set environmental flows and/or levels for all freshwater management units in its region (except ponds and naturally ephemeral water bodies) to give effect to the objectives in this national policy statement…

35. Policy B2 provides:

> every regional council making or changing regional plans to the extent needed to provide for the efficient allocation of fresh water to activities, within the limits set to give effect to Policy B1.

36. As Policy B2 makes reference to the limits required to give effect to Policy B1 (which requires regional councils to set environmental flows and/or levels), we consider the minimum flow is not a limit on its own; rather, it is part of a limit described as an environmental flow for the purposes of the NPS-FM.

37. This interpretation is also consistent with the Ministry for the Environment's guidance on Policy B1, which states that "*setting them [environmental flows] determines how much fresh water is available for use*".[10]

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[10] Ministry for the Environment, *A Guide to the National Policy Statement for Freshwater Management 2014 (as amended 2017)*, December 2017, at 52.

38. The guidelines on the interpretation of the NPS-FM are also consistent with both components forming the "limit". In the context of freshwater quantity, the guidelines provide that:[11]

> a limit would define how much water can be taken and when, and therefore how much water must remain to continue to meet a freshwater objective (see the definition of environmental flows).

39. Because a minimum flow, on its own, is not a limit in the context of the NPS-FM, a regional council is required to set a minimum flow (or other flow) as well as an allocation limit in order to give effect to the NPS-FM. Both of those components are necessary to define how much water can be taken and when, and therefore how much water must remain in the waterbody in order to meet a freshwater objective.

Does Policy B5 of the NPS-FM preclude regional councils from allowing water to be taken (by a rule or resource consent) when a flow in a river is below a minimum flow set in a plan?

40. As discussed above, Objective B2 requires future over-allocation to be avoided and existing over-allocation to be phased out. Policy B5 requires the Council to ensure that no decision will likely result in future over-allocation. The decision in the context of the making of a plan would only likely result in future over-allocation if:

    a. the taking of water below a minimum flow was a permitted or controlled activity; or

    b. if the policy framework did not seek to avoid future over-allocation, such that applications for resource consents to take below a minimum flow might easily be granted.

41. We consider that Policy B5, in conjunction with other provisions in the NPS-FM provides strong direction that the Council should not allow water to be taken (by way of a permitted or controlled activity rule or when making decisions on resource consent application) when a flow in a river is below a minimum flow set in a plan.

42. However, in a planning context, a plan could only be said to do this if it authorised the taking of water below a minimum flow as a permitted or controlled activity, or if it did not contain directive policy guidance seeking to avoid future over-allocation.

43. In the context of an application for resource consent, there may be exceptional circumstances in which a consent which sought to take water below a minimum flow for an allocation block could be granted, for example, a non-consumptive use. That is largely because the legal test in the context of an application for resource consent only requires the decision-maker to *have regard* to the NPS-FM, not to give effect to it.[12]

44. We also note that a plan may set differential minimum flows for different activities, (for example, crop protection in limited circumstances) provided that the allocation limit in conjunction with those minimum flows still met the directions in the higher order policy documents (including the NPS-FM and the RPS).

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[11] Ministry for the Environment, *A Guide to the National Policy Statement for Freshwater Management 2014 (as amended 2017),* December 2017, at 24.

[12] Section 104(1)(b)(iii), Resource Management Act 1991.

Given the direction in the NPS-FM, can a regional plan permit (or not control) minor and/or section 14(3)(b) takes of freshwater without including an explicit minimum flow in the rules in respect of these takes?

45. Related to the above questions in relation to minimum flows, you have also asked us whether a regional plan can permit (or not control) minor and/or section 14(3)(b) takes of freshwater without including an explicit minimum flow in the rules in respect of these takes?

46. In summary, we consider that a plan can be structured in a way that the rules permit minor takes of water and section 14(3)(b) takes (or does not control section 14(3)(b) takes) subject to a minimum flow of 0 L/s in respect of such takes, and still give effect to the NPS-FM. The Council will need to be satisfied that a minimum flow of 0 L/s in respect of such takes, in combination with the allocation limit, will still enable freshwater objectives to be met. This will likely require these permitted minor takes to be subject to other restrictions including a maximum instantaneous rate of take, and a daily volumetric limit.

47. As discussed above, under the NPS-FM, the Council is required to set an environmental flow regime, including a minimum flow, in its regional plan for all FMUs, which describes the amount of water in an FMU that is required to meet freshwater objectives.[13] Further, the Council is required to make/change regional plans to provide for efficient allocation of water to activities within this limit.[14] The Council is also required to ensure that no decision will likely result in future over-allocation[15] (in such a way that the aggregate amounts of all freshwater authorised to be taken in an FMU does not over-allocate the water in the FMU).[16]

48. The Proposed Plan must give effect to the NPS-FM (which is discussed above). There are a number of ways in which to do this, and the NPS-FM does not specify *how* a regional council must meet this legal test, and the particular objectives, policies and rules to be included in a regional plan is left to the Council,[17] subject to the RMA Schedule 1 process.

49. The NPS-FM simply requires that a regional plan includes an allocation limit and a minimum flow for an FMU, water is allocated within this limit, and that no decision will likely result in over-allocation.

50. The Council can set a a differential environmental flow regime (and minimum flows) for different activities, provided that the tests above are met (i.e., the freshwater objectives are met). Within that differential flow regime, there could be different minimum flows that apply to different categories/activities of water take.

51. This approach would require the Council to measure/model/estimate the environmental flow, which includes a minimum flow and allocation limit, required to

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[13] NPS-FM, Policy B1 and definition of "environmental flows and/or levels".

[14] NPS-FM, Policy B2.

[15] being the situation where the resource has been allocated to users beyond a limit, or is being used to a point where a freshwater objective is no longer being met. In respect of a "limit", this means the maximum amount of resource use available which allows a freshwater objective to be met).

[16] NPS-FM, Policy B5.

[17] Other than in limited circumstances in relation to the insertion of Policies A4 and B7, and some aspects of the NOF process.

achieve the freshwater objectives, and then structure the rules in the regional plan so as to ensure that the plan does not allocate water beyond that limit.

52. We consider that a regional plan can be structured in a way that permits minor takes of water and section 14(3)(b) takes (or does not control section 14(3)(b) takes) without including an explicit minimum flow in the rules in respect of such takes. In reality, this will effectively amount to setting a minimum flow of 0 L/s in respect of such takes. However, in our opinion, it would be preferably to express the minimum flow for these takes as 0 L/s.

53. The Council will need to ensure that setting a minimum flow of 0 L/s in respect of such takes will still enable the freshwater objectives for the relevant FMU to be met. This is because "over-allocation" includes the situation where the freshwater resource is being used to a point where a freshwater objective is no longer being met.

54. To ensure that the freshwater objectives will be met, this will likely require the relevant permitted minor takes to be subject to other restrictions. For example, this could include the rules being subject to conditions which set out the maximum instantaneous rate of take, and a maximum daily volumetric limit.

55. Further, and for completeness, we also note that if there is a risk of any small freshwater bodies being completely dewatered as a result of the estimated allocation to minor takes or section 14(3)(b) takes, then the Council could consider adding a further safeguard to ensure that those takes do not result in the freshwater body being completely dewatered. An example of such a condition is set out below:

> The rate of take from a river or modified watercourse does not exceed 30 percent of the instantaneous flow at the time of the take.

56. We are of the opinion that such a condition would meet the legal tests requirements for a permitted activity rule.

Allocation limits

57. Policy B1 of the NPS-FM directs the regional council to make or change plans "*to the extent needed to ensure the plans…set environmental flows and/or levels for all freshwater management units in its region*".

58. In light of the direction in Policy B1, you have asked us:

> Must an allocation limit (part of an environmental flow) apply to fresh water for (a) existing or likely new RMA s14(3)(b) purposes, and (b) permitted minor use activities?

59. In summary, provided an allocation limit is set taking into account water that is likely to be taken pursuant to section 14(3)(b) and water that is likely to be taken by way of permitted activity rule(s) under the Proposed Plan, no separate allocation block is required within the overall allocation limit for those particular categories of take.

