

BEFORE THE PROPOSED NATURAL RESOURCES PLAN HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of Water Quality
AND

IN THE MATTER of the submissions and further
submissions set out in the S42A
Officer Report

**STATEMENT OF PRIMARY EVIDENCE OF GERARD WILLIS
ON BEHALF OF WELLINGTON REGIONAL COUNCIL**

TECHNICAL – NUTRIENT MANAGEMENT PLANNING

12 January 2018

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1. SUMMARY

- 1.1 My name is Gerard Matthew Willis. I am a director of Enfocus Ltd, a resource management consultancy based in Pukekohe. I have practised as a planner and resource management specialist for the past 28 years. I hold a Bachelor of Regional Planning (Hons) degree from Massey University and am a full member of the NZ Planning Institute. A full copy of my qualifications and experience is available in **Attachment A** of my evidence.
- 1.2 I rely in part on the evidence set out in the Section 42A Report as well as the technical evidence and Mr Dave Grimmond, Dr Michael Greer, Dr Ton Snelder, Dr Alexander (Sandy) Elliot and Dr Richard Storey (for Greater Wellington).
- 1.3 My evidence addresses matters raised in the submission of Wellington Fish and Game Council (**Fish and Game**) in relation to proposed nutrient management (non point source discharge) provisions and in particular, interim in-stream concentration and leaching limits.
- 1.4 There is an element of overlap between this evidence and the Section 42A Report. That is largely unavoidable as this evidence is designed to be a “stand alone” analysis of the key issue of nutrient discharge management.
- 1.5 I have developed this evidence by reviewing the Fish and Game submission and the evidence in support of that submission provided as part of the Hearing Stream 1. I compared the planning proposals contained therein to:
- (a) the regime included in the Proposed Natural Resource Plan for the Wellington Region (**PNRP**); and
 - (b) the regimes adopted in recent years by other regional councils.
- 1.6 I also applied my experience in commenting on the issues and challenges associated with the Fish and Game proposals, the necessity for the Council to adopt those proposals at this point and the risks of doing so. In illustrating some of the risks I have

discussed the experience in implementing Horizon's One Plan.

1.7 In summary, my evidence makes the following points:

- (a) The Wellington Regional Council (**Greater Wellington**) is not required to fully implement the National Policy Statement for Freshwater Management (**NPSFM**) at this time. The approach of proposing a framework set of provisions for managing water quality in this PNRP, to be followed by programmed plan changes that introduce catchment-specific freshwater objectives and limits, is provided for in the NPSFM and is consistent with every other regional plan notified since the 2014 amendment to the NPSFM (being the amendment that introduced the mandatory process for setting freshwater objectives).
- (b) Despite the above, there is an obligation on Greater Wellington to give effect to its section 30 functions, the relevant objectives of the RPS and the objectives of the NPSFM to maintain water quality in the interim period (i.e. until catchment-specific freshwater objectives and limits are introduced).
- (c) Maintaining water quality in the interim period need not involve setting interim freshwater objectives and nutrient limits (either instream dissolved inorganic nitrogen (**DIN**)/dissolved reactive phosphorus (**DRP**) limits or property-scale nitrogen (**N**) leaching limits).
- (d) To my knowledge, no other regional plan has introduced interim limits of the type proposed by Fish and Game.
- (e) The nature of interim regimes adopted by other regions has varied depending on the level of risk to water quality in the interim period. Where risk is high, interim regimes have included rules that limit future agricultural intensification (but not DIN/DRP or leaching limits). Where risk is not high interim regimes are much less regulatory in nature.
- (f) The reason why neither interim DIN/DRP nor interim leaching

limits have been introduced elsewhere is that such limits are technically difficult to get right, rely on information that often does not exist until catchment processes are conducted, and need to be developed in ways that allow their effect (including on social and economic conditions) to be fully understood. Interim limits set at an inappropriate level can compound adjustment costs once final catchment limits are introduced and/or lead to highly disruptive implementation challenges.

- (g) The DIN/DRP and leaching limits proposed by Fish and Game are not developed in a way that is consistent with practice elsewhere and do not appear to have been developed with an understanding of the level of adjustment required and the likely cost of that adjustment. Certainly no evidence to that effect was available at the time this evidence was prepared.
- (h) Fish and Game's proposed amendments to the planning regime for rural point source and non point source discharges and land use are not fully developed in the submission and it is difficult to provide an assessment of their effectiveness and efficiency. While a number of the proposals for planning tools and approaches (such as farm environment plans (**FEPs**) and nutrient budgeting) are used elsewhere, the value of them in the Wellington context in advance of whaitua processes is not compelling. That is especially so because freshwater objectives, limits/targets and associated planning provisions are programmed for the most intensively used agricultural catchment (the Ruamāhanga) within 12 months. Applying interim limits and potentially needing to issue consents in the interim period could lead to administrative complexities and potential inequities if "final" objectives and limits are not consistent with those interim limits.
- (i) Horizon's One Plan provides an example of what can occur when the effect of limits (and associated planning provisions) is not fully understood at the time of plan development. In that region, following declarations made by the Environment Court requiring strict adherence to the leaching limits and associated rules, the processing of applications has not been able to be

progressed due to concerns about the ability of applicants to provide the necessary information to allow applications to be assessed and the lack of a clear consenting pathway. An investigation of a possible plan change to remedy the situation is currently underway.

2. INTRODUCTION

2.1 My name is Gerard Matthew Willis. I am a director of Enfocus Ltd, a resource management consultancy based in Pukekohe. I have practised as a planner and resource management specialist for the past 28 years. I hold a Bachelor of Regional Planning (Hons) degree from Massey University and am a full member of the NZ Planning Institute. A full copy of my qualifications and experience is available in **Attachment A** of my evidence.

2.2 I rely in part on the evidence of Ms Rachel Pawson in the Section 42A Report as well as the technical evidence of, Mr Dave Grimmond, Dr Michael Greer, Dr Ton Snelder, Dr Alexander (Sandy) Elliot and Dr Richard Storey (for Greater Wellington). A copy of their qualifications and experience can be provided as required.

2.3 I have been engaged by Greater Wellington to provide evidence relating to nutrient management planning for Water Quality.

3. CODE OF CONDUCT

3.1 I have read the Environment Court's Code of Conduct for Expert Witnesses, and I agree to comply with it. My qualifications as an expert are set out above. I confirm that the issues addressed in this brief of evidence are within my area of expertise, except where I state I am relying on the evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

4. SCOPE

4.1 My evidence discusses the appropriateness of the interim limits regime proposed by the Wellington Fish and Game Council (**Fish and Game**) in respect of water quality, in particular, as water quality is affected by diffuse sources of contaminants.

- 4.2 It does so with reference to:
- (a) the National Policy Statement for Freshwater Management (NPSFM); and
 - (b) the obligations under section 32 (and section 32AA) of the Act to evaluate the effectiveness and efficiency of planning provisions and the risk of acting or not acting where there is incomplete information.
- 4.3 I also note Greater Wellington's obligations to give effect to its Regional Policy Statement (**RPS**) but I leave the detail of that analysis to Ms Pawson in the Section 42A Report.
- 4.4 There is an element of overlap between this evidence and the Section 42A Report. That is largely unavoidable as this evidence is designed to be a "stand alone" analysis of the key issue of nutrient discharge management.
- 4.5 My evidence draws on my experience with freshwater plans and freshwater planning provisions applied in other regions and on the implementation of those plans/provisions. I comment specifically on:
- (a) current and emerging planning practice in freshwater quality management; and
 - (b) the experience of the Horizons Regional Council in implementing One Plan (which, although not an interim regime, has some of the same characteristics as the regime proposed by Fish and Game for the Wellington Region).

5. SUMMARY OF FISH AND GAME'S EVIDENCE ON NUTRIENT MANAGEMENT AND INTERIM LIMITS

- 5.1 The Fish and Game submission seeks a wide range of amendments to objectives, policies and rules relating to water quality. For the purpose of this evidence, the key amendments sought by Fish and Game are:
- (a) Elevation of Tables 3.1 to 3.4 (via a fundamental redrafting of Objective 024) so that achievement of the tables' attributes states becomes the central objective of *land use* management.

- (b) Amendment of Tables 3.1 to 3.4 and inclusion of a new Table 3.4a¹ such that they include DRP and DIN attribute states (as well as numeric objectives for temperature, pH, dissolved oxygen (**DO**) clarity and toxicants).
- (c) Amendment of Table 3.5 to include a numeric trophic level index (**TLI**) applicable to lakes (with the TLI to include nitrogen, phosphorus, clarity, sediment, macrophytes, DO and temperature). Set new objective for Lake Wairarapa of a TLI of 3 by 2030 and apply “standards” for TLI, chlorophyll a, secchi depth and TP and TN (by amending Policy P23)².
- (d) Amendment of Table 3.6 to replace narrative objectives with numeric states for “acceptable groundwater drinking concentrations”³ and addition of a new objective aimed at ensuring “land use provisions and rules” achieve the attributes states of Table 3.6 or otherwise maintain water quality.
- (e) Amendment to Policy 71 so that the standards of Table 3.4 and 3.4a apply (in addition to the proposed point source standards) to receiving waters in respect of both point source and non point source discharges.
- (f) Establishment of property-scale numeric nitrogen (**N**) and “where appropriate” phosphorus (**P**) leaching standards (on a per ha/year basis). Establishment also of standards (limits or targets) for sediment and E.coli.
- (g) Allocation of the total allowable load of nitrogen on the basis of either *“a flat per hectare allocation of nitrogen leaching (~15kg N/ha/yr) or a nitrogen leaching allowance per hectare based on allocation on a land use capability class basis, or some other methodology which achieves the efficient use of natural resources”*.

The submission itself includes a table of leaching limits described as *“the sought (sic) of LUC numbers that are*

¹ Table 3.4a, as proposed by Fish and Game, introduces standards for the same attributes as set out in Table 3.4 but applies them specifically to trout spawning and trout fishery rivers.

² The standards proposed for lakes are discussed in the evidence of Dr Michael Greer for the Council.

³ This matter is discussed in the evidence of Mr Graham Fenwick for the Council.

intended to be applied.” These are as follows:

LUC	I	II	III	IV	V	VI	VII	VIII
Year 1	20	18	16	14	13	10	8	2
Year 5	18	16	12	11	9	8	6	2

(h) Inclusion/amendment of associated policies and rules that regulate land use (both intensive and extensive) and associated discharges to meet specified standards. While the specifics of those changes are not entirely clear from the submission they appear to include the following:

- (i) A rule making new or intensified land use in an over allocated (for N) catchment a prohibited activity;
- (ii) Requirement to have a farm environment plan (FEP) and comply with specified practices as per those adopted in (parts of) Canterbury;
- (iii) Requirement to have a nutrient budget prepared by a qualified person;
- (iv) Exclusion of all livestock from rivers, lakes and wetlands; and
- (v) Establishment of a nutrient transfer or trading regime.

5.2 In summary, the core outcome of these amendments (if made) would be regulation of land use activities by imposition of N and possibly P property-scale leaching limits to achieve in-stream limits for (amongst other attributes) DIN and DRP. There would also be more numeric standards in relation to lakes (that would also include N and P and related “standards”).

