BEFORE THE FRESHWATER HEARING PANEL

I RARO O TE MANA O **IN THE MATTER**	of the Resource Management 1991 ('Act')
I TE TAKE O **IN THE MATTER**	of the Proposed Otago Regional Policy Statement 2021(Freshwater Planning Instrument parts)

NGĀ TĀPAETANGA
SUBMISSIONS

O

Wise Response Society Inc
(KAIWHAKATŪTŪ/SUBMITTERS)

I TĒNEI RĀ, I TE, 7 SEPTEMBER 2023

MAY IT PLEASE THE FRESHWATER HEARINGS PANEL

INTRODUCTION

1. The Freshwater Hearings Panel ('**Panel**') has before it that part of the Proposed Otago Regional Policy Statement 2021 identified as the Freshwater Planning Instrument.

2. Wise Response Inc (2611049 Link) (**Wise Response**) made a submission to that part of the Proposed Otago Regional Policy Statement 2021(**pORPS**) identified as the Freshwater Planning Instrument)(**FPI**).

3. Wise Response is a broad coalition of concerned citizens including academics, engineers, planners, economists, artists, sportspeople who are calling for a more comprehensive assessment of the imminent risks to New Zealand and drawing up of appropriate plans to deal with them. Link

4. Wise Response fundamentally asks: Link

   "*As demand for growth exceeds earth's physical limits causing unprecedented risks, what knowledge and changes do we need to secure New Zealand's future wellbeing?*"

5. A biophysical limits perspective fundamentally alters the way natural and physical resources should be managed. The submission made by Wise Response to the RPS/FPI sought to faithfully reflect that concept across the specific submission points.

6. These Opening Submissions are in 4 parts:

   A. First, they provide our overall view of your authority in light of our environmental and biodiversity crises;

   B. Second, having regard to our view, they then provide a brief review of our evidence to try and build a cohesive view of our existential predicament, our local unsustainable practices and where the opportunities lie to make things better;

   C. Third, it briefly reviews some of the statutory considerations relevant to the Panels authority to implement certain policy

D. And forth, they include an Appendix Table that sets out the submission points we made, the s42A response and an update of our position/views on each submission point.

Overall View

7. Wise Response states for the record that the results so far of this regional planning exercise appear to be akin to 'fiddling while Rome burns. We have to do better – much, much better.

8. From the point of view of climate change alone, the New Zealand Parliament declared a climate emergency on 2 December 2020, which included recognition of: "the devastating impact that volatile and extreme weather will have on New Zealand and the wellbeing of New Zealanders, on our primary industries, water availability, and public health, through flooding, sea-level rise, and wildfire damage."

9. Parliament's emergency declaration stated that "climate change is one of the greatest challenges of our time".

10. Included in the declaration was a commitment to implement the policies required to meet the targets in the Climate Change Response (Zero Carbon) Amendment Act 2019, and to increase support for striving towards 100 percent renewable electricity generation, low carbon energy, and transport systems[1].

11. Climate change however is only one symptom of an economy functioning beyond the capacity of the natural environment to provide sufficient energy, resources, and contaminant absorptive capacity. Responding to any one sector, such as freshwater, requires addressing all sectors. Equally, improving outcomes in one sector can contribute to improving outcomes in all sectors. This must be reflected in an RPS.

12. In our view, while the legal framework within which the pORPS and FPI must be complied with, the process currently appears unfit for purpose when we are in an environmental crisis.

[1] https://www.parliament.nz/en/pb/hansard-debates/rhr/combined/HansDeb_20201202_20201202_08

13. The ORC has the authority to interpret and work within that legal framework to get the very best outcomes you can in light of this crisis. We strongly urge them to do that.

Dr James Salinger's evidence

14. Dr Salinger states:

> *While CO2 is the dominant greenhouse gas, keeping global warming less than 2°C or 1.5°C clearly requires control of all greenhouse gases and especially methane (CH4) - the second most significant. [25]*
>
> *To limit the global temperature increase to 1.5 °C, global net CO2 emissions need to halve by 2030 and be zero by 2050. [28]*

15. These statements indicate that the magnitude of the challenge is already huge and urgent. But achieving those targets is not the end of it, as maintaining a limit of 1.5-degree increase requires that we extract GHG as well with yet to be developed technology. As Dr Salinger adds to the above:

> *Even then the rate of emissions abstraction from the atmosphere needs to be at about 50% of the current discharge rate by 2100 and climbing [29]*

16. Wise Response understands from this that simply to maintain a safe climate, we are already gambling not only that such technology for the GHG extraction can be developed, but also that it can extract at a rate equivalent to half our current emission rate. The fact that we need to rely on the development of such technology means we have already overshot an emissions limit.