60. Our analysis follows.

61. We understand that there are uncertainties associated with estimated allocations for section 14(3)(b) takes and permitted takes. Further, uncertainties will remain even with improved monitoring and modelling. For example, understanding the temporal nature of water takes for these uses.

62. An "environmental flow and/or level", which includes an allocation limit, describes the amount of water in a Freshwater Management Unit which is required to meet a

freshwater objective. Therefore, the allocation block for consented takes must be set taking into account:

a. water that is likely to be taken pursuant to section 14(3)(b) of the Act;

b. water that is likely to be taken by way of permitted activity takes; and

c. water that is available to be taken subject to resource consent whilst meeting a freshwater objective.

63. We note that where there are uncertainties associated with the s14(3)(b) takes or the permitted activity takes, the NPS-FM provides that the proportion of the limit that has been taken can be either measured, modelled, or estimated (see definition of "freshwater quantity accounting system").

64. In respect of section 14(3)(b) takes, the Council does not need to regulate a take under section 14(3)(b) in its regional plan, as these takes occur pursuant to the RMA. As such, it does not need to set a separate allocation block in respect of these takes, as part of the allocation limit, provided that the allocation block for consented takes is set taking into account the allocation estimated for s14(3)(b) takes.

65. Likewise, provided the Council has at least estimated the amount of water that may be taken pursuant to a permitted activity take rule, it does not need to set a separate allocation block within the allocation limit for these takes.

66. For completeness, we note that the Environment Court has previously held that the authorisation to take pursuant to section 14(3)(b) is not unlimited. The taking or use must not have, or be likely to have, an adverse effect on the environment. That is useful because it provides a platform for Council to estimate the volume of s14(3)(b) takes for the purpose of determining how much of the allocation limit is available to be taken subject to its permitted activity rule, or by way of resource consent.

Allowing section 14(3)(b) takes

67. You have also asked us to consider whether a regional council can allow new section 14(3)(b) takes to occur if fresh water in a FMU has been fully allocated?

68. In summary, strictly speaking section 14(3)(b) takes can occur under the RMA regardless of whether an FMU has been fully allocated, provided there are no restrictions on those takes in the Proposed Plan. However, the Council could include rules regulating section 14(3)(b) takes, including restrictions on volumes and rates of takes.

69. Our analysis follows.

70. The take of water under section 14(3)(b) can occur under the RMA regardless of whether a FMU has been fully allocated, and such takes do not need to be separately authorised (or allowed) by the Council in a regional plan.

71. However, when establishing the allocation limit, Council should be cognisant of the need to account for section 14(3)(b) takes and permitted activity takes.

72. If the allocation limit is fully allocated to existing consent holders, then the resource is likely to be over-allocated when the section 14(3)(b) takes are taken into account. If that is the case then Council could include rules in its Proposed Plan that restrict (or even prevent) further section 14(3)(b) takes. Council would also need to reduce the effects of over-allocation by requiring reductions in amounts taken by existing consent holders (either through a review of conditions on consent, or upon renewal of those consents in the future).

73. The Council may impose restrictions on the rate of take, or the volume of water that may be taken under section 14(3)(b) provided that the restrictions are to "*define the point at which a take, that would otherwise be authorised under section 14(3)(b), has, or is likely to have, an adverse effect, and hence fails to gain the statutory authorisation*."[18]

74. A restriction on the rate of take, or the volume of water that may be taken could also be used to define what is "reasonable" in terms of "an individual's reasonable domestic needs" or "the reasonable needs of a person's animals for drinking water". Such restrictions may be imposed through planning provisions.

[18] *Carter Holt Harvey Ltd v Waikato Regional Council* [2011] NZEnvC 380 at [111]-[112].

Appendix C – Technical advice from LWP Ltd.

LWP Ltd
145c Colombo Street
Christchurch 8023
03 3107420
021 495229

Northland Regional Council
Private Bag 9021
Whangarei

Attention: Susie Osbaldiston

20 April 2018 Project Ref: NRC0010

Proposed Regional Plan for Northland

LWP was engaged by Northland Regional Council (NRC) to provide technical advice to inform decisions on the Proposed Regional Plan for Northland (pRPN) specifically related to:

- Aupouri sub-area allocation limits specified in Policy D.4.17
- Policy D.4.18 *Conjunctive surface and groundwater management*
- Rule C.5.1.5 *Water take associated with bore development, pump testing, or dewatering*

Advice was also sought regarding options for implementation of these plan provisions.

1. Catchment-specific allocation limits for the Aupouri aquifer management unit

Policy D.4.17 of the pRPN specifies that:

2) The quantities of fresh water that can be taken from aquifers must not exceed:

a) for the Aupouri aquifer, the catchment-specific allocation limits in Table 12 'Allocation limits for the Aupouri aquifer management unit'...

Table 12 of the Proposed Plan specific allocation limits for 9 separate sub-aquifers comprising the Aupouri aquifer management unit, expressed both in terms of a volumetric allocation limit and as a percentage of annual average recharge.

1.1 Background to proposed allocation limits

The proposed framework for groundwater allocation on the Aupouri Peninsula is based on management recommendations provided by Lincoln Agritech (2015). This assessment involved hydrogeological analysis and numerical modelling of the Aupouri aquifer system, including evaluation of potential future abstraction scenarios.

In order to provide recommendations for sustainable groundwater allocation, the aquifer system was divided into 10 separate sub-aquifers which form individual management units for allocation purposes. Factors used to determine the location and geometry of the individual sub-aquifers include:

- The flow divide occurring along the central axis of the peninsula;
- Cross boundary flows between individual zones (modelled);
- The location of existing coastal groundwater (level and/or quality) monitoring sites;
- The location of proposed coastal groundwater (level and/or quality) monitoring sites;
- Clustering of existing groundwater consents;
- Clustering of coastal domestic bores;
- Location of dunes and wetlands; and
- Areas of forest or native scrubland (i.e. areas of limited demand)

Saline intrusion along the coastal margin was identified as the primary constraint on groundwater allocation on the Aupouri Peninsula, with landward migration of the saline interface potentially resulting in significant adverse effects on water quality.

Sustainable allocation volumes were assessed using a numerical groundwater model to simulate the potential response of the aquifer system to abstraction. The model was constructed using available hydrogeological information and calibrated to observed groundwater level data using the historical climate record. The model was then used to simulate to response of the aquifer system to varying levels of groundwater abstraction[1]. Using this approach, sustainable groundwater allocation volumes were estimated for each sub-aquifer based on two criteria:

1. Groundwater levels at the coastal margin should be maintained above critical thresholds predicted by the Gyhben Herzberg principle to ensure the saline interface remained offshore; and
2. Groundwater flows should not be reversed across the coastal boundary

Results of this assessment were used to estimate the sustainable allocation volumes which were subsequently incorporated into Table 12 of the pRPN.

Lincoln Agritech noted that, due to limited data available to construct and calibrate the model, confidence in model predictions was low in several sub-aquifers (notably Waihopo, Motutangi, Waiparera, Waipapakauri and Apihara). Model calculations also showed that groundwater levels were

[1] Note: model predictions were based on the distribution of groundwater abstraction at the time (i.e. by simulating increased abstraction at existing consent locations), rather than effects associated with more spatially distributed abstraction.

maintained well above the minimum groundwater level thresholds in other sub-aquifers (Houhora, Paparore, Sweetwater and Awanui), even at the recommended allocation limits[2].

It is noted that the recommended sustainable allocation volumes for the Houhora, Motutangi, Waiparera, Awanui and Apihara sub-aquifers are lower than the proposed interim allocation limit of 15% of land surface recharge recommended for shallow, coastal aquifers in the Proposed National Environmental Standard on Ecological Flows and Water Levels (MfE, 2008)[3]. However, recommended allocation limits for these sub-aquifers are equal to (Motutangi and Waiparera) or slightly higher (Houhora, Awanui and Apihara) than the default allocation limit of 10 percent of land surface recharge proposed for coastal aquifers in Policy D.4.17 2b of the pRPN.