5.3 In terms of rivers, the in-stream DIN and DRP limits would be those proposed in appendices 2 and 3 of the Fish and Game submission (in turn derived from the report *“Ecosystem and Nutrient Concentrations for Wellington Rivers and Streams (Death, undated)”* which is attached to the Fish and Game submission. In that report Professor Death suggests that *“nitrate concentrations to maintain*

MCI values range from 0.02 – 0.61 mg/l depending on river class⁴.

- 5.4 Other submitters, notably the Royal Forest and Bird Protection Society, Sustainable Wairarapa Inc and Rangitane o Wairarapa Inc, have made submissions that express a similar concern to that expressed by Fish and Game but have not suggested specific amendments or additional provisions.

6. METHODOLOGY

- 6.1 I am familiar with the provisions of the PNRP to which these proceedings relate. In preparing my evidence I have reviewed the relevant parts of the Section 32 report: Water quality and the Section 42A report: Water quality. I have also read the supporting documentation of the Council, and the relevant evidence presented on behalf of other submitters including, in particular, statements of evidence of the following witnesses for Fish and Game:

- (a) Mr Adam Canning (for Fish and Game) – as presented in hearing stream 1;
- (b) Ms Lucy Cooper (for Fish and Game) – as presented in hearing stream 1.

- 6.2 I have also reviewed the legal submissions of Ms Sarah Ongley for Fish and Game as were presented during hearing stream 1.

- 6.3 Having understood the relief sought by the submitter(s) I have evaluated those proposals against the PNRP as notified having regard to the matters described in paragraphs 4.2 and 4.3. I have also compared the proposal with the approaches recently adopted by other regional councils.

7. BACKGROUND: PROPOSED FRESHWATER MANAGEMENT FRAMEWORK

- 7.1 The overall approach to implement the NPSFM is outlined in sections 1.4 and 1.5 of the PNRP. There it states that five catchments are identified and that in each catchment a committee (“whaitua”) will continue to develop sections of the Plan related to their specific catchments. This will centre on developing

⁴ During the final stages of preparing tis evidence I received advice that Professor Death proposed to update these figures but at the time of writing updated numbers were not available to me.

recommendations for *limits* related to water quality. The PNRP provides a first step towards implementation of the NPSFM but does not purport to give full effect to it at this time. In that sense the provisions contained in the notified version are intended as establishing the transitional or *interim* regime until catchment plan changes are notified.

7.2 The core components of that regime, as included in the PNRP, are as follows.

- (a) An objective is set (Objective O23) such that water quality of the region's freshwater bodies and coastal marine area (CMA) is to be maintained or improved.
- (b) Numeric and narrative objectives relating to suitability of water for **contact recreation** and **Māori customary use** are set out in Tables 3.1, 3.2 and 3.3. The numeric objectives centre on pathogens (E.coli) and cyanobacteria.
- (c) Numeric and narrative objectives to safeguard **aquatic ecosystem health** and **mahinga kai** are set out in Tables 3.4 to 3.8. These centre on numeric objectives for periphyton and macroinvertebrates as well as narrative objectives for macrophytes, fish and mahinga kai species.
- (d) Policy 63 establishes that the water quality of **priority water bodies** (as scheduled) must be improved to meet (as a minimum) objectives in Tables 3.1, 3.2 and 3.3.
- (e) The NPSFM **interim policy** (policy A4) applies to discharge consents until such time as full implementation is given to the NPSFM.
- (f) In addition to the NPSFM interim policy, replacement **point source** discharges must improve water quality in water bodies that do not meet the Table 3.4, 3.5, 3.6 or 3.8 objectives. New point source discharges may only occur where water quality not meeting the objectives of those tables is not made worse (Policy P70).
- (g) **Discharge standards** relating to MCI effects, pH, clarity,

temperature and DO apply to point source discharges after reasonable mixing (Policy P71).

- (h) Managing **nutrient discharges** will involve use of good management practices, information gathering, integrated catchment management, regulatory and non regulatory methods and plan changes resulting from catchment-specific recommendations from whitua committees (Policy P65). As a component of that response rural land use is to be managed using good management practice (Policy P96). Specific limits or targets and/or an allocation framework will be established through the whitua processes.
- (i) The specific land use activities of **cultivation, break-feeding and stock access** are regulated (Rules R94 to R98). Earthworks and vegetation clearance are regulated under Rules R99 to R101. Aside from those rules, the “land use” component of farming activities (and any associated diffuse discharge) is not regulated, although agricultural discharges (associated with fertiliser, collected animal effluent, compost, farm dumps, silage and offal pits) are regulated under Chapter 5.3 of the PNRP.

7.3 In summary, the interim approach is:

- (a) To set interim numeric and narrative objectives for human and ecosystem health freshwater outcomes;
- (b) To set interim numeric *point source* discharge standards and regulate point source discharges to meet numeric and narrative objectives;
- (c) Exercise regulatory control over identifiable high risk land use activities;
- (d) Rely on non regulatory methods to manage more diffuse land use impacts until such time as Whitua committees report back on appropriate freshwater limits and outcomes for both lakes and rivers.

7.4 With regard to item (d) above, it is important to note that Mr Alastair

Smaill set out Greater Wellington’s intentions regarding the timing of these future limit setting plan changes in his evidence on Hearing Stream 1⁵. The timetable is set out in Table 1.

Table 1: Whaitua Implementation timetable as recorded in the Progressive Implementation Programme (PIP)

Whaitua	Collaborative process completion date/WIP completion	Notification of WIP implementing plan change
Ruamāhunga	May 2018	2018
Te Awarua-o- Porirua	June 2018	2018
Wellington Harbour and Hutt Valley	2020	2021
Kāpiti Coast	2022	2023
Wairarapa Coast	2023	2024

7.5 Finally it is important to note that, as expressly noted at page 26 of the *Section 32 report: Water quality*, and in the Hearing Stream 1 evidence of Mr Smaill, the objectives of section 3 of the PNRP, while objectives for the purpose of section 67 of the Act are not “freshwater objectives” for the purpose of the NPSFM, having not been formulated in accordance with Part CA of the NPSFM.

7.6 That is important for reasons I discuss at paragraph 9.15.

8. CURRENT AND EMERGING PRACTICE NATIONALLY

8.1 The approach to managing diffuse sources of contaminants and freshwater quality has been evolving since the first efforts were made in that regard in the form of Waikato’s Variation 5 in 2005. That initiative related to the Lake Taupo catchment, involved a relatively small number of affected properties, had the benefit of very substantial public funding (which effectively bought out privately held nitrogen leaching “rights”). Importantly, Variation 5 pre-dated the NPSFM. In my opinion little can be learnt from that example in terms of trends in, or validity of, current nutrient management practice.

8.2 The first broad scale effort to manage diffuse (agricultural) sources of contaminants was Horizons Regional Councils’ (**Horizons**) One Plan. That was notified in 2007 and although it was not made

⁵ Attached as Appendix B to the Section 42A report - Part A.

operative until 2014 (due to various appeals) its essential design predated the NPSFM. Some of the elements and approach of One Plan are consistent with the approach promoted through the NPSFM 2011 and in fact may have acted in part as a model for the NPSFM at the time. That includes the general approach of identifying values by catchment/waterbody, establishing objectives (called targets in One Plan) to protect/restore the community values, and the setting of limits to achieve (or in One Plan's case, achieve progress towards) the objectives. One Plan used a Land Use Capability (LUC)-based approach to setting property-scale limits on nitrogen (N) leaching. I discuss the various issues with One Plan's design and implementation in section 13 of this evidence. For current purposes it is necessary only to know that One Plan attempted a comprehensive⁶ and, more or less immediate, approach to regulating diffuse sources of contaminants from intensive farming activities.

8.3 The Canterbury Regional Council (ECan) has been at the forefront of regional water management policy since the Hurunui Waiau Plan in 2011. The catchment or "sub regional" approach to objective and limit setting is founded in Canterbury Land and Water Management Strategy (CLWMS). Under the CLWMS, Zone Committees were established to prepare Zone Implementation Plans (ZIPs) these sought to deliver on the ten priorities of the CLWMS. A key part of this was to jointly agree important water planning responses notably water quality (and quantity) objectives and limits. The Canterbury Land and Water Regional Plan (CLWRP) was notified in 2012. It provided an interim water quality management regime which broadly "held the line" in areas over-allocated for N until such time as the sub-regional plans were prepared with the benefit of the work of the zone committees. The CLWRP provided a framework within which detailed sub-regional plans could be added by variation/change. As the zone committees completed their work Change 1 (Selwyn–Waihora), Change 2 (Hinds), Change 3 (South Coastal Canterbury), Change 5 (Waitaki), Change 6 (Wairewa/Lake Forsyth) were notified and are progressively being incorporated as sub-regional sections of

⁶ All *new* intensive (dairy, horticulture, cropping and irrigated sheep and beef) farming was subject to consent and N leaching limits as well as *existing* intensive farming in targeted catchments.

the CLWRP⁷. These all include bespoke freshwater objectives and limits. Work continues on sub regional plans for other areas.

- 8.4 This approach was important for a number of reasons. Most importantly, it recognised that different catchments/sub-regions faced very different challenges. Furthermore, it allowed for a strongly collaborative approach to be taken to contentious issues that meant the statutory planning process that followed was less fractious and litigious that might have otherwise been the case⁸. It also meant that the detailed investigation and modelling work required to set appropriate limits and understand the full impact of those limits did not need to be rushed (and hence curtailed in scope and sophistication) in order to meet the CLWRP timetable. In short, time was provided to get the science right (or as right as possible given existing knowledge). Finally, the approach ensured that there was the capacity, in terms of appropriately skilled people, to undertake the necessary technical work.
- 8.5 The value of the Canterbury model (of setting a framework through a regional plan and then allowing key detail to be added through subsequent catchment-scale processes) becomes even more obvious following the issuing of amendments/additions to the NPSFM in 2014. The NPSFM 2014 introduced Part CA requiring councils “*through discussion with communities, including tangata whenua*” to develop freshwater objectives using a detailed and deliberative process set out in Policy CA2. In particular, Policy CA 2 f) requires a regional council to consider a wide range of matters that would be difficult to give proper attention to at a scale any larger than a catchment. (Part CA of the NPSFM is attached as Attachment 3).
- 8.6 It is not surprising, therefore, that following the roll out of the Canterbury model and the issue of the NPSFM 2014 almost every other regional council that has notified a region-wide plan adopted a similar approach. They too have proposed regional plans with

⁷ Plan Change 4 was also notified but dealt with miscellaneous administrative matters rather than a specific catchment. Similarly Change 5 also included changes to region-wide nutrient management provisions.

⁸ Although I also note that the Canterbury plans were prepared under the *Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010* which limited appeals of points of law.

“framework” nutrient management/diffuse discharge provisions while clearly setting out the plan for on-going development of catchment-specific provisions. This intent being recorded in progressive implementation programmes (PIPs) required under Part E of the NPSFM, and in the regional plans themselves.