17. Given the fatal consequences of failing to meet national and international emissions reduction goals, if meeting the freshwater requirements can be used to assist that process, the evidence is that it should be employed forthwith.

18. Dr Salinger draws attention to the opportunity to quickly mitigate the radiative forcing with a reduction in methane. The largest source of methane in NZ is biogenic from ruminant animals.

> *The shorter half-life of CH4 allows the more intense warming from CH4 to be ameliorated quickly. [25]*

19. Considering these factors together, the only reasonable conclusion is that our current state of affairs regarding climate change is dire. If we are going to have a chance of maintaining a safe climate, all opportunities to mitigate causes and adapt to those effects that are already happening must be pursued with the upmost rigour and urgency.

20. Further, even if emissions reduction rates are achieved, **the context for this RPS (and pORPS) is already one of an uncertain and increasingly demanding operating environment for decades to come.** This will impact all farm and related businesses with more frequent and destructive effects. Thus without a huge shift in what is currently driving climate change, the globe will continue to heat resulting eventually in catastrophic consequences for all life – including that in freshwater.

21. Summarizing the implications of Dr Salinger's evidence a more difficult and threatening climate (and the associated risk to the economy) urgently requires:

    - Shifting to farming enterprise and lower stocking rates that have a smaller emissions footprint and which comply with the national (Net zero by 2050) and international (Paris agreement) emissions reduction targets
    - Ensuring a reduction in biogenic methane as a pathway to reduce warming potential most expeditiously.
    - Enhancing resilience to extreme events affecting freshwater – overland flow, flooding, erosion.
    - Building the water storage capacity in soil and whole-of-catchment to enhance drought resistance and deliver a more even catchment runoff
    - Building the natural fertility in the landscape to reduce the need for chemical fertiliser and associated emissions

Mr Nathan Surendran's evidence

22. Addressing energy and resource supply and trends, Mr Surendran first draws attention to the direct dependence of our economy on fossil energy and particularly diesel, stating:

> *Nothing that we count as GDP activity supporting material standards of living and the wellbeing that provides, happens without these energy inputs. [8]*

23. He then connects that energy dependence directly to GDP stating:

> *… taking a physical reality approach which understand that energy and material throughput* **is** *GDP. A 10% drop in liquid fuel supply is close to a 10% drop in economic output, because diesel to a large extent is the industrial economy. [14]*

24. He then considers supply, which includes a graph showing that today approximately 15% of energy output of oil liquids is required for its own production and that by 2050, this proportion will have risen to approximately 50%. [16] Mr Surendren says the effect of this declining trend on economic activity will be as follows:

> *A decline in net energy means that there is less net energy available for economic growth, which inevitably leads to a squeeze on economic activity outside of the energy sector. A net energy decline is leading to increased competition for remaining energy resources, increased energy price volatility, and logistics, commodity and goods price inflation, plus a squeeze in discretionary spending.[17]*

25. And because of the close relationship between fossil fuel energy and emissions [Surendran at 39], that decline is precisely what is required to retain a liveable climate.

26. Conversely and conveniently, that close relationship between them and GDP also means that the rate of consumption and unsustainable growth can be constrained by squeezing emissions at the required rate.

27. However, the urgency of the situation from a climate perspective [Salinger at 28] is such that this inevitable transition may not occur in time to prevent irreversible changes in the climate and its effects. That is why the net zero emissions goal by 2050 is so important for New Zealand (and why the Paris Agreement is so important internationally).