Recommended allocation volumes for the remaining sub-aquifers are either equivalent to 35 percent of land surface recharge[4] (adopted as the default allocation limit for aquifers (other than coastal) in Policy D.4.17 2c) of the pRPN or, in the case of the Waipapakauri sub-area, equivalent to 20 percent of estimated land surface recharge.

1.2 Submissions received on allocation volumes for the Aupouri aquifer management unit

Submissions on Policy D.4.17 of the pRPN specifically related to allocation volumes for the Aupouri aquifer management unit can be grouped under two main themes:

- Submissions supporting retention of the proposed allocation volumes (Balle Bros Group, Irrigation New Zealand and D Laurenson); and
- Submissions requesting an increase in groundwater allocation volumes

Of the submissions seeking an increase in allocation limits, five (Hayward Family Trust, Honeytree Farms Ltd, KSL Ltd, Motutangi Waiharara Water User Group and Horticulture New Zealand) seek an increase in the minimum allocation for all sub-aquifers of the Aupouri aquifer management unit to a minimum of 15 percent of land surface recharge. The submission by S Shine seeks an increase in allocation from the Motutangi and Waiharara sub-aquifers to 20 percent of land surface recharge. The

[2] Limits for these areas were determined on the basis of cross boundary effects on adjacent sub-aquifers where coastal groundwater levels were closer to the estimated critical thresholds. This assessment is significantly influenced by the spatial distribution of abstraction assumed in the model (which was based on the location of existing consents at the time and differs from consent applications currently in process). For example, due to the location of a significant proportion of existing abstraction at the southern end of the Houhora sub-aquifer, scenarios assessed assume a significant degree of cross boundary effect in the Motutangi sub-aquifer.

[3] Proposed as a default (i.e. conservative) allocation limit for shallow coastal aquifers until such time as a Regional Council has sufficient information to formally establish an aquifer-specific limit.

[4] Equal to the interim limit for all other aquifers (i.e. other than shallow, coastal) in the Proposed National Environmental Standard on Ecological Flows and Water Levels (MfE, 2008) and adopted as the default allocation limit for equivalent aquifers in Policy D.4.17 2c) of the pRPN

remaining submissions (K & F King and F Foy) seek an (unspecified) increase in the proposed groundwater allocation volume/defaults which are considered too conservative.

1.3 Information and analysis presented to support the Motutangi Waiharara Water User Group (MWWUG) combined resource consent application

During 2016 Northland Regional Council (NRC) received multiple applications to abstract groundwater for irrigation of avocado orchards on the Aupouri Peninsula, a majority of which are located in the Motutangi and Waiharara sub-aquifers. After reviewing information provided to support the individual applications, NRC requested further information from each applicant under Section 92(1) of the Resource Management Act 1991 in order to adequately assess the local and cumulative effects of the proposed abstraction. In response to the request for further information, a total of 17 parties formed the Motutangi-Waiharara Water User Group (MWWUG) to collectively advance the applications and engaged a consultant (Williamson Water Advisory (WWA)) to undertake appropriate analysis to respond to the NRC further information request.

In June 2017, WWA lodged two documents with NRC on behalf of the MWWUG, comprising an assessment of environmental effects (AEE) and supporting technical assessment comprising analysis of pumping scenarios undertaken using a numerical groundwater model developed for the portion of the Aupouri Peninsula subject to the applications (effectively the Houhora, Motutangi and Waiparera sub-aquifers). Following notification of potentially affected parties, a hearing for the application was held in Kaitaia in late March 2018. As of mid-April 2018, the hearing is currently adjourned, pending further information being provided to the hearing panel.

Hydrogeological investigations detailed in the WWA reports include a range of investigations to improve characterisation of the regional and local hydrogeological setting in the vicinity of the proposed abstractions (i.e. the area encompassing the Houhora, Motutangi and Waiparera sub-aquifers), and assess the potential effects of the proposed abstraction. In part, this information builds on analysis undertaken by Lincoln Agritech (2015) report, but also includes analysis of additional data and re-interpretation of key aspects of the hydrogeological setting.

Analysis of potential effects of the proposed abstraction were undertaken using a sub-regional numerical groundwater model. This model is similar to that utilised for the Lincoln Agritech (2015) assessment, but differs in three key aspects:

- Interpretation of the geometry (i.e. subsurface geology and depth to underlying basement) and hydraulic properties of the aquifer system for the WWA model included analysis of a number of bore logs and aquifer tests which were not available when the earlier model was constructed;
- The semi-confined nature of the shellbed aquifers was modelled in a different way (i.e. by varying vertical anisotropy rather than explicitly modelling an aquitard layer); and
- Proposed abstraction in the WWA model was simulated as occurring at the specific location of the individual water takes proposed (or, in the case of future scenarios, distributed evenly across the model domain), rather than at the location of existing resource consents at the time the Lincoln Agritech (2015) model was constructed.

A range of pumping scenarios were analysed using the model including existing groundwater allocation (Scenario 1), existing and proposed groundwater abstraction (Scenario 2) and three future allocation scenarios (Scenarios 3a, 3b and 3c which assume the proposed MWWUG abstraction plus and an additional 20,000, 40,000 and 80,000 m^3/day of abstraction respectively). Further scenarios (Scenarios 4a, 4b and 4c) were run to simulate the effect of reducing the assumed vertical leakage (i.e. to simulate the shellbed being more well confined) that assumed under Scenario 2[5].

To estimate the potential for saline intrusion to occur modelled heads around the coastal margin were compared to the head required to maintain the saline interface offshore (calculated using the Ghyben Herzberg principle). Results of the assessment indicated that drawdown from the proposed abstraction[6] is unlikely to reduce coastal groundwater levels below critical thresholds required to maintain the saline interface offshore. Similarly, pumping scenarios 3a and 3b (assuming 20,000 and 40,000 m^3/day additional abstraction distributed across the model domain respectively) do not indicate that coastal groundwater levels will be reduced below the critical thresholds, even during the most extended periods of low rainfall in the available climate record.

Overall, hydrogeological assessment and modelling undertaken to support the MWWUG provides useful information to improve estimates of aquifer sustainability in the Houhora, Motutangi and Waiparera sub-areas. The analysis presented indicates that drawdown resulting from abstraction at rates and volumes in excess of the allocation limits for the Houhora, Motutangi and Waiparera sub-aquifers proposed in Table 12 of the pRPN is unlikely to reduce groundwater levels around the coastal margin below critical thresholds required to prevent saline intrusion into the aquifer system.

1.4 Discussion

Lincoln Agritech (2015) identified the potential for saline intrusion along the coastal margin as the primary constraint on aquifer sustainability in the Aupouri aquifer management unit and recommended allocation limits for various aquifer sub-areas (which have subsequently been incorporated into the Policy D.4.17 of the pRPN). The recommended limits were based on an assessment of the volume of groundwater able to be extracted from the aquifer system while maintaining groundwater levels along the coastal margins above critical thresholds established to mitigate the risk of saline intrusion occurring.

The Lincoln Agritech report notes that confidence in accuracy of modelling undertaken to derive the allocation limits was low in a number of areas due to the limited data available to characterise the local hydrogeological setting. As a result, in areas with limited data, a conservative approach was adopted to calculating sustainable allocation limits. This conservatism is reflected in the proposed allocation volumes. It is also noted that the allocation limits were calculated assuming larger volumes of

[5] Scenarios 4a, 4b and 4c assume equivalent abstraction to Scenario 2 (i.e. existing consents plus the proposed MWWUG takes) under conditions where vertical leakage is one, two and three orders of magnitude lower that that assumed for Scenario 2.

[6] Equivalent to 70% of the pRPN allocation in the Houhora sub-area, 99% in the Motutangi sub-area and 61% in the Waiparera sub-area

allocation at existing consent locations, rather than at alternative locations elsewhere in the model domain. This latter assumption influenced the magnitude of modelled cross boundary effects in some sub-aquifers.

The numerical modelling and assessment undertaken for the MWWUG application provides an alternative assessment of the potential effects of increased groundwater abstraction in the Houhora, Motutangi and Waiparera sub-aquifers. This model builds on the analysis undertaken by Lincoln Agritech (2015), and includes analysis of additional data, re-interpretation of key aspects of the hydrogeological setting and simulation of a different spatial pattern of groundwater abstraction (matching currently proposed abstraction). Assessment of a range of abstraction scenarios using the WWA model indicate that abstraction at rates in excess of the sub-aquifer allocation limits recommended in the Lincoln Agritech (2015) report are unlikely to result in a significantly increased risk of saline intrusion.