- 8.7 Examples of this include not only Wellington’s PNRP but also the following regional plans⁹.
- (a) The Auckland Unitary Plan (notified 2013 – decisions 2016) manages discharges and land use according to NPSFM bottom lines and a macro invertebrate Index (MCI) guideline *“until such time as objectives and limits are established ...”*. The plan commits to developing specific objectives and limits for each Freshwater Management Unit with Mana Whenua, through community engagement, scientific research and mātauranga Māori. No interim DIN or DRP, or N leaching limits are set.
 - (b) The Gisborne Regional Freshwater Plan (GRFP) (notified 2015 – decisions 2017) provides for objectives, limits and targets to be provided in Catchment Plans. The GRFP currently only includes one catchment plan. Others will follow in time to give full effect to the NPSFM. The catchment plan that is included at this point (Waipaoa) contains no numeric limits at this time in respect of DIN or DRP (amongst others) on the basis that the information was not available for those limits to be reliably established. These will follow when enough information exists.
 - (c) The proposed Marlborough Environment Plan (notified 2016 – decisions pending) sets nitrate-nitrogen and ammoniacal nitrogen numerical freshwater objectives (consistent with the NPSFM) and other standards relevant to managing point source discharges but no interim DIN or DRP limits (or other cumulative contaminant limits) are set at this point. The plan refers to the Council’s PIP saying it will set such limits by

⁹ Note, I cite these examples not because they justify the approach proposed by the Proposed Plan, but simply to place the Proposed Plan in the context of the national response to implementing the NPSFM and to set out an alternative and more complete view of that context than that provided by Ms Cooper.

2024.

- (d) The proposed Southland Water and Land Plan (notified 2016 – decisions pending) proposes that subsequent plan changes will set objectives, limits policies and rules for each FMU that will be tailored to respond to the pressures faced within each catchment. This is to be completed by 2025. Although water quality standards are set (for attributes relating largely to point source discharges) no interim DIN or DRP limits are set.
- (e) The proposed Northland Regional Plan (notified 2017) contains “standards” for rivers in respect of just nitrate (toxicity) and ammonia (toxicity). A notation states that these standards will be replaced with numeric freshwater quality objectives in accordance with the regional council's programme for implementing the NPSFM. Again, that PIP allows for catchment processes to extend to 2025.

8.8 In short, the approach adopted by the PNRP is consistent with what I would describe as the trend in the way regional councils are addressing their responsibilities under the NPSFM. That is, the majority of regional plans notified since 2014 propose to address freshwater objectives and limits relating to diffuse discharges through subsequent plan changes. Most citing inadequate current understanding of the relationship between land use and water quality as the reason it cannot reliably set DIN and DRP limits (in particular) at the time of plan notification. Without DIN and DRP limits and corresponding loads, no allocation of N or P loss entitlement to the property scale (i.e. property scale leaching limits) is possible.

8.9 Certainly there are “outliers” being plans that have not taken the approach described above. These include One Plan (as already discussed) and Otago’s Change 6A to its Regional Plan¹⁰. Both of

¹⁰ The other outlier plan would be the Waikato Plan Change 1. However, two things distinguish that plan. Firstly, it only addresses the Waikato and Waipa catchments and not the entire region. Second, it is subject to Waikato Vision and Strategy being a statutory instrument that prevails over all other instruments including the NPSFM. In that sense it imposes obligations to restore the river over and above those of the NPSFM. That aside, it is important to note that Plan Change 1 imposes no N leaching limit at this time of the type sought here by Fish and Game - although existing farming must not exceed a N reference point that reflects past leaching. Further, the highest leaching 25% of farms must reduce leaching to the 75th percentile over time. Bay of Plenty Regional Council also notified Plan Change 10 in 2016 (making

those plans did, however, precede the amendment to the NPSFM in 2014 and the added requirements imposed by Part CA which significantly increased obligations associated with freshwater objective (and hence limit) setting.

8.10 It is important to record that none of the plans identified in paragraph 8.7 above have had their approach to nutrient management tested in the Environment Court. Nevertheless, it is my opinion that the weight of evidence presented in those processes, regarding the inability to set reliable limits at this point, and the calibre of decision-makers (with both Auckland and Canterbury panels being chaired by current or former Environment Court judges) means that considerable confidence can be placed in the viability of the approaches proposed.

9. NPSFM AND THE WATER QUALITY PROVISIONS OF THE ACT

9.1 The approach taken by the PNRP (and Canterbury, Auckland, Gisborne, Southland, Marlborough and Northland) is not, in my opinion in any way contrary to the NPSFM. I note that that planning interpretation is consistent with the legal opinion on this matter supplied by DLA Piper for Greater Wellington in response to the Panel's Minute No. 4 (dated 8 June 2017).

9.2 Part E b) of the NPSFM very clearly requires councils to implement the policy "*as promptly as is reasonable in the circumstances and so it is fully implemented by to 31 December 2025*". This may be extended until 31 December 2030 under certain circumstances (although as noted in Table 1 no such extension is planned here with the Council's PIP indicating the notification of the last of its five catchment plan changes in 2024).

9.3 In my opinion, whether it is reasonable in the circumstances to fully implement the NPSFM now, by including a full suite of freshwater objectives and limits/targets, depends on:

- (a) whether it has undertaken the technical work required to understand the relationship between land use and water

quality (as discussed in paragraphs 11.3 to **Error! Reference source not found.** below); and

- (b) whether a process has been undertaken that gives full and genuine effect to Part CA of the NPSFM (as discussed in paragraphs 11.11 and 11.12). I understand that processes are underway in that regard in the Wellington Region but are yet to be completed (i.e. the whitua processes).

9.4 Including detailed freshwater objectives and limits (for, in particular DIN and DRP) in the absence of (a) and (b) above, for the reasons given in later sections of this evidence, is not only unnecessary but also unwise and risks poor planning outcomes.

Interim obligations

9.5 Despite the above, there are obligations arising from the RPS, the NPSFM and the Act itself (and associated regulations) that apply to the preparation of plans in the interim period prior to full implementation of the NPSFM. These obligations include, in particular:

- (a) The obligation to recognise and provide for section 6 matters (including the natural character of wetlands, lakes, rivers and their margins and have particular regard to section 7 (including the protection of the habitat of trout and salmon).
- (b) The obligation under section 30(c) to control the use of land for the purpose of:
 - (i) maintaining and enhancing water quality; and
 - (ii) maintaining and enhancing ecosystems in water bodies.
- (c) The requirement under section 70 for the council to be satisfied that certain effects (including having any significant adverse effects on aquatic life) will not result from a discharge before that discharge can be provided for in a regional plan as a permitted activity.
- (d) The Resource Management (National Standards for Sources of Drinking Water) Regulations 2007.

- (e) Objectives and policies of the RPS to be given effect to (including, in particular, Objectives 12, 13 and Policies 12, 18). These provisions require the life-supporting capacity of freshwater to be safeguarded and healthy functioning aquatic ecosystems to be supported¹¹.
- (f) Objectives A1, A2, A3 and A4¹² of the NPSFM. These include the obligation under Objective A2 to maintain or improve overall freshwater quality.
- (g) Discharges must be managed in accordance with the NPSFM Policy A4 (incorporated in the PNRP as Policy P66). The NPSFM requires observance with Policy A4 until such time as changes are made to give effect to Policies A1 (which includes the establishment of freshwater objectives in accordance with Part CA) and Policy A2 (which requires councils to set targets that take account of the sources of contaminants recorded under Policy CC1).

9.6 In that regard, it is important to understand that while the full suite of freshwater objectives and limits need not be included in the PNRP at this point, there must be some assurance that water quality will not be degraded in the period before catchment plans are notified. The nature of plan approaches adopted in that regard varies according to the risk that occurs over that interim period. In areas with strong growth in, and pressure for continuing, land use change and intensification interim regulatory approaches have been adopted. Canterbury and Southland provide examples.

- (a) In Canterbury, the CLWRP imposed interim region-wide rules on land use that varied according to the nutrient management zone (four zones were identified indicating different levels of nitrogen allocation status/risk). The rules are complex and need not be explained here but in broad terms they sought to cap leaching at current, or “baseline”, rates (estimated using OVERSEER) in red (over allocated) zones while allowing for

¹¹ A review of the consistency with the RPS is set out in Ms Pawson’s evidence.

¹² Objective A4 was added in the 2017 amendment to the NPSFM. Although the proposed plan was notified before the 2017 amendment was gazette, it is my understanding that in the absence of any transitional provision the proposed plan but give effect to latest (current) version of the NPSFM

limited increase in Green (under allocated) zones¹³. Those region-wide rules are over-ridden by new rules introduced through sub-regional plans (already the case over large parts of Canterbury).

- (b) In Southland, interim rules manage dairy farming by limiting the number of cows on properties over 20 hectares to those farmed at the time of plan notification. Consent is required for conversion to dairy farming. Other rules manage intensive winter grazing being an activity of specific risk in that region.

9.7 The situation faced in the Auckland, Gisborne, Marlborough and Northland, regions is, however, quite different with significantly less rural land use intensification risking the maintenance of water quality. The regulatory approach to managing farming activities in those regions in the interim period may be summarised as follows:

- (a) The Auckland Unitary Plan contains no rules controlling farming activities as land uses. Regulatory control is exercised over rural production discharges¹⁴ and stock access to waterbodies¹⁵.
- (b) The diffuse discharge provisions of the Gisborne Freshwater Plan focus on implementing good management practice. Existing dairy farming (and other intensive farming) is a permitted activity conditional on the farm having an FEP prepared and stock excluded from water bodies. New intensive farming, cropping and vegetable growing is also permitted subject to an FEP and other standards (but not including N leaching standards).
- (c) The Marlborough Environment Plan permits existing farming as a use of land, including dairy farming, without any specific nutrient management conditions. Any new dairy farm is a discretionary activity. Other rules control rural production discharges and stock exclusion.

¹³ Ms Cooper's evidence that the CLWRP "*caps the permitted nitrogen loss calculation for farming activities at 10kg per hectare per annum*" is incorrect.

¹⁴ Such as discharges of dairy shed effluent, discharges from silage storage etc.

¹⁵ As a comparison with Wellington (see para 0) it may be useful to note that Auckland has a significantly larger dairy footprint than Wellington – approximately 47,000 cows on 110,000 hectares.

- (d) The proposed Northland Regional Plan does not control farming activities as a land use but like the other plans controls rural production discharges and stock access.

9.8 The interim approach taken by these other regional councils is tailored according to:

- (a) land use change and intensification trends and pressure faced;
- (b) water quality state and trends; and
- (c) the programmed timing of the notification of catchment-scale objectives and limits.

9.9 For the reasons set out in section 10 the situation faced in Wellington is, in my opinion, more similar to Auckland, Gisborne, Marlborough or Northland than it is to Canterbury or Southland¹⁶. That is, risk of significant land use intensification and hence pressure on water quality is low in the foreseeable future. Accordingly, when comparing interim regimes (i.e. the rules that apply before catchment limit setting processes are completed), it is those councils that provide the most valid benchmark of current and emerging practice.

Interim DRP and DIN elsewhere

9.10 It is important also to note that although some regions have relatively stringent interim regulatory regimes (notably Canterbury and Southland), none have presumptively proposed interim DRP or DIN limits ahead of catchment processes nor have they attempted to set property-scale leaching limits (other than keeping farms to existing leaching rates in the case of Canterbury).