28. In Mr Surendran's assessment, renewables will not be able to replace fossil energy [20] and decoupling energy and growth is not possible. [36] His key conclusion is:

> *This assessment means that we will not be able to continue to rely on economic growth and consumption-based lifestyles, nor, in fact, the continuation of industrial society in anything like its current form in the*

medium term (5-25 years). We must grapple urgently with how to adapt to live within the declining net energy of our energy system.[34] …. Plan for an energy budget of perhaps 20% of current rate of throughput by 2050.[35]

29. Hence, from Mr Surendran's point of view, **the broad context for this RPS/pORPS is unavoidably one of declining cheap energy to do work and accordingly, a contracting economy.**

30. Summarizing the implications of Mr Surendren's evidence, a steady decline in the capacity to do work (and the associated risk to the economy) implies:

    - Achieving all freshwater goals (including overallocation) as soon as possible while we have the technical and resource capacity to do so.
    - Ensuring the integrity of land and freshwater-related ecosystem services
    - Shifting land management systems to be less dependent on external inputs, (most notably energy) to minimise the risk of disrupting freshwater protection

31. Accordingly, key provisions we have recommended to address both Mr Surendren's and Dr Salinger's evidence include (underlined are changes we recommend):

    - <u>actively promote low impact regenerative landuse practice</u> … (LF–FW–M6 – Regional Plans (9)
    - achieving visions and goals to re-establish healthy and resilient ecosystems as soon as possible (LF-VM – 02, O3, 04, 05)
    - where rohe have been defined within FMUs: (1) environmental outcomes must be developed for the FMU within which the rohe is located<u>, informed by environmental and resource risks, limits and trends</u>. (LF–VM–P6 – Relationship between FMUs and Rohe)
    - innovative and sustainable land and water management practices provide for the health and well-being of water bodies and freshwater ecosystems and improve resilience to <u>environmental risks and trends including</u> ~~the effects of~~ climate change, and ... (LF-FW-O1A (7) Region-wide objective for fresh water)

- Within both environmental and resource limits and in accordance with any relevant environmental flows and levels, … (LF-FW-P7A Water allocation and use)

Dr Helen Beattie's evidence

32. In responding to a brief regarding the impact of current animal farming practice and any mitigation options on freshwater, Dr Helen Beattie's evidence explains that many current practices – particularly the intensive ones – have direct and indirect adverse impact on freshwater and that landuse system change is needed if our agricultural systems are to be sustainable.

> *Intensification in farming systems is harmful on multiple fronts, with some currently accepted practices failing to protect the health and welfare of our animals, people and our environment. [1 (g)]*
>
> *Deintensification, and/or preventing further intensification will reduce some of the risk on environmental damage and contamination, zoonosis and the development of antimicrobial resistance. [1 (h)]*
>
> *In other instances, where land use exceeds capability alternate land use is needed. [1 (i)]*

33. It is her opinion too that many current animal husbandry practices associated with intensive farming actually contravene the Animal Welfare Act 1999 [17] as well as not meeting industry expectations for good practice [19]

34. In addition to improving the welfare of the intensively farmed animals themselves, reducing stocking rates and total numbers has a synergistic effect by both reducing the adverse impact on freshwater quality, as well as reducing the gross radiative forcing on the climate (most notably biogenic methane).

> *Where land use conflicts with land capability, whole-of-system change is required to shift to a system that the land can support. A combination of global (e.g., climate change) and local (e.g., water quality) drivers are pushing for a transition in our land-use systems in New Zealand.*

35. This view is of the effects of agricultural intensification is echoed in a Canterbury District Health Board public health report from increased greenhouse gas emissions, loss of biodiversity and ecosystem services, and weaker rural communities. [22] Nutrient pollution faecal coliforms and veterinary drugs detected in community water supplies have also been linked to farming.[26]

36. Zoonotic diseases such as campylobacteriosis, cryptosporidiosis and E Coli are frequently of animal origin and are usually transmitted through drinking water and are higher with more intensive animal farming. [34] Where soils are leaky there is an increased risk of contamination of ground and surface waters [16].