It is noted that there is always inherent uncertainty in groundwater models, and particularly in the case where cumulative effects arise from a number of proposed abstractions over a wide area with diverse and complex geology. Simulated groundwater levels and associated saline intrusion risk are also sensitive to the assumed distribution of groundwater abstraction within the model domain. As a consequence, while numerical model simulations provide an appropriate means to estimate sustainable groundwater allocation volumes at a regional to sub-regional scale, environmental monitoring is also required to ensure that management thresholds are not exceeded at a local scale, particularly along the coastal margin where effects such as saline intrusion may be sensitive to relatively minor variations in the magnitude of drawdown resulting from abstraction.

1.5 Recommendation

Based on the preceding discussion it is suggested that NRC give consideration to submissions requesting that groundwater allocation for the Houhora, Motutangi and Waiparera sub-aquifers of the Aupouri aquifer management unit (listed in Table 12 of the pRPN) to the equivalent of 15% of annual average recharge. This volume of abstraction is well within 'envelope' of scenarios simulated by the WAA model which indicate no significant increase in the potential risk of saline intrusion. Such an amendment would reflect additional hydrogeological investigations and groundwater modelling that has been recently undertaken for the MWWUG application that address factors contributing to the low confidence in model predictions (and consequent conservative approach to allocation) in these sub-aquifers described in the Lincoln Agritech (2015) report.

However, due to the complex subsurface geology and hydrogeology of the Aupouri aquifer system, it is recommended that any increase groundwater allocation for individual sub-aquifers of the Aupouri aquifer management unit should be supported by a corresponding amendment to Policy D.4.17 2) a) to include specific provision for groundwater levels along the coastal margin to be maintained above a minimum threshold required to prevent saline intrusion. This amendment would enable development of the groundwater resource while ensuring than residual uncertainty associated with the potential for saline intrusion is managed through the maintenance of coastal groundwater levels above minimum

thresholds[7]. This would essentially formalise the management approach adopted for recent resource consent applications (either granted or currently in process) in the Sweetwater, Houhora, Motutangi and Waiharara sub-areas.

Other suggested amendments to Policy D.4.17 include:

- Removal of the *% annual average recharge* figures for individual sub-aquifers listed in Table 12 so allocation is expressed as a single volume derived from the recharge assessment undertaken for the Lincoln Agritech (2015) study. Given future hydrogeological studies may estimate varying recharge volumes for individual sub-areas of the Aupouri aquifer, removal of the % recharge figures would help avoid any ambiguity related to specification of the allocation limits;
- Removal of the Aupouri-other sub-aquifer from Table 12. This would mean that groundwater allocation in areas of the Aupouri aquifer management unit outside the defined sub-aquifers would default to Policy D.4.17 2b (i.e., a default allocation limit of 10 percent of annual average recharge). This would provide a conservative approach to allocation in these areas which have limited hydrogeological information available, an approach consistent with that adopted for coastal aquifers elsewhere in Northland.

1.5.1 Suggested amendments to Policy D.4.17

Policy D.4.17 Allocation limits for Aquifers

2) The quantities of fresh water than can be taken from aquifers must not exceed:

a) for the Aupouri Aquifer:

i. The catchment-specific allocation limits in Table 12 'Allocation limits for the Aupouri aquifer management unit'; and

ii. <u>Minimum groundwater levels along the coastal margin required to prevent adverse effects associated with saline intrusion</u>

[7] Such thresholds have to be established on a site-specific basis as they may vary in different sub-aquifers.

Table 12 Allocation limits for the Aupouri aquifer management unit

Sub-aquifer	Allocation Limit	
	m^3/year	~~% annual average recharge~~
Aupouri-Waihopo	1,278,200	~~15~~
Aupouri-Houhora	~~2,141,300~~ 3,211,950	~~11~~
Aupouri-Motutangi	~~1,069,600~~ 1,604,400	~~10~~
Aupouri-Waiparera	~~2,312,200~~ 3,468,300	~~10~~
Aupouri-Paparore	3,787,500	~~35~~
Aupouri-Waipapakauri	1,192,800	~~20~~
Aupouri-Awanui	4,640,400	~~12~~
Aupouri-Sweetwater	4,675,000	~~35~~
Aupouri-Apihara	922,500	~~12~~
~~Aupouri-Other~~	~~Not applicable~~	~~15~~

1.6 Options for accounting for cross boundary effects

As described in Section 1.1 above, the Aupouri aquifer management unit has been divided into 9 sub-aquifers for the purpose of managing groundwater allocation. These sub-aquifers represent arbitrary subdivisions (albeit based on specified criteria) of a single contiguous aquifer system, rather than hydraulically separate management units.

As a result, groundwater abstraction from an individual sub-aquifer has the potential to result in cross boundary effects on the water balance of an adjoining sub-aquifer or sub-aquifers, particularly where large-scale abstraction occurs close to the sub-aquifer boundary. For example, a bore located immediately adjacent to a sub-aquifer boundary will effectively draw equal volumes of groundwater from an adjoining sub-aquifer. However, with increasing distance from the boundary the magnitude of cross boundary effects will diminish.

The extent and magnitude of cross boundary effects are influenced by a range of factors including the cumulative rate of abstraction, the location of individual pumping bores with respect to the sub-aquifer boundary and local aquifer hydraulic properties. Ideally, such cumulative effects on sub-aquifer water balance would be calculated using a calibrated numerical model. However, given application of numerical modelling may not be practicable on an individual consent basis, the following section provides a simple arbitrary method which would enable NRC to account for the approximate magnitude of cross boundary effects when calculating cumulative allocation volumes for individual sub-aquifers.

The primary target for groundwater development on the Aupouri Peninsula is a shellbed layer which typically occurs near the base of the sedimentary sequence (at depths varying between 40 and 100+ metres bgl depending on depth to basement rocks). While the thickness, composition and hydraulic properties of this layer vary, available aquifer test data summarised in Lincoln Agritech (2015) and WWA (2017) indicate it forms a spatially extensive semi-confined aquifer system.

To derive a simple methodology for managing cross boundary effects, the Hunt and Scott (2007)[8] solution was utilised to estimate radial drawdown around a pumped bore assuming the following:

Transmissivity = 400 m²/day
Storativity = 0.0005
K'/B' = 0.001
T_o = 100 m²/day
σ = 0.1
Pumping duration = 120 days
Pumping Rate = 10 to 50 L/s

The volume of storage depletion in the pumped aquifer and overlying sand aquifer was then calculated for 50 metre radial increments based on the calculated drawdown at the mid-point radius and assumed aquifer storage properties. An approximation of the volume of aquifer storage depletion was then calculated for a pumping bore located varying distances from an arbitrary boundary following the methodology outlined below and illustrated graphically in Figure 1.

$$V_a = \left(\frac{A_a}{A_{R2} - A_{R1}}\right) \times (V_{R2} - V_{R1})$$

Where V_a = volume of groundwater pumpage from an adjacent sub-aquifer
A_a = spatial extent of drawdown >0.1m[9] in the adjacent sub-aquifer (m²)
A_{R1} = spatial extent of drawdown >0.1 m (m²)
A_{R2} = spatial extent of drawdown at radius R_1 (m²)
V_{R2} = Total volume of groundwater pumpage (m³)
V_{R1} = Total volume of pumpage within R_1 (m³)

[8] Hunt, B., Scott, D., 2007: *Flow to a Well in a Two-Aquifer System.* ASCE Journal of Hydrologic Engineering, Vol. 12(2), p146-155

[9] The area of calculated drawdown exceeding 0.1m contributes over 95% of the cumulative volume of aquifer storage depletion.