9.11 In summary, I do not agree with Ms Cooper's suggestion at para 53 of her evidence that "*the lack of regulatory oversight proposed in the pPNRP over agricultural land uses known to contribute to declining water quality stands out as an exception to a general trend in regional planning*". In my opinion, the evidence (outlined above) suggests otherwise.

¹⁶ That is consistent with the analysis set out at section 2.2 of the Section 32 Report.
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Relevance of Section 32 in evaluating interim rules

- 9.12 It is also important to note the importance of section 32 in this analysis. The effect of section 32 was recently emphasised by the Environment Court in *Royal Forest & Bird Protection Society Inc v Whakatane District Council [2017] NZEnvC 051* in a case that concerned the appropriate activity classification for the clearance of significant indigenous vegetation. In that decision, in the context of deciding an appropriate rule framework under section 32 of the RMA, the Environment Court led by Judge Kirkpatrick confirmed at paragraph 59:

[59] In considering what rule may be the *most appropriate* in the context of the evaluation under s 32 of the Act, we consider that notwithstanding the amendments that have been made to that section in the meantime, the presumptively correct approach remains as expressed in *Wakatipu Environmental Society Inc v Queenstown Lakes District Council*.²¹ that where the purpose of the Act and the objectives of the Plan can be met by a less restrictive regime then that regime should be adopted. Such an approach reflects the requirement in s 32(1)(b)(ii) to examine the efficiency of the provision by identifying, assessing and, if practicable, quantifying all of the benefits and costs anticipated from its implementation. It also promotes the purpose of the Act by enabling people to provide for their well-being while addressing the effects of their activities.

- 9.13 I take that to mean that it is important to consider the context within which rules (including limits) are proposed and not adopt provisions that are more restrictive than necessary to achieve the desired outcomes.

Over-allocation

- 9.14 The final point I would make on the question of the NPSFM and the interim regime is that there can be no existing “over-allocation” in terms of the definition of the NPSFM. That is because over-allocation, as defined in the NPSFM, only occurs 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.

- 9.15 Neither of those situations arises here because, as discussed at

paragraph 7.2(k), the PNRP does not, at this stage, include freshwater objectives. Nor is it accurate to refer to the MCI attribute states in Table 3.4 as “limits”. Limits are set in respect of attributes that contribute to/are controlling factors of a particular attribute state (objective) in a water body¹⁷. It is for those reasons that I disagree with the submissions of Ms Ongley when she refers to the PNRP needing to address over-allocation of the MCI “limit”.

10. LAND USE INTENSIFICATION AND WATER QUALITY PRESSURES IN THE IN THE WELLINGTON REGION

Land use intensification trends and pressures

- 10.1 Mr Dave Grimmond’s evidence for Greater Wellington indicates that on virtually all indicators of land use intensity there has been either a declining trend (dairy and beef cattle, sheep and pig numbers, area in farming use) or a stable trend (fertiliser use) in the Wellington Region over the past 5-10 years. That applies terms of absolute numbers and as a share of the national aggregate.
- 10.2 In terms of forward looking projections, Mr Grimmond does predict some increase in fertiliser use (both in absolute tonnage and on a per hectare application basis) over the period to 2025. However, that projected increase would only restore fertiliser use back to the levels they were at around 2007 and remain below the peak usage that occurred in the 1995-2005 period. More importantly, that total fertiliser usage in the region is not projected to increase until around 2023 and is being projected against a backdrop of expected *decreases* in livestock numbers.
- 10.3 I have independently considered other evidence that confirms Mr Grimmond’s analysis. I set that out below.

Dairy growth pressure

- 10.4 Dairy statistics published by the Livestock Improvement Corporation

¹⁷ It is common ground amongst technical practitioners (and planners) that the term “limits” should be used in respect of attributes that contribute to/are controlling factors of a particular attribute state (objective) in a water body. Periphyton is appropriately described as an objective whereas DRP and DIN being controlling factors (along with other matters) as to whether a particular periphyton state is likely to be achieved, and when controls are placed on DRP/DIN they are accurately referred to as limits. MCI is an outcome in its own right and, like periphyton, is most accurately characterised as an objective (or “indicator”). That is the approach in widespread usage in my experience.

(LIC) and DairyNZ¹⁸ show that the size and intensity of dairy farming in the Wellington Region has barely changed over the past decade. In 2005-2006 the total effective hectares in dairy farming was 25,930 hectares. By 2015/16 the statistics show that the area had grown by just 377ha area to a total of 26,307 hectares (or just 37 ha annual average growth). Similarly, cow numbers grew from 70,074 to 72,421 over the same 10-year period (about 200 cows per year). Wellington's proportion of the national dairy herd actually fell from 1.8 to 1.4 percent¹⁹.

- 10.5 Eighty percent of the Wellington dairy herd is in the Masterton and Carterton Districts with the vast majority of that in the Ruamāhanga catchment. The Council's PIP indicates that a plan change to respond to Whaitua recommendations for the Ruamāhanga catchment is scheduled for May 2018.

Horticultural

- 10.6 Data on horticultural growth is more difficult to locate. I do note though that in response to questions from the Hearings Panel, HorticultureNZ has advised that there are 70 growers operating within the Region with an average landholding of 12.5 hectares each. That equates to a total regional horticultural land use footprint of just 875 hectares most of which is in the Kāpiti Whaitua (in the Otaki area). The plan change for the Kāpiti Whaitua is programmed for 2023.

Potential irrigation development

- 10.7 I understand that most of the land within the Wellington Region potentially suitable for intensification is in the Wairarapa (mostly the Ruamahanga Whaitua). In the Ruamahanga catchment LUC Class III land dominates although there is Class II and even Class I in the river floodplain. This land is recognised as being highly versatile being suitable for most land uses. Intensification in that area is, however, generally dependent on irrigation given relatively low rainfall.

¹⁸ *New Zealand Dairy Statistics 2015-16*, 2016 Livestock Improvement Corporation Limited & DairyNZ Limited, 2016 DNZ30-005.

¹⁹ These figures are even lower than those reported in the section 32 report (section 2.2) because the figure for the "Wellington Region" reported there included areas outside the local government Wellington region boundaries.

- 10.8 In that regard I am aware that there have been discussions about, and research into, a major water supply/irrigation scheme in the Wairarapa over a number of years. Work on investigating such a scheme is currently being progressed under the auspices of “Water Wairarapa” – a Regional Council-led initiative with support from the Ministry for Primary Industries.
- 10.9 While an irrigation scheme in the Wairarapa would be a “game-changer” in terms creating potential for land use intensification, the timeframes for the project are such that the scheme (should it eventuate) would not move into its construction phase until 2023²⁰. Given that the Ruamahanga Whaitua plan change is scheduled for 2018 the scheme would not appear to facilitate any land use change before limits are in place.

Water quality trends

- 10.10 Information on water quality trends is provided in the evidence of Dr Greer (in his January 2018 evidence) and Dr Ton Snelder.
- 10.11 Dr Greer states at paragraph 123 that:

A recent analysis of trends in GWRC’s water quality data found that, in the vast majority of monitored rivers, trends in DIN and DRP concentrations and macroinvertebrate community health over the past ten years could not be detected (Snelder, 2017). Consequently, while significant changes in habitat and water quality are required in many rivers to meet the ecosystem health outcomes, it is unlikely that increasing nutrient concentrations will further degrade ecosystem health before Whaitua specific nutrient outcomes/limits can be developed.

- 10.12 The report to which Dr Greer refers is entitled *Analysis of Water Quality Trends for Rivers and Lakes in the Wellington Region* (Land Water People Client Report No.2017-01). That report considered the trends in individual rivers in the region over a ten-year period. Dr Snelder was subsequently engaged by Greater Wellington to prepare a further report²¹ which aggregated the results of that previous trend analysis to define regional scale water quality trends.
- 10.13 That report considers trends in up to 19 variables at each of the 61

²⁰ The project timeframe is included as Attachment 4.

²¹ Analysis of regional scale river water quality trends in the Wellington region Period 2007 to 2016, November 2017,
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state of the environment monitoring sites. The conclusions of that study are complex and best left to Dr Snelder to explain (as he does in his evidence) but in summary the following points appear highly pertinent to the issue of water quality risk faced in the interim period and the need for interim limits or other rules.

10.14 There are improving regional trends in:

- (a) visual clarity and nutrients (including total phosphorus and nitrogen species) over both a five and ten year period;
- (b) Chlorophyll-a (a measure of periphyton biomass) over a ten year period; and
- (c) *E.coli* over a five year period.

10.15 There are exceptions to the general pattern of improving water quality being:

- (a) Measures related to river invertebrate communities which have degraded at more sites than they have improved the five year time period; and
- (b) There are some sites where several water quality variables have degrading trends.
- (c) Weak and somewhat contradictory evidence for regional degradation with respect to the dissolved nitrogen variables NO₃-N and NNN over the five-year time period.

10.16 Overall the study found *“strong evidence of water quality improvement across the region over the past decade. Water quality has degraded at some sites and for some variables. However the study indicates degradation is isolated rather than occurring in a consistent regional scale manner”*.

11. ISSUES RAISED BY THE APPROACH UNDERPINNING THE FISH AND GAME APPROACH

11.1 As outlined above, it is my opinion that the PNRP need not include final or interim in-stream DRP/DIN limits or property-specific leaching limits at this stage to comply with the NPSFM.

- 11.2 However, even if the Council chose do so at this stage it should not, in my opinion, proceed in the manner suggested by Fish and Game. I say that for multiple reasons.

The technical challenge

- 11.3 Establishing the “correct” DRP and/or DIN (or load) limits is technically challenging. As noted earlier, that is the principal reason why most regions have not rushed into it but are committed to catchment-specific processes.
- 11.4 There are many dimensions to setting such limits. My observation as a planner is that the usual practice is to understand what DRP and DIN concentrations would allow periphyton objectives to be met. That means understanding the nature of the receiving environment (water body) and its susceptibility to periphyton growth. My understanding is that matters such as stream bed substrate, gradient and channel depth, flow, flow variability, temperature, light, sediment and clarity all influence the potential for periphyton growth and accrual periods. Moreover natural sources of nutrients (particularly P) also need to be considered. Hence limits can normally be expected to vary according to the type of waterbody and even by reach of river²².
- 11.5 Because freshwater objectives cannot be set lower than existing water quality, it is likely that DRP and DIN limits cannot be set higher than existing levels and hence understanding what those existing levels are is also required. Councils do not always have a complete understanding of that (or the monitoring record is not always good enough to be confident of that²³).
- 11.6 Setting nutrient limits is a process that cannot easily be separated from the setting of freshwater objectives. Indeed, it is usually an iterative process undertaken in conjunction with the development of freshwater objectives. This is recognised by the NPSFM Part CA which requires consideration of the required limits when making decisions about the level at which a freshwater objective is to be set (see following section).

²² In Canterbury, for example, limits vary according to (amongst other things) whether the limits applies in the upland or lowland reach of a river system.

²³ That was recently accepted (by the Hearings Panel) to be the case in Gisborne for example.