37. In summary, for environmental, animal welfare and public health reasons related to freshwater, Dr Beattie's evidence recommends:

    - Shifting to other less intensive farming systems
    - Reducing the stocking rate under intensive farming
    - Reducing the use of medications and chemicals with adverse impacts

Dr Mike Joy Evidence

38. In Dr Joy's opinion the stocking rates and fertilizer rates currently permitted are significantly above what the land can safely assimilate. Regarding stocking rates, he says:

> *New Zealand's stocking rate is three times higher than the rate mandated by the European Union to protect freshwater, which is about one dairy cow per hectare. The average for dairy stocking rate for NZ in 2017-18 was 2.8 cows per hectares and for Otago 2.9 cows per hectare. [37]*

39. Regarding the application of nitrogen fertilizer, he observes:

> *New Zealand has seen a more than 662% increase in nitrogen applied to agricultural land as urea fertiliser, from 24,586 tonnes in 1990 to 358,000 tonnes in 2019. [34]*

40. Dr Joy notes that intensification causes increased nutrients in freshwaters, leading to eutrophication which is excess algal growth driving altered diurnal dissolved oxygen

levels lethal to stream life and can also adversely affect mahinga kai and public health issues [Summary, f h and i]

41. He states that the oxygen levels in eutrophic water due to excess nutrient become unstable and if unchecked, will no longer support most aquatic life.

> *Most lowland lakes in the South Island pasture catchments contain excess nutrients, and are classified as either moderately impacted or at high risk of degradation. [45]*

42. And because the bottom-line water quality limit adopted in the NPSFM 2020 is higher than scientists recommend (both in NZ and the EU) which implies more widespread eutrophication can be expected unless other mitigation steps are taken. [42]

43. Dr Joy's evidence goes on to address similar water quality issues with groundwater including pesticide residues, emerging organic contaminants and agrichemicals [50] aggravated by over abstraction in some locations. [51]

44. Other factors contributing to a deterioration in the quality and quantity of surface water including its natural character and life-supporting capacity, include irrigation abstractions, damming and diversions, catchment transfers, sediment suspension and aquatic and riparian habitat loss, loss of freshwater invertebrates, the destruction of 90% of wetlands and their ecosystem services.

45. Cumulative effects include that on our 54 native freshwater fish species, (including the culturally significant Longfin tuna/eel, lamprey, freshwater mussels), over 74% are threated, up from 20% in 30 years and disease risks for mahinga kai collection and consumption, as well as nitrate and biotoxins, and the risk of general bioaccumulation in fish species. (Our highlight)

> ***If the decline continues at the current rate, by 2050 there will be none left****. In order to maintain mahinga kai and halt the decline of river fauna, it is crucial to ensure that rivers, groundwaters, lakes, and estuaries maintain natural flows, have uncontaminated water, and are not mixed across different catchments.*

46. One of the reasons for this lamentable state of affairs has been failure to take cumulative effects into account when granting individual consents. [107] More

recently, Farm Environmental Plans have been adopted as a formal "self-regulation" tool to reduce adverse effects of farming practice on freshwater. However, a recent Lessons-learned report on the Ashburton Lakes has identified multiple issues with this approach.

> *A recent report from the Ministry for the Environment revealed systemic failures of the key mitigation options for dairy farms, Farm Environment Plans (FEP) and Good Management Practice (GMP). This report is important because it highlights the failure of FEPs being promoted by government as a mitigation option for farm impacts on freshwater [110]*
>
> *They were an industry response to avoid regulation and unsurprisingly flawed as the don't take into account the scale of change required [Summary, p] and under them the regulatory authority found itself powerless to act before the consent lapses even when harm to freshwater is clear. [112]*

47. The full suite of freshwater issues Dr Joy has highlighted - a widely degraded state and/or deteriorating trend centred on areas of intensive agriculture - demonstrate unequivocally that current intensive land management practices need to change.

> *A further conclusion of the MfE report was that using controls based on output (the basis of freshwater management currently) don't work, thus they must be input based or a combination of both. [114]*

48. When addressing the importance of Te Mana o te Wai and Ki uta ki tai, Dr Joy draws attention to what we consider goes to the crux of what is required from freshwater polices

> *Ki uta ki tai is crucial to TMOTW, it requires integrated management, integrating all the multitude of connected activities on the whenua. The only way real change for the better or at minimum halting the decline in freshwaters is through unconditionally changing what we do on the land. The biggest driver by far in the region currently is agricultural intensification.* ***Thus, the only way change can occur is through reducing landuse intensity.*** *[95] (our highlight)*

49. While it may not be the immediate priority for any business, failure to achieve sustainability goals will have devastating consequences for businesses and society at large. Indeed, our Society considers this to be the single most important challenge confronting the panel. The Society notes the shift in international business discourse toward recognising the economic and financial risks of biodiversity loss (Knight-Lenihan evidence).