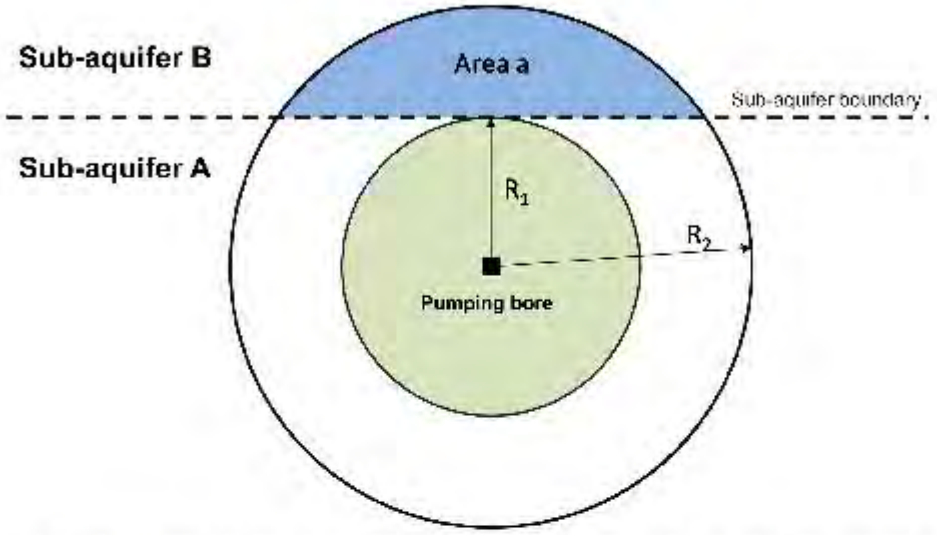

Figure 1. *Methodology used to develop an approximate relationship to account for cross boundary pumping effects in the Aupouri aquifer management unit*

Results of the assessment indicate an asymptotic relationship between distance from the sub-aquifer boundary (R_1) and the percentage of the total pumped volume derived from an adjacent sub-aquifer as shown in Figure 2 below. The figure indicates potential cross boundary effects decline relatively quickly from 50% of the pumped volume immediately adjacent to the boundary, to around 5% of the pumped volume for a bore located 2,000 metres from the sub-aquifer boundary. It is noted that the magnitude of cross boundary calculated cross boundary effect (in term of percentage of total volume pumped) is relatively insensitive to the assumed abstraction rate (between 10 and 50 L/s).

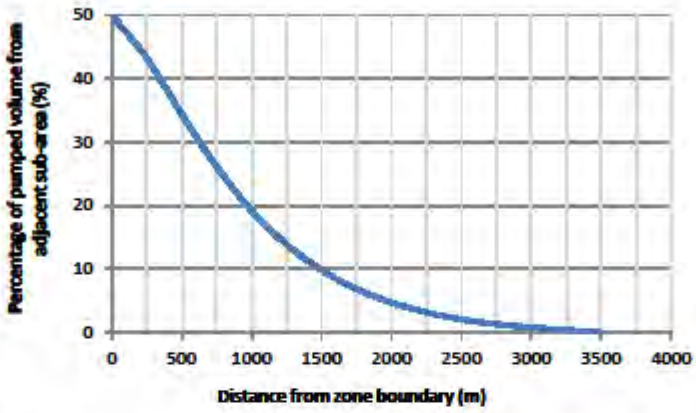

Figure 2. *Estimated (volumetric) cross boundary effect for a bore located at varying distances from a sub-area boundary*

Based on the relationship shown in Figure 2, Table 1 below provides a simple scheme that could be utilised by NRC to account for cross boundary effects when calculating cumulative allocation for individual sub-aquifers of the Aupouri aquifer management unit. The method provides a simple approximation for calculation of the portion of the total seasonal allocation included in the cumulative allocation for the sub-aquifer in which the pumped bore is located (sub-aquifer A) and adjoining sub-aquifer (sub-aquifer B).

Table 1. *Suggested methodology for attributing volumetric allocation between adjacent sub-aquifers of the Aupouri aquifer management unit.*

Pumped bore distance from sub-aquifer boundary (m)	Percentage of seasonal allocation from sub-aquifer A	Percentage of seasonal allocation from sub-aquifer B
0 - 500	55	45
500 - 1,000	75	25
1,000 - 1,500	85	15
1,500 - 2,000	95	5

However, it is noted that the proposed methodology:

- Is based on a range of assumptions related to aquifer hydraulic properties and the geometry of aquifer storage depletion. Future application of the regional-scale numerical groundwater

model developed by Lincoln Agritech (2015) for NRC could be utilised to validate the estimated magnitude of cross-boundary effects;

- Does not account for regional or sub-regional cumulative effects associated with multiple groundwater takes;
- Assumes a nominal pumping duration of 120 days which is a common assumption for horticultural irrigation on the Aupouri Peninsula. Takes for other uses (e.g. municipal supply) may have different pumping durations which will affect the potential magnitude of cross boundary effects;
- May not be applicable to small-scale groundwater takes (e.g. < 10 L/s); and
- Considers only a simple boundary geometry so may not be applicable at all locations in the Aupouri aquifer management unit (e.g. where more than 2 sub-aquifers occur in close proximity).

2. Conjunctive surface water and groundwater management

Policy D.4.18 of the pRPN specifies that that the Council will:

Apply minimum flows, minimum levels and allocation limits set for rivers, lakes and natural wetlands to water takes from aquifers that are directly or highly connected. An application to take water from an aquifer with direct or high hydraulic connectivity to a fully allocated river or which would result in flows or levels to be reduced below a minimum flow or minimum level will generally not be granted. A resource consent may be granted under D.4.19 'Exceptions to minimum flows or levels'.

The overall intention of the policy is to integrate the management of surface and groundwater resources so surface water depletion effects resulting from abstraction of hydraulically connected groundwater are managed in manner consistent with surface water management objectives.

2.1 Interaction between groundwater and surface water

In many parts of the Northland Region, lakes, rivers, streams, wetlands and aquifers form part of a complex, interconnected hydrological system. Recognition that surface water and groundwater resources within certain physical settings are fundamentally linked requires an integrated management approach to ensure sustainable management of the Regions water resources.

The concept of hydraulic connectivity describes the degree of interconnection between groundwater and surface water resources in a given environmental setting. The degree of hydraulic connectivity determines the potential timing and magnitude of effects on surface water flows and levels resulting from groundwater abstraction (referred to as surface water depletion). Groundwater and surface waterbodies can be regarded as exhibiting a high degree of hydraulic connectivity if water can readily flow from a surface water body into, or out of, a hydraulically connected groundwater resource. In contrast, stream-aquifer systems may be characterised as exhibiting low (or poor) hydraulic connectivity if the movement of water between these systems is limited. Natural stream-aquifer systems may range from highly to poorly connected, depending on local topography, geology and

climate conditions. As a result, the degree of connectivity between surface and groundwater may vary across a catchment reflecting local conditions.

In the Northland context, groundwater can be an important source of base flow for rivers and streams, particularly during dry periods. Examples of highly connected water resources may include:

- Shallow unconfined gravel aquifers which are recharged by flow loss from overlying rivers and streams;
- Streams draining sand or alluvial aquifers where groundwater discharge provides significant baseflow during low flow conditions; and,
- Springs and spring-fed streams originating from volcanic aquifers.

Examples of groundwater and surface water resources with a low degree of hydraulic connection include:

- Streams separated from an underlying aquifer by a layer of low permeability sediments;
- Streams overlying low permeability geological materials which contain a limited groundwater resource.

Drawdown of groundwater levels resulting from groundwater abstraction has the potential to impact on stream flow in hydraulically connected surface waterways. In the case of a losing stream, a reduction in groundwater levels due to abstraction increases the hydraulic gradient between the stream and aquifer, potentially resulting in an increased rate of flow loss from the stream. In the case of a gaining stream, the initial effect of abstraction is to reduce baseflow discharge. This reduction occurs because groundwater abstraction effectively intercepts a portion of the groundwater flowing through the aquifer that would otherwise have naturally discharged to the stream. However, if the pumping rate is high enough, or pumping continues for a sufficient period, groundwater levels may fall below the water level in the stream and the stream will start to directly lose water to the aquifer.