- 11.7 In short, there is not a simple approach by which a council can take an “off the shelf” guideline or standard and apply it regardless of local conditions and circumstances²⁴. Well-developed freshwater plans will set freshwater objectives and limits that are bespoke to individual waterbodies. I note that the technical evidence of Dr Micheal Greer, Senior Environmental Scientist for the Council, presented in June 2017 made very similar comments in paragraphs 123-124. In particular, at paragraph 123 Dr Greer states:

In natural systems, ecosystem health is driven by multiple stressors, and the effects of nutrient enrichment is dependent on the state of a suite of other parameters (Piggott et al., 2012). As a result, the response of macroinvertebrate communities to nutrient concentrations will vary considerably across the region, even at a catchment scale, depending on factors such as the frequency of flood flows, deposited sediment and habitat availability. Therefore, it is not appropriate to stipulate generic numeric DIN and DRP outcomes at the river class scale, as they would not be robust or defensible. Instead it is recommended that river/reach specific nutrient outcomes continue to be developed as part of the Whaitua processes.

- 11.8 Similarly, translating DIN/DRP limits into property-scale leaching limits is also complex. Amongst other things it requires an understanding of the processes occurring below the root zone and, in particular, the level of nitrogen attenuation and the losses outside the freshwater system and other hydrogeological influences.
- 11.9 It also requires complex decisions to be made about how the available assimilative capacity should be allocated between different land uses and sectors that are not technical or “scientific” in nature but have major economic and social implications and which require extensive community consultation, cost analysis and judgement.
- 11.10 Underpinning many of these decisions there needs to be an understanding of the current contributions to N and P loads in rivers by existing land uses (i.e. what is the current land use mix and what is the contribution by each land use type - and ideally by each property). Given that OVERSEER files are seldom available for land uses outside the dairy sector (and not always comprehensively

²⁴ I accept that in Horizons One Plan an “off-the shelf” SIN limit was adopted being the 0.444mg/l from the ANZECC Guideline as the upper limit (lower limits apply in where existing water quality is better) but as I discuss later this may be part of the issue now faced by that council. Moreover, even Fish and Game propose for this plan DIN limits that vary by water body rather reflecting different values and different susceptibilities.

across that sector either) this can be a challenging task alone. Without that information it is difficult to understand the degree of change required and the technical, economic and social feasibility of making change. That is information that is critical to fulfilling obligations under both 32 of the Act and the NPSFM Part CA.

The need to involve communities and consider social and economic costs and implementation issues

11.11 As noted earlier, the process for setting freshwater objectives is prescribed by Part CA of the NPSFM. In short, it is to be done *through discussion with communities, including tangata whenua*. The Part CA process also involves the consideration of matters such as:

- (a) How to enable communities to provide for their economic well-being, including productive economic opportunities, while managing within limits (Policy CA f iab));
- (b) The limits that would be required to achieve the freshwater objectives (Policy CA f iii));
- (c) Any choices between the values that the formulation of freshwater objectives and associated limits would require (Policy CA f iv));
- (d) Any implications for resource users, people and communities arising from freshwater objectives and associated limits including implications for actions, investments, on-going management changes and any social, cultural or economic implications (Policy CA f v)); and
- (e) Timeframes required for achieving objective, including the ability of regional councils to set long term timeframes for achieving targets (Policy CA f vi)).

11.12 Although Fish and Game may not be proposing freshwater objectives or even, necessarily, NPSFM “limits” they are proposing numeric standards that are intended to have the same or similar effect as if they were freshwater objectives and/or limits under the NPSFM. In planning terms, given the apparent low land use

intensification risk²⁵, it is my opinion that it would be poor planning practice to introduce provisions that could have such widespread effect without proper community participation and analysis of potential effectiveness and efficiency (including both costs and benefits). In many cases, the Fish and Game proposals are not clear and certain enough for that analysis to be undertaken (see paragraph 12.3).

Apparent technical shortcomings of the limits/standards proposed by Fish and Game

- 11.13 It is clear from the technical evidence of Dr Elliot and Dr Storey that the complexities of setting DRP and DIN limits outlined above have not been adequately resolved in the Fish and Game proposed limits.

Indirectness of relationships between outcomes and proposed DRP and DIN concentration limits

- 11.14 As noted earlier, the methodology behind Fish and Game's setting of proposed DRP and DIN limits involves drawing a direct relationship between MCI scores and concentrations of nitrate and DRP. As I understand Professor Death's methodology he suggests a direct causative relationship between current MCI scores and current nitrate and DRP concentrations.
- 11.15 I am aware that Professor Death promoted this (or similar) approach being taken in the Tukituki catchment (Hawkes Bay)²⁶ but I am not aware of it being used anywhere else in New Zealand to calculate DIN and DRP limits. I am aware that attempts have been made to draw a relationship between DIN/DRP and periphyton²⁷. My understanding of MCI is that (not unlike periphyton) it is influenced by a range of factors. This is confirmed by Dr Storey where at paragraph 1.6 of his evidence, he states that stressors on MCI

²⁵ I note that my assessment of risk of short-term water quality decline and the lack of any compelling argument for interim limits (as set out in section 10) is consistent with that in section 6.2.3 of the Section 32 Report.

²⁶ I also acknowledge that on the basis of evidence available to it at the time, the Board of Inquiry accepted Professor Death's modeling approach in its decision.

²⁷ These are based on the 2000 New Zealand Periphyton Guidelines (Biggs, 2000) and more laterly on the two Envirolink funded reports have also been published that are providing guidance to practitioners in other parts of the country being: *Review of the New Zealand instream plant and nutrient guidelines and development of an extended decision making framework: Phases 1 and 2 final report*, Matheson F, Quinn J, and Hickey C. NIWA, 2012; and *Instream plant and nutrient guidelines. Review and development of an extended decision-making framework Phase 3*. Matheson F, Quinn J, and Unwin, M. NIWA, 2016.

include temperature, deposited sediment, suspended sediment, excess periphyton growth and altered hydrology. This is consistent with the evidence of Dr Greer as quoted earlier.

- 11.16 Dr Storey also points out that *“expert consensus is that where nutrients are correlated with MCI the causative link is via the effect of nutrients in increasing periphyton biomass”*. I understand that to mean that there is not considered to be a direct link between nutrients and MCI. The link that exists is because nutrients can increase periphyton growth which can in turn adversely effect MCI. In other words it is an indirect link²⁸.
- 11.17 Dr Storey also confirms that *“the relationship between nutrient concentrations and periphyton may or may not be strong depending on factors such as light, temperature and frequency of flows”*. I understand that to mean that, not only is there an indirect relationship between nutrient concentrations and MCI (because that link is via periphyton growth), but there is only an indirect (or inexact) link between periphyton and nutrient concentrations.
- 11.18 It is apparent to me as a planner working regularly on this issue, that the question of setting DIN/DRP limits remains an evolving and somewhat contested area of practice amongst technical experts. However, I understand Dr Storey’s evidence (which corroborates that of Dr Greer) to suggest that the methodology proposed by Professor Death to develop permanent or interim limits may be too simplistic and also likely to be ineffective in achieving outcomes in many reaches.

Calculation of loads, required load reductions and leaching limits

- 11.19 Mr Canning’s evidence calculates the current nitrogen and phosphorus loads throughout the Region and the in-stream and “on-land”²⁹ loads required to achieve Professor Death’s DIN and DRP concentrations. He calculated that (except for forested headwaters) reduction in loads of between 26.6 and 81 percent are required. Mr Canning’s evidence goes further by suggesting property-scale leaching limits based on a LUC/natural capital approach to deliver

²⁸ Excepting, of course, that at high levels nitrate can be toxic to aquatic organisms.

²⁹ The on-land load is a sub set of the in-stream load in recognition of the degree of attenuation between root zone and waterbody due to biochemical processes.

those load reductions.

- 11.20 I am not qualified to comment on the methodology employed by Mr Canning to determine the instream and “on land” loads. However, I note from the evidence of Dr Elliot that he has identified a number of uncertainties, errors and other issues that raise questions about the reliability of Mr Canning’s load calculations. I note in particular, Mr Elliot’s conclusion that “*the methods employed are not sufficiently robust and are unsuited for setting load limits*”. In my experience this is the type of professional disagreement that can arise when there is not an inclusive and considered approach to working through these complex technical issues. It confirms my assessment that limit setting processes are best conducted through dedicated community processes that fully test technical assumptions and methodologies in a way that builds broad support for critical technical conclusions.
- 11.21 Dr Elliot does not comment on Mr Canning’s support for an LUC/natural capital allocation regime. That is appropriate in my opinion because the choice of an allocation mechanism is not a purely technical/scientific exercise. It is a multi-disciplinary consideration, where questions of cost and benefit, efficiency and effectiveness are key. I do note that Mr Canning does not propose a natural capital approach that generates leaching rates on the basis of modelled N loss from farms managed to (but not beyond) their natural capital (an approach that yields leaching rates potentially unrelated to desired water quality)³⁰. Rather, he appears to propose an allocation regime that allocates the load calculated to deliver the desired in-stream SIN concentrations using the *relativities* between the theoretical leaching of different LUC classes farmed to their natural potential. For example, LUC I land can support land use intensity that would mean it would leach 1.67 times that of a farm on LUC IV land (because LUC IV land cannot support the same intensity of land use without external inputs)³¹. Hence LUC I land would, under the Fish and Game proposal, be allocated 1.67 times the N leaching entitlement that LUC IV land (whatever that number has to be to achieve the desired catchment load).

³⁰ As was adopted in One Plan – see explanation of that approach in Attachment 2.

³¹ It is important to understand that LUC I is not expected to leach more due to the soil leaching properties but simply because the land use it can sustain (without external inputs) will be more intensive.

- 11.22 The approach proposed by Mr Canning does have some benefits, principally it encourages intensive use on the best land and discourages it from more marginal land. However, it also has some disadvantages, most importantly, it ignores existing land use and existing investment and provides no period of transition (from current leaching to the proposed ultimate leaching limits).
- 11.23 All allocation approaches have both advantages and disadvantages. Selecting the right approach depends on a range of factors including the nature of the existing land use pattern and state of existing intensification. It requires dialogue with affected communities and modelling of different scenarios so that the full implications for future production can be understood. In Canterbury, for example, the approach to allocation has varied across different sub-regions because the implications of a single allocation method (as tested by the Zone Committees) will be different in different places.
- 11.24 For those reasons, I disagree with the suggestion from Ms Cooper that nitrogen limits need to be adopted “without delay” (see paragraphs 48 and 53 of her Hearing Stream 1 evidence). In my opinion, nitrogen limits need to be adopted after careful technical and community consideration of options and impacts. In that regard, it is much more likely that a robust and durable approach to setting nutrient limits and allocation will emerge through the whitua processes.

Overview of my opinion of the merits of the Fish and Game approach to interim limits

- 11.25 In my opinion, adopting a SIN/DIN or DRP limit at this time is only feasible if reliance is placed on generic guidelines (as used for the upper SIN limit in One Plan) or methodologies such as those outlined by Professor Death and Mr Canning which are not supported by other technical witnesses Dr Storey and Dr Greer (for reasons already discussed). The risk with such an approach is that they may result in poorly targeted and ineffective interventions with unknown costs. (That potential is discussed further in section 13 of this evidence).
- 11.26 The recent experience of Horizons Regional Council (Horizons)

illustrates some of the difficulties that can arise when limits and associated regulatory regimes are not fully developed or their potential impacts not fully understood prior to implementation. I comment on that experience in Section 13.