50. This will mean separating out those submissions that are clearly seeking to retain practices responsible for our degraded state for short-term reasons and which, if not checked, will prevent its stabilisation and repair.

51. **So, unless this RPS/pORPS at least requires a clear path to be set away from the current deteriorating trajectory Drs Beattie and Dr Joy so clearly articulated, then it will be just another in a line of policy failures that we can no longer afford.**

52. Such an outcome would be contrary to the requirement under the RM Act, the NPSFM and the Te Mana o te Wai hierarchy [92] to, first and foremost, achieve sustainable management

53. In summary, because of unsustainable impacts on the quality of freshwater and aquatic life, Dr Joys evidence requires:

    - Shifting to other less intensive and lower emissions farming systems with less or better managed irrigation
    - Reducing the stocking rate under intensive farming.
    - Reducing the use of fertilizer and other agrichemicals
    - Methods other than Farm Environment plans must be employed if good environmental outcomes are to be achieved.

54. Key provisions recommended by our Society intended to help reduce the impacts of intensive agriculture and transition identified by Drs Beattie and Joy include (underlined are changes we recommend):

    - indigenous species migrate for natural lifecycle behaviour easily and **as** naturally as possible, (LF-FW-O1A (3))

- use of exogenous inputs with effects exceeding environmental limits are phased out. (LF-FW-O1A (9))
- natural fertility, water harvest and water retention throughout the catchment are improved with soil, land and cover management (10)
- Adopting "environmental gain/restoration" as a default for all landuse rather than no further deterioration and shortest possible timeframes for achieving water quality targets.
- actively promote low impact regenerative landuse practice … (LF–FW–M6 – Regional Plans (9)
- promoting land management activities that enhance soil retention and water infiltration, including building and preserving soil structure and avoiding compaction (LF–LS–P18 Soil erosion (3 – revised recommendation)

Dr Stephen Knight-Lenihan's Evidence

55. Dr Stephen Knight-Lenihan's evidence supports that of Drs Beattie and Joy, and in addition brings an international perspective

56. Given the state of the environment/biodiversity and in accordance with the principle of Ki uta ki tai, we have requested that ecological gain/restoration must now be required across all ecosystems. This is supported by Dr Knight-Lenihan:

> *Research globally supports the need for net improvements in ecological health and integrity across **all** habitats. (Summary, (a)) (our highlight)*

What this may mean in practice is that while focusing on significant habitat or species for protection and restoration, attention must also be given to areas considered less significant, as they will often have been subject to cumulative losses over time. Restoring ecological functioning requires including these areas in a restoration plan.

57. Dr Knight-Lenihan backs this up with the notion that "no-net-loss" is no longer adequate

> *Continuing decline in global biodiversity has led to a critical need to halt and reverse this decline. This requires protecting, enhancing and restoring ecosystems. Communities globally need to assess how they can contribute.*

> *Avoiding and minimising ecological harm, with the possibility of generating benefits in certain circumstances, is no longer adequate. (Summary, (d))*

58. He says there are well established methods to monitor improvements in ecosystems although the UK Environment Act does not establish methods, it assumes those methods are available.

> *There are many well-established ways to measure improving ecosystem functioning or health, and biological integrity. The planning challenge is agreeing on what is an acceptable level of integrity... In order to reduce the risk of continuing biodiversity decline, regulatory authorities could put in place mechanisms ensuring on-going improvements in how well ecosystems are functioning. Baselines, goals and targets for improving ecosystem values for any environmental domain can be used as a starting point for this process. (Summary, (c)(d))*

59. Such goals and targets need to take into account the extent to which biophysical capacity has been exceeded and the accumulated historical impacts

> *In this context, environmental limits, objectives and targets for any domain, including freshwater, should be seen as part of a set of mechanisms designed to support the continuing improvement of all domains, while supporting human well-being. [22]*

60. As this is an emerging practice there are some aspects which need further work.

> *Challenges include measuring actual improvements in various ecological values over time, deciding what is an acceptable level of enhancement and restoration relative to human development and activity, and the resourcing needs for monitoring, compliance and enforcement. [28g]*

61. However, these challenges have not prevented, for example, the UK introducing legislation providing for biodiversity gain, and the 2022 Kunming-Montreal Global Biodiversity Framework (GBF) identifying goals and targets to not only halt biodiversity decline, but to reverse it. New Zealand, along with other signatories to the UN Convention on Biological Diversity, has adopted the GBF.