Where there is a high degree of hydraulic connection between surface water and groundwater, surface water depletion effects occur rapidly and may approach the rate of groundwater abstraction in a short period. Conversely, where there is a low degree of hydraulic connection, surface water depletion effects may take considerable time to develop and occur at a rate considerably lower than the rate of groundwater abstraction. The rate and timing of surface water depletion effects resulting from groundwater abstraction is influenced by a range of factors including:

- The rate of abstraction
- The distance between the pumping bore and adjacent surface waterways
- The hydraulic properties (permeability and storage characteristics) of the aquifer materials; and
- The permeability of materials accumulated on the streambed (referred to as the streambed *clogging layer*)

Policy D.4.18 proposes application of *minimum flows, minimum levels and allocation limits set for rivers, lakes and natural wetlands to water takes from aquifers that are directly or highly connected.*

Given the large number of small streams in the Northland Region the intent of this Policy is to ensure flows and water levels in surface waterbodies do not decline below appropriate environmental thresholds due to the combined effects of groundwater and surface water abstraction. This management approach has been termed *conjunctive water management*.

2.2 Submissions on Policy D.4.18

Submissions on Policy D.4.18 of the pRPN specifically related to conjunctive surface and groundwater management can be classified as falling into three groups:

- Submissions supporting retention of the Policy as proposed (Balle Bros Group, Northland Fish and Game);
- Submissions seeking minor amendments to policy wording (Far North District Council, Fonterra, Hitaitaimarangi Marae 339 Trust, and GBC Winstone); and
- Submissions requesting greater clarity in the definition of 'directly or highly connected' and greater certainly regarding management of allocation and application of surface water minimum flows (Horticulture New Zealand, Irrigation New Zealand)

Submissions by both Horticulture New Zealand and Irrigation New Zealand provide suggested wording for amendments to the clarify the wording and application of the proposed Policy. The Horticulture New Zealand submission seeks inclusion of a new definition for direct or highly connected aquifers:

> *An aquifer where river depletion after a period of 90 days at the maximum pumping rate is greater than 60 percent of the pumped groundwater volume*

The Irrigation New Zealand Submission requests inclusion of a new Appendix which would specify a method for determining hydraulic connection along with a schedule for determining allocation and minimum flow restrictions[10]:

> *Direct stream depletion is where the modelled effect of 7 days steady continuous groundwater abstraction on the surface waterbody is greater than 90%*
>
> *High stream depletion is where the modelled effect of 7 days of steady continuous groundwater abstraction is greater than 90% but where 150 days of steady continuous groundwater abstraction is greater than 60%*
>
> *Moderate stream depletion is where the modelled effect of 150 days of steady continuous groundwater abstraction of the surface waterbody is less than 60% but greater than 40%, or where the effect of 150 days of continuous steady groundwater abstraction on the surface waterbody is less than 40% but pumping the annual volume over 150 days at a steady continuous rate is greater than 5 L/s*

[10] The proposed wording of the Appendix essentially follows that specified in Schedule 9 of the Canterbury Land and Water Regional Plan

Low stream depletion is where the effect of 150 days of steady continuous groundwater abstraction on the surface waterbody is less than 40% and the effect of pumping the annual volume over 150 days at a continuous steady rate is less than 5 L/s.

Effect	*Amount in surface water allocation limit*	*Amount in groundwater allocation*	*Pumping schedule*	*Flow restrictions*
Direct	*Maximum daily rate of take and 100% of the annual volume*	*None*	*N/A*	*Yes*
High	*Estimated effect using the pumping schedule and 75% of the annual volume*	*25%*	*150 days*	*Yes- if more than stream depletion effect cut-off*
Moderate	*Effect estimated using the pumping schedule and 50% of the annual volume*	*50%*	*150 days*	*No*
Low	*None*	*100%*	*N/A*	*No*

The Irrigation New Zealand submission also provides a suggested addition to cover the situation where groundwater abstraction occurs via a borefield (i.e. multiple bores operating under a single consent) rather than from a single production bore.

2.3 Discussion

Given the limited specificity in Policy D.4.18 as proposed, I consider there is merit in considering submissions from Horticulture New Zealand and Irrigation New Zealand which seek to provide greater certainty regarding to resource users and stakeholders regarding groundwater takes that may be subject to surface water allocation and minimum flow provisions. Ideally the Policy should:

- Provide a methodology to enable relatively straightforward identification of groundwater takes which are subject to Policy D.4.18. The methodology should include specification of appropriate parameters for calculation of surface water depletion including a pumping schedule (rate and duration) for takes of differing scale and duration;
- Provide a methodology for division of allocation between surface water and groundwater;
- Identify groundwater takes subject to surface water minimum flows and water level restrictions.

A discussed in the previous section, it is important to note that the magnitude and timing of surface water depletion[11] effects resulting from groundwater abstraction depend on a wide range of factors

[11] Reference is made to '*surface water depletion effects*' rather than '*stream depletion effects*' to reflect application of Policy D.4.18 to all surface waterbodies including rivers, streams, lakes and wetlands.

including the hydraulic properties of the aquifer system as well as the location and rate of pumping. Due to the buffer provided by aquifer storage, surface water depletion effects tend to be diffuse, lag changes in abstraction rate and occur at a rate lower than the overall rate of groundwater abstraction. As a consequence, there are no clear thresholds between insignificant and significant effects so it is necessary to define arbitrary criteria to determine those groundwater takes that may have a sufficiently large effect on hydraulically connected surface water to warrant inclusion in surface water allocation volumes and which may be amenable to mitigation by application of pumping

As proposed, Policy D.4.18 would apply to groundwater takes classified as having a direct or high degree of hydraulic connection. For the purposes of providing clarification of takes intended to be included in Policy D.4.18 as notified, the following definitions are suggested:

Direct hydraulic connection

Groundwater takes that result in a direct and immediate surface water depletion effect which approximates the overall rate of abstraction. Groundwater takes with a direct hydraulic connection can be considered analogous to surface water takes.

High hydraulic connection

Groundwater takes that result in a surface water depletion effect which:

- *Develops rapidly following the start of pumping;*
- *Comprises a significant proportion of water abstracted after pumping for an extended period; and*
- *Dissipates relatively rapidly following cessation of abstraction.*

2.4 Recommendation

Given the limited specificity provided by the proposed wording of Policy D.4.18, it is suggested the NRC consider providing a methodology or schedule that provides plan users with greater clarity regarding the classification and management of hydraulically connected groundwater abstraction.

Although, as described in the previous section, thresholds for the management of surface water depletion effects are relatively arbitrary, there is a degree of commonality between hydraulic connection categories and associated management approaches adopted in various Regional Plans[12] across New Zealand that are broadly similar to those sought in the submissions from Irrigation New Zealand and Horticulture New Zealand.

Table 2 provides a suggested approach that could be adopted by NRC to provide greater certainty with regard the classification and management of hydraulically connected groundwater abstraction. As proposed, the schedule would exclude takes classified as having a high degree of hydraulic

[12] Including relevant Regional Plans in the Hawke's Bay, Horizons, Greater Wellington, Canterbury and Southland Regions.

connection with a daily average abstraction rate of take less than 1 L/s from minimum flow restrictions. This exclusion is proposed to retain the reliability of supply for small takes (typically stock, domestic or farm water supplies) which have a relatively minor effect on surface water flows, while capturing effects associated with larger-scale abstraction. However, under the proposed schedule calculated surface depletion effects from takes <1 L/s would still be included in the cumulative allocation for the relevant surface water body.

It is also noted that the proposed pumping schedule for groundwater takes classified as having a direct or high hydraulic connection is based on the maximum pumping rate calculated over a period of 7 days (to allow for the effects of intermittent abstraction), rather than seasonal average pumping rate (i.e. the seasonal volume dived by the nominal duration of abstraction). Use of the maximum (short-term) abstraction rate is considered appropriate for the following reasons:

- Many aquifers in Northland (particularly those hosted in volcanic rocks) tend to have low storage. As a consequence surface water depletion effects can manifest in hydraulically connected waterbodies in response to pumping over relatively short durations; and
- Abstraction for many groundwater takes tends to occur close to maximum authorised rates during extended dry periods. Due to the relatively small size of many Northland catchments, this period of maximum abstraction tends to occur when flows are at or near minimum flow thresholds. Use of maximum short-term abstraction rates to calculate the magnitude of surface water depletion effects will ensure a conservative approach to estimates of cumulative surface water allocation.