12. ASSESSMENT OF FISH AND GAME'S SPECIFIC NUTRIENT MANAGEMENT PROPOSALS

12.1 The one important qualification I would make to my analysis is that at the time of preparing this evidence there is little detail on what activities the Fish and Game proposals (such as requirements for nutrient budgets, farm environment plans, leaching limits, compulsory GMPs, stock exclusion, prohibited activity status) relate to. Are, for example, such proposals intended to apply:

- (a) To all farming activities (or just intensive farming)?
- (b) To properties of all sizes (even very small/"lifestyle" properties)?
- (c) Equally in all catchments/geographies regardless of water quality and risk to water quality?
- (d) From day one or are they phased in over time?

12.2 Without that detail it is not possible to undertake a robust section 32 assessment of effectiveness and efficiency (including costs and benefits).

12.3 The submission makes a series of requests for new and additional policies (and associated rules) in response to its submissions on Policy P65 ("Minimising effect of nutrient discharges") and Policy 71. Those can be grouped into the following themes that I comment on below³².

Defining the allocation status in the PNRP

12.4 Fish and Game seeks a policy that ensures:

The allocation status of freshwater management units is defined and included in a schedule to the plan along that lines of

³² I have omitted to comment on certain proposed policies and rules that may affect nutrient losses but which are managed under their own policy and rule framework. These include provisions relating to the detail of stock exclusion, and setbacks.

*appendix 9 to [its] submission*³³.

- 12.5 An allocation status cannot be determined until freshwater objectives or limits have been established. Once catchment scale freshwater objectives and limits are included in the Plan the proposal would be appropriate. An assessment of the extent to which MCI objectives of Table 3.4 could theoretically be included at this point, that could not be done comprehensively on the basis of measured data as comprehensive MCI monitoring data does not exist (as acknowledged by Professor Death). In my opinion including an assessment based on whether MCI objectives are met based modelling would not add significant value to the plan.

In-stream/receiving water standards

- 12.6 As noted above, I have reservations about whether the numeric standards sought by Fish and Game (at least the DRP and DIN standards) are appropriate.
- 12.7 However, even if they were appropriate the way that they are sought to be applied within the PNRP does not, in my opinion, conform with good water planning practice.

The Fish and Game submissions seek to:

*Amend the receiving water standards to include the standards in table 3.4 and 3.4a as appendiced (sic) to this submission*³⁴

And, amend rules so that:

The standards in policy 71 are applied for permitted activities which relate to land use activities and non-point and point source discharges.

- 12.8 It is not entirely clear what is intended by this submission point but it would be wrong, in my opinion, to somehow make permitted activities conditional on the achievement of the Table 3.4 receiving water standards. That is for many reasons, not least because of the

³³ Schedule 9 to the submission is the report of Professor Death.

³⁴ The two appendices referred to: modify Table 3.4 by introducing numeric objectives for temperature, pH, DO, DRP, DIN, clarity and toxicants. Table 3.4a introduces standards for the same attributes proposed to apply to trout spawning and trout fishery rivers.

challenges and difficulties in being clear about:

- (a) how and when compliance with the Table 3.4 standard would be measured (i.e. if it is the average monitoring record - over what period would this apply?);
- (b) where compliance would be measured (is it anywhere downstream regardless of water quality near the location of the activity?)
- (c) how a breach of conditions would be communicated to those operating under permitted activity rules and what happens when council declares that a standard is not met?
- (d) how implementation challenges would be managed.
Conceivably many hundreds of consents would be instantly required on breach of a water quality standard. That may be simply unmanageable from a consenting perspective.

12.9 Furthermore, it would be wrong to apply the point source receiving water standards to non point source dischargers. Those point source discharge standards are designed to be applied outside the *zone of reasonable mixing*. It is not practical to apply a zone of reasonable mixing to non point source discharges.

Property-scale leaching limits

12.10 As noted in section 5, the Fish and Game seeks that:

Farming activities comply with a sustainable nitrogen leaching rate which is based on allocating the total allowable load of nitrogen for the sub catchment, water management zone or catchment to the land on the basis of either a "flat" per hectare allocation of nitrogen leaching (~15kg N/ha/yr) or a nitrogen leaching allowance per hectare based on an allocation on a land use capability class basis, or some other methodology which achieves the efficient use of natural resources.

12.11 The Table of leaching rates suggested in the submission (see my paragraph 5.1(g)) vary by LUC and over time (ranging from 20kg N/ha/yr in Year 1 of LUC 1 land to 2 kg N/ha/yr on Class VII land).

- 12.12 Mr Canning's evidence (see Table 5 of his evidence), however, proposes a different set of leaching limits. He has calculated the load equivalents of Professor Death's concentrations and compared those to his current loads to conclude that substantial reductions (up to 80%) in N and P are required.
- 12.13 He has accordingly proposed leaching limits designed to achieve those load reductions. These vary (as earlier discussed) by LUC class and by river. Mr Canning's proposed leaching limit table does not provide for an incremental step down over time as suggested by the submission. Overall, Mr Canning's leaching rates are considerably more stringent than those suggested in the submission (in the Ruamāhanga, for example, Mr Canning's leaching rates are between 40-50% lower than those indicated in the submission).
- 12.14 It is unclear, therefore, what leaching limits Fish and Game proposes. As a matter of process, however, it would seem inappropriate to adopt those suggested by Mr Canning since they differ substantively from those proposed in the submission. Conversely those proposed in the submission appear, at this point, to have no foundation in terms of maintaining water quality over the interim period.

Approach to allocation

- 12.15 Fish and Game seeks that policies and rules:

Ensure(s) that those activities and land uses which are contributing the most to the over-allocation bear the majority of the cost of reducing the overallocation (adopt the polluter pays principal (sic))

and

Apply the allocation principals (sic) from Beef and Lamb as set out in appendix 11 to this submission.

- 12.16 As discussed at 11.9, the design of an allocation approach has very significant implications with different approaches potentially generating very different economic and social outcomes (and future land use patterns). Accordingly, it is a matter that requires detailed

analysis. It would be wrong to adopt an approach to allocation without such analysis. Furthermore, it would be wrong, in my opinion, to adopt allocation principles promoted by one rural land use. Different allocation regimes tend to favour different rural land use meaning that principles promoted by one sector cannot be relied on as impartial advice.

- 12.17 For that reason, and as noted earlier, N load limits and property-scale N leaching rates are matters best left to the whitua processes.

Adoption of specified practices

- 12.18 Fish and Game seeks a policy that:

Requires farms to comply with specified management practices which reduce the loss of nitrogen, phosphorus, sediment and faecal contamination, including, but not limited to, the requirement to seal effluent ponds and to practice deferred irrigation, good management practices for the application of fertiliser and other nutrients sources, including setbacks from waterbodies, permanent fencing and planting of riparian margins, good management practices for earthworks and cultivation including setbacks from waterbodies to avoid or minimise sediment run-off to water.

- 12.19 Policy 65 already requires compliance with good management practices (GMPs). That term is defined in the PNRP including a link to the Council's website where a list of GMP guideline documents can be found³⁵. A note is also included on the web page that new GMPs will be added over time. The difficulty of including an exclusive list of GMPs in the plan is that GMPs continue to be developed and refined. In my opinion, the approach adopted by the PNRP is preferable for that reason. Moreover, many of the GMPs listed are already specified in detail as conditions of rules including setbacks for cultivation and break-feeding, effluent storage needing to be sealed and be of sufficient volume to allow for deferred irrigation (with deferment able to be regulated through the required

³⁵ This includes GMP guidelines in relation to cultivation and break-feeding, nutrient management, riparian management, effluent management and earthworks/sediment control.

consent process), and the requirement for silage storage to be sealed.

- 12.20 Many GMPs will be bespoke to particular farm systems and properties and are best identified and required through farm-specific farm environment plans (FEPs).

Farm Environment Plans

- 12.21 Fish and Game seeks a policy to:

Include Farm environment plans and good management practice standards as shown indicatively in appendix 10 to this submission³⁶

- 12.22 FEPs are an increasingly commonly used tool in non point source discharge management.
- 12.23 As with other proposals made by Fish and Game, the key issue is not whether FEPs may be a good idea in general terms but whether they need be required now, ahead of the whitua process and specific catchment limits.
- 12.24 In my opinion, it would make little sense to require FEPs as part of the PNRP. I reach that conclusion for three reasons:
- (a) FEPs should be designed (amongst other things) to achieve specific leaching limits/reductions. As discussed earlier I do not consider that leaching limits ahead of the whitua process is necessary or appropriate.
 - (b) If FEPs were required now they would likely need to be revised and amended when leaching limits are introduced which could be as soon as 12 months away (in the Ruamāhanga catchment).
 - (c) Based on my experience, it will take a lengthy period (several years) for all farms to comply with any requirement for FEPs given limited capacity in the rural consulting sector, meaning

³⁶ Appendix 10 to the submission set out the Farm Environment Plan requirements of an undated version of the CLWRP and the proposed (but now superseded version of the Good Farm Practices introduced to the CLWRP by Variation (now Change) 3.
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that FEPs required now are likely to be out-dated as soon as they are completed (due to the need for them to deliver the outcomes of yet to be completed whitua processes).

Nutrient budgets

12.25 Fish and Game seeks a policy that:

Nutrient budgets are to be prepared annually by a person who has completed both the “intermediate” and the “Advanced courses on Sustainable Nutrient Management in New Zealand Agriculture” conducted by Massey University, and provided in an electronic format compatible with regional councils information systems and may include but shall not be limited to the following reports from Overseer or their equivalent if an alternative model is used (must be accredited for use by the regional council): Nutrient Budget, Nitrogen, Phosphorus, Summary, Nitrogen Overview.

12.26 I agree that nutrient budgeting is an important component of effective nutrient management. While modelling of N loss using OVERSEER is already undertaken by Fonterra for its suppliers³⁷, it is not commonly practiced by other rural land uses at this point. While having an N leaching “baseline” can be a useful starting point for policy makers, it will take time to roll out given capacity constraints in the rural (nutrient management adviser) sector.

12.27 Again, the key issue is whether the PNRP needs to require nutrient budgeting universally now or whether it should follow from the whitua processes. From an implementation point of view, it will be important to prioritise where nutrient budgeting is most critically needed. Ideally, nutrient budgeting should occur first in areas of most intensive land use and/or highest N concentrations in surface and/or groundwater. The best way to target effort is through catchment scale planning.

12.28 For that reason, although I support nutrient budgeting, as with FEPs I consider that, given the Wellington context, with the key whitua

³⁷ Under Fonterra’s standard supplier contract suppliers must provide Fonterra with the information each year allowing for the modeling to be undertaken. Fonterra then supplies the modeling results back to farmers along with peer group comparison data.

process and associated catchment scale plan changes being imminent, there is little to be gained by requiring universal nutrient budgeting at this point. Indeed there may be some risk associated with spreading limited budgeting capacity too thinly when concentrating efforts on key areas/farming types would produce greater environmental benefit.