62. Wise Response submits that setting an obligation for "net gain" is a precondition to the innovation and development still required to be able to monitor and enforce it.

63. Moreover, the mitigation hierarchy in the Resource Management Act is expressed as avoid, remedy and mitigate, and while its application may result in overall benefits, it is not an explicit requirement

> *The difficulty is that in a biophysical system in net decline, adhering to the mitigation hierarchy may only reduce the rate of decline. The GBF and [an international Global Goal for Nature campaign] emphasise the need to actively enhance and restore ecosystems. [16]*

64. To summarize the key implications of Dr Knight-Lenihan's evidence:

- all habitats need to achieve net improvement in ecological health and integrity
- environmental goals need to consider the extent to which limits have been exceeded
- there are some aspects of the application of the "net gain" principle which need further work
- Some other states have started to adopt the principle in policy

65. Key provisions recommended by our Society intended to give effect to these findings include:

- <u>all freshwater use is for activities compliant with national and international emissions reduction and biodiversity policy agreements.</u> (LF-FW-O1A (13) – Objective)
- there is ~~no decrease~~ <u>a steady restoration</u> in the extent and diversity of indigenous ecosystem types and habitats in natural wetlands, (LF–FW–O9 (2) - Natural wetlands
- where <u>technically</u> possible:
    1. an increase in the extent and quality <u>of former wetland</u> habitat for indigenous species <u>by 10%/year and</u>,
    2. the restoration of hydrological <u>and ecological</u> processes, <u>including the steady re-establishment of the original ground and surface water levels</u>.

- progress toward water quality targets is being effectively tracked (LF-FW-O1A (12))

Dr Craig Anderson

66. Dr Craig Anderson[2] contributed to our oral submission on Land and Freshwater section of the Non – FPI. His contribution was inserted verbatim (sections 8 – 14) in that document under the heading "Scope for more water and climate-smart management of soils"

67. The Society asked him to provide an expanded statement on the same points for this hearing, but he was unable due to limited time before the submission deadline. While the split RPS process means Dr Anderson's opinion is not registered as evidence, we wish to briefly draw the panel's attention to its relevance to the FPI, so it can be taken into account when the FPI and the Non-FPI are integrated.

68. Both Drs Beattie and Joy have indicated that landuse management and freshwater condition are directly linked. Options identified to prevent or reverse a degraded state are a change of landuse, reduced stocking rates and reduce inputs with damaging environmental side effects. This raises the question as to whether such change can be made while retaining economic viability. Also, to what extent such changes might deliver aggregated benefits for freshwater catchments.

69. Regarding synthetic nitrogen fertilizer as an input Dr Anderson stated:

> *Addition of excess synthetic nitrogen to soils circumvents the genetic capability present within the soil microbiome to deliver nitrogen from the atmosphere, can cause slow acidification and degradation of soil and can result in soil carbon losses, specifically in areas of intensification beyond carry capacity.*

70. Regarding lower stocking rates and economic viability, Dr Anderson stated:

[2] Craig Anderson is a biogeochemist working at Plant and Food Research, Lincoln Christchurch. His current research interests are nitrogen cycling in soil along with soil health and function. He has over 10 years' experience in agriculturally related research and a further ten years' experience in general environmental management research management.

Deintensification does not equate to loss of economic viability, especially if marginal return models are used in the first instance i.e., minimising or removing any activities on-farm that result in expenditure. [12]

Deintensification delivers immediate gains with respect to climate targets as lower stocking rates immediately result in lower methane emissions both from the animals and the soil.[13]

There are increasing numbers of local New Zealand examples where changes in management practices in pastoral and arable operations are delivering more functional agro-ecosystems without economic losses. This is primarily due to increases in soil organic matter and more efficient turnover and utilisation of resources resulting from improved soil structure, water flow and storage and gas exchange that allows a higher diversity of function to be delivered by the soil microbiome [11]

71. Regarding aggregated benefits for freshwater systems Dr Anderson stated

Land use suitability analysis at catchment scale would be a reasonable path forward to achieve gains in agroecosystem health and surface and groundwater health…

…The technology and capability to achieve this is available in New Zealand with the best example implemented to date being the Taupo area and upper Waikato catchment.[14]

72. Our policy recommendation to reduce synthetic nitrogen fertilizer will not only reduce freshwater pollution, but also lead to enhanced community and catchment resilience through "increases in soil organic matter…improved soil structure, water flow and storage" [11].