The proposed pumping schedule also differentiates between short term abstraction (e.g for irrigation) and longer-term abstraction (e.g. for water supply or industrial use). For seasonal abstraction, the pumping period for assessment of surface water depletion effects is calculated as a maximum continuous period of pumping possible until the seasonal volume is utilised. For takes with a nominal pumping duration greater than 150 days, it is proposed the assessment of surface water depletion effects assume a 150 days period of continuous abstraction. The proposed 150 days assessment period recognises the following considerations:

- For takes with a high degree of hydraulic connection, the calculated magnitude of surface water depletion increases rapidly following commencement of pumping then levels out over time. As a result, assumption of longer abstraction periods will not significantly influence the calculated magnitude of surface water depletion effects; and
- Few year-round takes pump continuously at the maximum authorised rate. Most (e.g. public water supply) exhibit some degree of seasonality.

***Table 2** Suggested schedule for classifying and managing groundwater takes with a direct or high degree of hydraulic connection to surface water*

Hydraulic Connection Category	Classification	Pumping schedule	Management Approach
Direct	Where the calculated surface water depletion effect is assessed as greater than 90% of the abstraction rate determined by the pumping schedule.	Abstraction rate equivalent to the maximum 7 day volume averaged over 7 days. Pumping duration of 7 days continuous abstraction.	The groundwater take will be managed as an equivalent surface water take for allocation purposes and subject to minimum flows and water levels established under Policy D.4.14 and Policy D.4.15
High	Where the take is not classified as having a direct hydraulic connection and the calculated surface water depletion effect is greater than 60% of the abstraction rate determined by the pumping schedule.	Abstraction rate equivalent to the maximum 7 day volume averaged over 7 days. Pumping duration is calculated as follows: i. For takes with a pumping duration less than 150 days, the maximum continuous period of abstraction at the abstraction rate, until the seasonal volume is fully utilised. ii. For takes with a pumping duration in excess of 150 days, a pumping duration of 150 days will be assumed.	The calculated surface water depletion effect is included in the surface water allocation regime established under Policy D.4.16. The remainder of the seasonal volume is managed as groundwater allocation. Takes with a daily average abstraction rate greater than 1 L/s are subject to relevant minimum flows water and levels established under Policy D.4.14 and Policy D.4.15.

As proposed, Rule C.5.1.5 only applies to groundwater takes classified as having a direct or high degree of hydraulic connection. However, in many situations, groundwater takes with a lower degree of hydraulic connection than those classified as direct or high may also contribute to cumulative depletion of surface water flows and levels. While such takes may contribute to cumulative surface water depletion, they are less amenable to pumping regulation by application of minimum flow controls due to the lag between pumping and consequent effects on surface water.

Addition of surface water depletion assessment criteria to include hydraulically connected groundwater with a 'moderate' hydraulic connection is sought in the submission by Horticulture New Zealand. If the Council were of a mind to accept this submission, Table 3 provides suggested criteria for the widening of the classification and management of hydraulically connected groundwater takes to include takes which result in surface water depletion equivalent to a significant proportion of the overall rate of take (between 40 to 60 percent of the pumping rate) but which many not be amenable to effective regulation by pumping controls. It is noted that proposed assessment criteria are based

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on the average long-term pumping rate (i.e. seasonal volume divide by nominal duration of abstraction) to reflect the increased lag between pumping and resultant surface water depletion effects.

Table 3. *Suggested schedule for classifying and managing groundwater takes with a moderate degree of hydraulic connection to surface water*

Hydraulic Connection Category	Classification	Pumping Schedule	Management Approach
Moderate	Where the take is not classified as having a direct hydraulic connection and the calculated surface water depletion effect is between 40% and 60% of the abstraction rate determined by the pumping schedule.	Abstraction rate equivalent to the seasonal volume divided by the nominal duration of the pumping season. Duration of abstraction based on nominal duration of pumping, up to a maximum of 150 days.	The calculated surface water depletion effect is included in the surface water allocation regime established under Policy D.4.16. The take is not subject to surface water minimum flows and water levels

2.5 Implementation of Policy D.4.18

Specific points to assist implementation of the Policy D.4.18 (that could potentially be included as additional wording in a surface water depletion schedule) include:

a) Assessment of hydraulic connection will be supported by a conceptual hydrogeological model that characterises the nature of local surface water/groundwater interaction. Estimation of the magnitude of surface water depletion will be undertaken using relevant analytical or numerical assessment techniques which are suitable for application in the hydrogeological setting identified;

b) Representative hydraulic properties for assessment of the magnitude of surface water depletion will be derived from aquifer testing as well as assessment of representative values from the wider hydrogeological environment;

c) Waterbodies characterised as ephemeral[13] will be excluded from consideration of surface water depletion effects;

d) Assessment of surface water depletion effects will take into account any non-consumptive component of the groundwater take[14];

[13] Not currently defined in the glossary but referred to in Rule C.8.2.1

[14] As requested in the submission by Fonterra

on the average long-term pumping rate (i.e. seasonal volume divide by nominal duration of abstraction) to reflect the increased lag between pumping and resultant surface water depletion effects.

Table 3. *Suggested schedule for classifying and managing groundwater takes with a moderate degree of hydraulic connection to surface water*

Hydraulic Connection Category	Classification	Pumping Schedule	Management Approach
Moderate	Where the take is not classified as having a direct hydraulic connection and the calculated surface water depletion effect is between 40% and 60% of the abstraction rate determined by the pumping schedule.	Abstraction rate equivalent to the seasonal volume divided by the nominal duration of the pumping season. Duration of abstraction based on nominal duration of pumping, up to a maximum of 150 days.	The calculated surface water depletion effect is included in the surface water allocation regime established under Policy D.4.16. The take is not subject to surface water minimum flows and water levels

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[13] Not currently defined in the glossary but referred to in Rule C.8.2.1

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Application of the suggested management approach for hydraulically connected groundwater takes outlined in Table 2 (and Table 3) above would enable management of localised and cumulative surface water depletion effects in a manner equivalent to surface water allocation under Policies D.4.14, D.4.15 and D.4.16.

Where allocation is available under Policy D.4.16, a water permit for a groundwater take classified as having a direct or high hydraulic connection to an adjacent surface waterway could be granted. The calculated surface water depletion effect would be managed as an equivalent surface water take at the closest point on the surface water network for the purposes of calculating cumulative allocation, either at the assumed point of take or in the downstream catchment. Where no allocation is available in the surface waterbody, the take would not be granted. Similarly, any take classified as having a direct or high degree of hydraulic connection would be subject to the minimum flow applicable at the relevant point in the surface water network.

Given the suggested linkage to policies establishing allocation limits and minimum flows and water levels in surface waterbodies (Policy D.4.14, Policy D.4.15 and Policy D.4.16, it is not considered that Policy D.4.18 requires any specific reference to stream size. Application of surface water allocation and minimum flow and water level criteria will ensure effects of groundwater takes classified as having a direct or high degree of hydraulic connection are managed in accordance with the particular management objectives established for the relevant waterbody.

3. Water take associated with bore development, pump testing or dewatering

Rule C.5.1.5 of the pRPN specifies that:

The taking of groundwater associated with bore development, bore testing, or dewatering by pumping is a permitted activity, provided:

1) *in coastal aquifers:*
    a) *the site of the bore or ground dewatering does not occur within 200 metres of mean high water springs, and*
    b) *the daily volume of the water taken does not exceed 100 cubic metres per day, and*
    c) *the activity is completed within seven days of its commencement, or*
2) *in other areas, the activity is completed within seven days of its commencement and the average rate of take does not exceed 1000 cubic metres per day, and*
3) *the activity does not adversely affect the reliability of water supply of an authorised water take, and*
4) *the activity is not in a natural wetland or does not cause any permanent change to water levels in any natural wetland, and*
5) *any resulting settlement or reduction in groundwater levels does not cause adverse effects on buildings, structures, underground infrastructure or services.*

3.1 Submissions on Rule C.5.1.5

Submissions received on Rule C.5.1.5 can be grouped under four themes:

- Support for the Rule as proposed (Balle Bros Group, GDC Winstone, KiwiRail, Spark New Zealand Trading Ltd, Tegal Foods Ltd)
- Submissions seeking amendments to the rate and volume of abstraction authorised for aquifer testing, specifically referenced to the Aupouri aquifer (Hayward Family Trust, Honeytree Farms Ltd, KSL Limited, Motutangi Waiharara Water User Group, Horticulture New Zealand);
- Inclusion of dewatering for installation of underground tank pits (subject to specific controls) and cross reference to discharge rules for aquifer testing (The Oil Companies);
- Amendment of the rule to address potential effects of acid sulphate soils (Whangarei District Council, Far North District Council).