Nitrogen trading

12.29 Fish and Game seeks a policy and associated rules that:

Provide(s) for trading of nitrogen or phosphorus loss rates between production land uses or properties in the same sub catchment so long as the nutrient load and the freshwater objectives in tables 3.4 and 3.4a, 3.5 and 3.6, and the limits/standards are not breached at any point within that sub catchment, or water management unit

12.30 Obviously trading cannot occur until such time as nitrogen leaching entitlement is allocated to users. For the reasons discussed above, in my view it would be premature to do that within the PNRP at this time.

12.31 Setting aside for the moment that fundamental point, Fish and Game provides no detail on how a region-wide trading regime might work. Trading systems are complex and require significant policy development to ensure they are effective and not open to manipulation and abuse. Three matters suggest to me that Fish and Game's support for trading should be rejected at this point.

(a) From a process perspective, it is my opinion that any trading system would need to be considered through a Schedule 1 process that ensured all design details were available at the time of notification so that they may be fairly tested by all parties through the submission process.

(b) Notwithstanding improvements in OVERSEER there remain very significant measurement issues to be addressed. When establishing a market, council and potential buyers and sellers need to have a very high level of confidence in the integrity of the "unit" being traded. Based on my experience, I do not

consider that confidence can be easily gained given:

- (i) the degree of variation in OVERSEER modelling between users; and
- (ii) the continuing version change that OVERSEER is currently subject to³⁸.

These issues may not be insurmountable in the long term but currently they pose real barriers to establishing a credible trading system.

- (c) Despite the Lake Taupo catchment experience there is no precedent on which to draw for the design of a trading system. Taupo was developed with a particular set of circumstances³⁹ that do not apply here.

13. IMPLEMENTATION ISSUES AND CHALLENGES WITH ONE PLAN

- 13.1 One Plan represents an ambitious approach to managing diffuse discharges. From the date of notification, any *new* intensive farming land use (dairy, cropping, horticulture and irrigated sheep and beef farming) required resource consent. *Existing* intensive farming land uses required consent in “targeted” catchments from prescribed dates. There was some phase-in of targeted catchments applicable to existing land uses (allowing for the spreading of the consent processing burden) but nevertheless consent requirements applied to existing farms in all targeted catchments within two years of One Plan becoming operative (i.e. by 1 July 2016).
- 13.2 The nature of the consent required varies according to whether the applicable “*cumulative nitrogen leaching maximum*” (CNLM) is met by the individual farm⁴⁰.
- 13.3 The CNLMs are prescribed over four time periods being year 1, year 5 year 10 and year 20 (reducing in each subsequent period). They

³⁸ OVERSEER is subject to two updates annually. One is minor and unlikely to affect modeling results. The other though is substantive and, in the past, some of those changes have resulted in new versions of OVERSEER generating significantly different leaching rates from the version replaced.

³⁹ These include the very small number of farms involved, the very significant public money that bought up N entitlement and the one-off agreement with the owners of OVERSEER to continue to make available the version of OVERSEER used to design the scheme (to avoid issues with future version change (ordinarily previous version of the model become unavailable once replaced with a new version).

⁴⁰ This is the term given to the property-scale leaching limit (kg N/ha/year).

also vary by land use class (LUC).

- 13.4 If the applicable CNLM can be met immediately the existing activity is a controlled activity. If it cannot be met immediately, a restricted discretionary activity consent is required. Policies, however, make it very clear that any exceedance of the Year 1 CNLMs is permissible only in very limited circumstances⁴¹ or, outside of those circumstances, only for a period of four years⁴² (by which time the 5 year CNLM will almost be applicable in any event). There is no flexibility in policy to exceed year 5, 10 or 20 CNLMs.
- 13.5 Given the stringency of that regulatory regime, the nature and appropriateness of the CNLM was always going to be critical. Nevertheless, at the time of the plan hearing there had been an expectation that 80% of existing farms would be able to comply with the applicable CNLMs.

Nature of the CNLMs

- 13.6 The CNLMs were derived from a *natural capital* approach that estimated what different LUC classes would leach if the land was put to the pastoral farming use able to be sustained using only the land's natural capital (i.e. with no external inputs of, for example, fertiliser, stock feed or irrigation). A fuller explanation is provided as Attachment 2.
- 13.7 The CNLMs were, and continue to be, criticised for a number of reasons, most validly because they are unrelated to the desired water quality (see Attachment 2 for further explanation). It should be noted, however, that the approach proposed by Fish and Game for the PNRP (at least as suggested by Mr Canning) does appear to differ from that employed by One Plan as discussed in paragraph 11.21. Hence that particular criticism of One Plan does not apply here.

Compliance gap

- 13.8 As noted earlier, initial expectations were that most farms would be

⁴¹ Being in areas with more the 1500mm per year of rainfall and where the land is class IV to VIII. In practice few if any intensive farms meet this criteria.

⁴² As confirmed by the Environment Court in Wellington *Fish & Game Council & EDS Inc v MWRC* [2017] NZEnvC 37.
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able to comply with One Plan's CNLMs using good management practice. Indeed, the provisions sought to give effect to an RPS policy that stated precisely that.

13.9 As it transpired, the majority of applications received by Horizons indicated a significant compliance gap between actual leaching rates and the applicable CNLMs that could not be breached by merely adopting good management practice (or by granting a four year period of grace). The reason for this discrepancy is not entirely clear at this point. My own assessment is that it is likely to be the result of:

- (a) changes to the OVERSEER model over the 2007-2017 period which meant that the current model generated higher N leaching estimates compared to the earlier version of the model used for calculation of the CNLMs; and
- (b) likely under-estimation of actual leaching rates occurring at the time One Plan was prepared given the limited analysis of existing N leaching available at the time One Plan was developed.

13.10 As a result, Horizons has been in a position of having to process most applications under the restricted activity consent rule. The way it did so was challenged by Fish and Game and the Environmental Defence Society (EDS) who sought a declaration from the Environment Court that Horizons was not lawfully implementing the provisions of One Plan or the other relevant provisions of the Act. There were multiple points of concern raised by Fish and Game/EDS but the core issues centred on the matters that needed to be, and could not be, had regard to when considering an application for a restricted discretionary activity under the relevant nutrient management provisions of One Plan.

13.11 In short, Horizons had been operating an informal practice of requiring "fair effort". A DairyNZ (Horizons-endorsed) Guide⁴³ to obtaining consent indicated that fair effort would be determined using a process where possible N loss mitigation measures were

⁴³ Dairy farming under the One Plan: Your guide to obtaining a land use consent for an existing dairy farm, DairyNZ 2014.

identified and costed. Those that could be adopted while having less than 5-10 percent impact on operating profit were expected to be adopted. In practical terms, Horizons generally approved consent applications that could demonstrate at least a 10% N leaching reduction.

- 13.12 The crux of the Fish and Game case was that such an approach was not endorsed by the plan provisions and in applying that approach the Council was disregarding its legal obligations to require a full AEE, assess environmental effects, apply national instruments (namely the Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007, assess applications against applicable objectives and policies and give reasons consistent with the assessment against of effects and assessment against policies.
- 13.13 For its part, Horizons claimed to be doing its pragmatic best to make the One Plan's provisions work and achieve progress towards its water quality targets.
- 13.14 As has been well reported, the Court made most of the declarations sought by Fish and Game/EDS with some minor modification. The upshot of this has been that Horizons has been left in a situation where:
- (a) It has (prior to the declarations) granted many consents (applying the now discredited approach) but many farms, particularly in the Upper Manawatu catchment, have yet to lodge applications (or had lodged applications processed);
 - (b) The applications that remain to be determined will need to be assessed according to the approach confirmed by the declarations. The problem Horizons faces is that:
 - (i) It will not be able to accept applications that are not accompanied by an AEE that addresses the individual and cumulative effect of each farm on water quality. That is a technically difficult (some would argue impossible) task and one with considerable cost implications for applicants.

- (ii) It is unlikely (due to the specific wording of policies) that it will be able, in practice, to consent *any* of the remaining applications to exceed the CNLMs⁴⁴.
- (c) Because of the above, it has had little option but to require that future applications comply in full with the expectations set out in the declarations. On that basis the applications that had been lodged with the council but not processed were withdrawn. While farmers in targeted catchments could (and should) apply for consent they have generally not done so because they are unable to assemble the information necessary for them to comply with the information requirements that would allow applications to be processed and potentially granted. This has led to uncertainty for farmers and stalled progress towards improving water quality.
- (d) Council has considered it necessary to investigate plan change options to resolve the current impasse.

13.15 In my opinion, from a planning perspective, the key lessons learnt from the One Plan experience are that:

- (a) There is some risk in treating observance with a numeric property-scale leaching rate as the ultimate and sole objective (rather than using the number as a *trigger* for closer examination of on farm practices);
- (b) Where compliance with numeric property-scale leaching rates is used as the “hard” limit (rather than simply a trigger point between consent categories) there needs to be:
 - (i) Prior detailed assessment of the *feasibility* (including both technical and economic) of meeting the limits and an accurate understanding of the existing compliance gap. In Horizons it became clear after the plan became operative that some existing land uses (particularly horticultural land uses) exceeded CNLMs by, in some cases, hundreds of percent;

⁴⁴ Excepting any that fall within the prescribed criteria of Class VI land and >1500mm annual rainfall

- (ii) provision for a *transition* for farms unable to meet newly imposed leaching rates. One Plan contained no real transition period which made consenting and compliance particularly challenging given that CNLMs were derived in a manner that made them unrelated to existing leaching rates (hence some farms faced significant reductions expectations at day 1).
- (c) The rule framework needs a full *consenting pathway*. Administration of the One Plan was made unmanageable by a rule framework that failed to provide a category for applications that could not meet the Year 1 CNLMs or do so within four years of the Plan becoming operative (i.e. no pathway existed beyond the RDA consent).
- (d) The policy framework needs to ensure there can be robust yet practical assessment against matters relevant to decisions on whether to extend transition periods and/or depart from leaching limits (and if so by how much). One Plan's policy framework forces all consideration back to the largely unmeasurable (and probably unachievable) test of whether water quality would be improved "in order to meet SIN limits"⁴⁵ (in contrast to asking the question of whether the contribution made towards meeting that SIN limit was reasonable in the circumstances – noting that any application to leach N at a rate less than previously contributes to the aim of *reducing* cumulative N leaching).
- (e) Any in-stream DIN/SIN limit needs to be set cognisant of the leaching limits required to achieve it (and the existing leaching rates) so that it is clear how much leaching reduction is required to achieve those limits. That needs to be done not simply at the collective scale but at a scale that allows the "ask" to be understood for different farm types and in different locations and preferably at the individual property scale. The SIN limits set in the One Plan were (arguably) imposed without

⁴⁵ This test is required by the applicable RPS policy and is unachievable by any application since it is clear (as explained in Attachment 2) that even full compliance with the CNLMs by all activities would not achieve the SIN concentration targets even at year 20 in at least two of the main target catchments.

sufficient regard to feasibility or implications for individual farmers⁴⁶. It is of some relevance, in my opinion, that, the NPSFM now requires such regard to be had. That obligation was not in place when One Plan was developed or hearings and appeals held.

14. SECTION 32 AND THE RISK OF ACTING OR NOT ACTING

14.1 As noted earlier, there is considerable difficulty in undertaking a detailed section 32 evaluation of Fish and Game's proposed interim limits (and associated provisions) at this time. That is because:

14.2 In terms of effectiveness there is:

- (a) Uncertainty over whether the limits would deliver the desired outcomes as outlined by technical witnesses for Greater Wellington; and
- (b) A lack of detail about how the planning provisions would work including what activities would be caught by new provisions and over what timeframe.

14.3 In terms of efficiency (being the ability to meet objectives at least cost):

- (a) No information on the gap between current leaching and proposed leaching limits is available (although load reductions of up to 82% suggest very significant leaching reductions required at the property scale).
- (b) No assessment of total cost of the proposed limits is available. These will be the costs incurred by primary producers in meeting N leaching limits including any foregone production, and higher capital and operating costs. In particular, it is not clear whether proposed limits could be met by adoption of GMP or whether more significant farm system change would be required.
- (c) No information on the distribution of costs is available (who would face the greatest costs). We do know that the proposed

⁴⁶ I note that Professor Death recommends for Wellington a maximum nitrate concentration of 0.61g/m³ – i.e. a less stringent limit than included in One Plan (0.444g/m³).

leaching limits are low relative to, for example, Horizons (where we know they have been extremely challenging).

- (d) No information on whether alternative provisions (i.e. those that distribute costs differently or phase in requirements over different time periods) might deliver the same or similar result at less cost.

- 14.4 Given that uncertainty, section 32(2)(c) is particularly important. That requires an assessment of the risk of acting or not acting where there is incomplete information about the subject matter.
- 14.5 For the reasons set out in section 10 of this evidence, there seems to be a low risk associated with not acting on interim nutrient limits at this time. This risk does vary somewhat between whaitua. In the Ruamāhanga and Te Awarua-o- Porirua whaitua the risk must be assessed as extremely low given that the time lapse between a decision on this PNRP being issued and the notification of a plan change will be in the order of a few months. It is true that, based purely on the period of time the interim provisions of the PNRP will apply, the risk for the Kāpiti Coast and Wairarapa Coast Whaitua will be somewhat higher. However, the reason why these two whaitua are scheduled for 2023 and 2024 respectively is that they are assessed as having low potential for land use change/intensification. Wairarapa Coast is comprised almost entirely of hill country unsuited to intensive land use being largely LUC class VI and VII land (except for a few small and isolated pockets in river valleys and coastal flats). Currently extensive sheep and beef farming and forestry predominate.
- 14.6 Kāpiti Coast Whaitua is largely comprised of the Tararua Forest Park although it does include the alluvial plains in the Otaki to Te Horo area which are suitable for (and to a reasonable extent are already used for) horticulture and intensive grazing. Although there is intensive land use on these alluvial plains the area is heavily subdivided and these small-holdings (including much land in rural residential use) will likely limit the potential for any significant intensification of pastoral agriculture (i.e. conversion to dairy). Increased horticulture may be a possibility. Overall, however,

potential for large-scale land use change and intensification in Kāpiti Coast is not high and hence its priority in the PIP.

14.7 On the other hand, the risk of acting is that Greater Wellington may, within six months of decisions being made on this plan, be required to assess applications for resource consent by farms not complying with the interim leaching limits. Various scenarios are possible. It may be that:

- (a) The interim limits turn out to be less stringent than those promoted by the whitua process meaning that consents are granted that do not provide for the objectives of the whitua process to be achieved;
- (b) It would be difficult (if not impossible) to address the outcome described in (a) through a review of consent conditions given that case law is clear that consent conditions cannot be reviewed in such a way as to render a consent nugatory⁴⁷.
- (c) The interim limits turn out to be more stringent than those found to be appropriate through the whitua process. In that case, an inequitable situation would arise between those granted under the interim provisions and those granted under the provisions of the whitua plan change;
- (d) The situation described in (c) could only be resolved through complex administrative processes of cancelling or surrendering and reapplying for consents. That would be bureaucratic and expensive.
- (e) Holders of consents granted under the interim provisions of the PNRP are unable to comply with the limits imposed because those limits have no relationship to existing leaching rates and the practical opportunity that exists to reduce those rates in the timeframes imposed. This would create a difficult compliance issue for Greater Wellington akin to the situation Horizons currently finds itself in.
- (f) The ability for the rural consulting sector to deliver the nutrient

⁴⁷ *Minister of Conservation v Tasman District Council* (NZHC CIV-2003-485-1072, 9 December 2003)

budgeting and farm planning required is overwhelmed because the practical challenge of implementation has not been evaluated in advance of rules taking effect.

- 14.8 For those reasons, I am of the opinion that interim limits on DIN/DRP concentrations or on N leaching at the property scale should not be included in the PNRP.
- 14.9 There is an argument that some other form of interim regulation (additional to what the PNRP already contains) is required. This might, for example, be regulation that limits the size and intensity of existing farms. That would make the PNRP more consistent with approaches in Canterbury and proposed for Southland.
- 14.10 Based on the evidence available to me, however, there does not appear to be a strong case for the need for such control over the interim period. However, if submitters bring forward evidence to the contrary (i.e. of real potential for land use intensification and consequential risk of water quality decline in any of the three whitua where plan changes will not occur until after 2018) then some interim rule limiting further intensification in those areas may be justified.
- 14.11 In the absence of that evidence it is my opinion that the most appropriate course of action to retain those provisions of the Proposed Pan that address non point source discharges (including land use) as notified, except for targeted changes to address specific points as proposed in the Section 42A Report.

Attachment 1

Qualifications and experience

I am a director of Enfocuss Ltd, a resource management consultancy based in Pukekohe. I have practiced as a planner and resource management specialist for the past 28 years.

I hold a Bachelor of Regional Planning (Hons) degree from Massey University and am a full member of the NZ Planning Institute; a full member of the Resource Management Law Association and a certified hearings commissioner under the Making Good Decisions Programme.

My previous experience includes working in policy and regulatory planning roles in local government both in New Zealand and in the United Kingdom. I also spent a considerable part of my early career in central government roles including as a senior policy analyst at Ministry for the Environment (MfE) and environment adviser to the Minister for the Environment.

Since 2001, I have been a planning and environmental consultant, establishing my own practice in 2002. In that capacity I have acted for a number of district and regional councils on planning issues and provided advice to Maori organisations, companies and government agencies. Of note, over recent years, I have advised four different regional councils on the development of regional policy statements and/or regional plans. Over the past year I have been engaged by four different regional councils to provide advice in relation to water management issues.

I have also been involved in reform of freshwater management at the national level:

- (a) I was previously engaged by MfE under the Sustainable Water Programme of Action to advise on alternatives to first-in-first served allocation regimes and on barriers to tradable permits.
- (b) In 2010 I was engaged by MfE to assist in the New Start for Freshwater Programme with specific involvement in water governance issues.
- (c) In 2013 I was engaged by the Ministry for the Environment to draft amendments to the NPS-FM, including the incorporation of the National Objectives Framework.
- (d) In 2016 I was engaged by MfE to provide independent comment on the workability of the proposed changes to the NPSFM.
- (e) Also in 2016 I was a member of the Technical Reference Group overseeing the development of guidance on the use of Overseer in Regulation⁴⁸.

I have previously been engaged by MfE to assist in the development of several other national policy statements.

My relevant experience also involves the preparation of evidence for hearings in relation to water

⁴⁸ Freeman, M, Robson, M, Lilburne L, McCallum-Clark, M, Cooke, A, & McNae, D. (2016) Using OVERSEER in regulation - technical resources and guidance for the appropriate and consistent use of OVERSEER by regional councils, August 2016. Report prepared by Freeman Environmental Ltd for the OVERSEER Guidance Project Board.

Technical: Water quality

quantity and/or quality matters in respect of Horizons One Plan, Variation 6 to Environment Waikato's Regional Plan, Proposed Change 6A to the Otago Regional Plan, the Gisborne Regional Freshwater Plan, Change 3 to the Bay of Plenty RPS and, in Canterbury, the Proposed Hurunui and Waiau Rivers Regional Plan, the Canterbury Land and Water Regional Plan (CLWRP), including Variations (now Plan Changes) 1 and 2 and Plan Changes 3 and 5 to the CLWRP.

I am currently engaged by Horizons Regional Council to advise on possible changes to the freshwater provisions of One Plan.

Previous involvement in the PNRP

My involvement in the PNRP commenced in April 2015 when I was engaged to undertake a pre-notification review of a draft of the plan.

Subsequent to that, in July 2017 I was engaged by the Wellington Regional Council to review the objectives of the PNRP.

Attachment 2

How One Plan's CNLMs were derived and criticisms thereof

The Year 1 CNLM for each LUC was derived by calculating the stocking rate able to be sustained on a clover-based pasture (with no external inputs), and then using OVERSEER to estimate the leaching that would occur from a farm system with that stocking rate (with a variety of other assumptions made). The year 1 CNLM assumed 100% uptake of the land in that LUC. Year 5 and 20 CNLMs were calculated by rerunning the model based on 90% uptake and 75% uptake respectively. (Year 10 was simply calculated as a mid point). This variation to the “pure” natural capital approach appears aimed at getting some level of alignment between the natural capital based CNLMs and the measured in-stream loads at the time the plan was developed. There is no relationship between the Year 20 CNLMs and the target loads⁴⁹

The approach is often described as the *natural capital* approach to allocation. It has, however, been criticised for various reasons. Perhaps the most fundamental of those criticisms is that the LUC/natural capital approach as used by One Plan is that it does not relate directly to water quality. As set out above, the discharge limit is calculated based on what the land can produce, not what potentially affected water bodies can sustain.

The fact is that there is not necessarily any relationship between allocation based on LUC/natural capital (as used in One Plan) and the desired water quality. It is quite clear from modelling done in the two key Manawatu catchments that even if there is full compliance with the 20 year CNLM the loads calculated to deliver the targeted SIN concentration of 0.444 g/m³ will not be met (in fact in the Manawatu River (at Hopelands) would remain over 200% allocated for SIN at year 20⁵⁰ while the Mangatainoka River (at SH1) will remain approximately 15% over-allocated⁵¹). Putting aside for the moment the question of whether the SIN in-stream standard is appropriate, that raises the question of whether such an approach is even viable when assessed against the NPSFM 2017. It seems to me that the NPSFM requires that limits are set to achieve freshwater objectives developed under Part CA. The natural capital approach (as used in One Plan) simply offers no guarantee of that.

⁴⁹ The target load is that load that represents the maximum load that would allow the SIN concentration target to be met.

⁵⁰ The target N load for the Upper Manawatu is 364,000 tonnes whereas the limits set according to natural capital would still result in a 750,783 tonne N load at year 20.

⁵¹ The target N load for the Mangatainoka is 264,000 tonnes whereas the limits set according to natural capital would result in a 30,1452 tonne N load at year 20.

Attachment 3
Part CA of the NPSFM (2017)

CA. National Objectives Framework

Objective CA1

To provide an approach to establish freshwater objectives for national values, and any other values, that:

- a) is nationally consistent; and
- b) recognises regional and local circumstances.

Policy CA1

By every regional council identifying freshwater management units that include all freshwater bodies within its region.

Policy CA2

By every regional council, through discussion with communities, including tangata whenua, applying the following processes 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
 - iii. for any national value for which relevant attributes are not provided in **Appendix 2** or 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;

Attachment 4 Wairarapa Water Project Timeline