In addition to submissions received, NRC also sought comments regarding the proposed set-back distance in coastal aquifers and high-volume pump testing in the Aupouri aquifer.

3.2 Discussion

3.2.1 Coastal aquifers

The Northland region contains numerous coastal aquifers. Such aquifers are often hosted in fine-grained sediments which form unconfined to semi-confined aquifers that have restricted spatial extent. Due to their limited water budget and localised pressures due to existing levels of resource use, such aquifers require careful management to ensure water quality is not adversely impacted by seawater intrusion.

As proposed, Rule C.5.1.5 would provide for small-scale, short duration groundwater abstraction for bore development, aquifer testing and dewatering in coastal aquifers provided the take is located greater than 200 metres from mean high water springs. Specific controls on the rate, duration and location of abstraction are proposed ensure that such abstraction does not exacerbate risks to water quality (associated with saline intrusion) in such areas.

Given the typical hydraulic properties of such aquifer systems, and the fact that seawater intrusion is a gradual (rather than immediate) response to a reduction in groundwater levels along the coastal margin, the proposed permitted activity thresholds would appear to provide a suitably conservative approach to ensure abstraction authorised under Rule C.5.1.5 result in less than minor effects on the environment. In particular, the proposed restriction of pumping duration to a maximum of seven days will ensure effects are transitory, even in situations where a coastal aquifer may be semi-confined at depth (i.e. exhibit limited storage). Saline intrusion typically occurs over a timescale of months to years, so short-term abstraction is unlikely to significantly increase risks to water quality, even at a local-scale.

3.2.2 Aquifer testing in the Aupouri aquifer management unit

As noted by several submitters, the target water-bearing layer for large-scale groundwater development in the Aupouri aquifer management unit is typically a shellbed layer which occurs near the base of the sedimentary sequence. This unit exhibits moderate permeability which, combined with significant available drawdown, means bores screened in the unit are generally high yielding. As a result, aquifer testing required to support resource consent applications typically requires pumping at rates exceeding those specified in Clause 2 of Rule C.5.1.5.

Pumping test information provides valuable information that enables characterisation of the hydraulic properties of the source aquifer, particularly in areas such as Aupouri where existing hydrogeological information may be limited. Given the proposed Plan does not contain any specific requirements for aquifer testing to support water permit applications, enabling such testing as a permitted activity may help ensure such information is collected as a matter of course during drilling investigations.

However, in a majority of instances, adequate information to characterise aquifer hydraulic properties can be obtained from an aquifer test of shorter duration than the 10 day duration proposed in Clause 2. Given the potential sensitivity of the Aupouri aquifer system to abstraction, particularly in areas where significant development has already occurred, it is suggested that the Council consider increasing the maximum rate for aquifer testing as a permitted activity to 2,500 m^3 (as requested by submitters) but decrease the duration permitted from 10 days to 3 days.

The suggested change would enable large-scale aquifer testing to be undertaken for a continuous duration of 72 hours, which in a majority of instances is likely to be sufficient to provide data to characterise aquifer hydraulic properties. While abstraction at higher rates will potentially increase the magnitude of localised drawdown in the vicinity of the pumped bore, the overall (volumetric) effect on the aquifer would be similar to that which would be permitted under Rule C.5.1.5 as proposed (i.e. 7 days at 1,000 m^3/day = 7,000 m^3 vs 3 days at 2,500 m^3/day = 7,500 m^3). The reduced duration would also ensure that drawdown effects remain localised in the immediate vicinity of the pumped bore thereby reducing the potential for adverse effects on existing groundwater users.

It is however suggested that

3.3 Dewatering for installation or replacement of underground storage tanks

Submission on Rule C.5.1.5 by The Oil Companies seeks to amend Clause 2 to provide a specific provision related to dewatering of underground excavations where:

b. the activity is dewatering for construction, installation or maintenance of underground equipment (generally underground storage tanks) or foundations where the sides of the excavation are sheet piled or boxed to stem the lateral flow and the activity is completed within 10 days of its commencement

The submission notes that such activities are likely to be required at facilities with underground tanks once every 15 to 20 years. The procedure typically involves installation of sheet piles (or similar) to prevent the lateral ingress of water into the excavation, with dewatering only undertaken at a rate sufficient to lower the water table to the base of the excavation. Dewatering flows are treated and

returned to the nearby receiving environment. The submission also notes that while initial short-term dewatering rates of up to 40 L/s may be required, experience indicates longer-term pumping rates typically stabilise around 10 L/s (obviously varying depending on the hydrogeological environment).

The proposed amendment covers an activity that is an integral part of maintaining important infrastructure which occurs on an infrequent and short-term basis, and is essentially non-consumptive (although not all water may necessarily return to the source waterbody depending on discharge arrangements). The suggested amendment also requires that mitigation measures (i.e. sheet piling) are put in place to mitigate the potential magnitude of effect. Given these factors, it would seem reasonable that the Council consider the amendment sought.

The Oil Companies submission also seeks addition of a cross reference in Rule C.5.1.5 to the corresponding discharge rule (Rule C.6.9.5). The suggested amendment would provide a useful reference to Plan users highlighting specific water quality requirements for discharge associated with bore development, testing and dewatering as a permitted activity.

3.4 Acid sulphate soils

Submissions from Whangarei District Council and Far North District Council seek amendment of the rule to address potential effects associated with acid sulphate soils. As detailed in the Whangarei District Council submission, dewatering of acid sulphate soils may result in oxidation of sulphide compounds leading to acidification of groundwater. This process can potentially result in leaching of heavy metals into solution resulting in adverse effects on aquatic organisms and water quality in receiving downstream environments.

Adverse water quality effects associated with dewatering of acid sulphate soils is an appropriate concern where large-scale, permanent dewatering of soil materials occurs (e.g. through land drainage). However, Rule C.5.1.5 relates to short-term, small-scale abstraction which have relatively transitory effects and therefore are unlikely to pose a significant risk of resulting in adverse water quality effects.

3.5 Suggested amendments to Rule C.5.1.5

The taking of groundwater associated with bore development, bore testing, or dewatering by pumping is a permitted activity, provided:

1) in coastal aquifers:

a) the site of the bore or ground dewatering does not occur within 200 metres of mean high water springs, and

b) the daily volume of the water taken does not exceed 100 cubic metres per day, and

c) the activity is completed within seven days of its commencement, or

2) in the Aupouri aquifer management unit

a) the daily volume of water taken does not exceed 2,500 cubic metres per day and

b) *the activity does not result in groundwater levels falling below 1 m above mean sea level within 200 metres of the coastal margin; and either*

i. *the activity is completed within seven days of its commencement for takes up to 1,000 m^3/day, or*

ii. *the activity is completed within three days of its commencement for takes up to 2,500 m^3/day.*

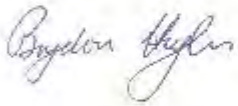
~~23)~~ *in other areas*

a) *the activity is completed within seven days of its commencement and the average rate of take does not exceed 1000 cubic metres per day, or*

b) *the activity is dewatering for construction, installation or maintenance of underground equipment (generally underground storage tanks) or foundations where the sides of the excavation are sheet piled or boxed to stem the lateral flow and the activity is completed within 10 days of its commencement, and;*

c) *the activity does not result in groundwater levels falling below 1 m above mean sea level within 200 metres of the coastal margin; and either*

Yours Sincerely



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