73. It follows that were such on-site improvements to soil hydrology undertaken at sufficient scale, the net effect would be greater rainfall efficiency and more attenuated release of water across catchments, improving the persistence of river flows between rainfall events and augmenting surface and groundwater health. [14]

74. Key provisions recommended for the FPI by our Society intended to give effect to Dr Anderson's opinion include:

- the functional interconnection of land and soil, freshwater (including groundwater) and coastal water is recognised with an integrated management approach (Ki uta ki tai), (LF-FW-O1A (2))
- natural fertility, water harvest and water retention throughout the catchment are improved with soil, land and cover management (LF-FW-O1A (10))
- ~~Maintaining s~~ Soil quality. Maintain and where it is degraded, improve soil quality by managing both land and freshwater resources, including the interconnections between soil health, vegetative cover and water quality and quantity. (LF-LS-P16)
- "promote ~~encourage~~ on-site storage of rainfall in soil, wetlands and reservoirs to detain peak stormwater flows, and … (LF-FW-M7(c))
- promoting land management activities that enhance soil retention and water infiltration, including building and preserving soil structure and avoiding compaction **(**LF–LS–P18 – Soil erosion (3))

Dr Hamish Rennie Evidence

75. The key points in Dr Rennie evidence may be summarised as:

- Wise Response sought clear statements that would be action forcing rather than negotiated compromises that, as Dr Joy points out … have not been effective elsewhere.
- The proposed targets provided by Wise Response provide a clear and measurable approach, with 'improvement' being a minimal supporting provision. From a planning perspective clear target suggested by Wise Response are desirable.
- Provisions suggested by Wise Response would provide a clear policy direction to plan-makers that carbon sequestration and associated responses to addressing GHGs are to be promoted through their plans. This would be useful guidance for decision-makers.

76. His evidence supports our call for more directive wording throughout the plan. Our concerns in that respect were born out in the "Lessons Learned" report on the Ashburton Lakes. And as indicated already, climate change provisions are essential to contain the growing stress on freshwater bodies.

Evidence considered together

77. The evidence is consistent with the ORCs own State of the Environment assessments that current landuse practices and their cumulative impact on freshwater[3].

78. The totality of the evidence requires an urgent paradigm shift in behaviour and resource management if we are to dodge an environmental crisis. This change can be achieved provided it does comply with the NPSFM requirement for long-term visions to be informed by "environmental pressures" (NPSFM 3.3(3) (b). Likewise setting limits must have regard to the foreseeable impacts of climate change (3.14(2)(a) (ii)).

79. Regarding urgency, we note that every local authority must give effect to the NPS "as soon as reasonably practicable" (NPSFW 4.1(1)) which supports our call for achieving water quality goals sooner. WR realises this relates to planning timelines, but the urgency of the situation requires "practicable" to mean immediately.

80. Using the national target of net zero emissions by 2050 as the key condition for gauging what policies and activities are necessary, realistic, a priority and sustainable in the medium and longer term is the best lever we have to release us from the growth imperative.

81. Meeting that 2050 goal is patently the only way the various social and cultural/mauri AERs and NPS provisions can possibly be achieved. Ominously, the only reference to "net zero" in the pORPS is in IM-M5 - Other Methods, and is merely "encourage". The link between enhancing and restoring freshwater and terrestrial ecosystems, and meeting climate mitigation and adaptation targets and long-term goals, needs to be clear in the RPS.

82. The key WR issues of the implications of declining net energy and the concept of steady "restoration/ecological gain" for all water quality (and by association, land - eg NPSFM 3.5(2)) is to address degraded systems, not just those deemed "significant" (ie adopt the "improve" path option in Policy 5, NPSFM).

83. So, the combined message from this evidence is that our freshwater is under stress and in a sorry state, that under climate and energy constraints that stress is likely to

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intensify, and that essentially the way we are treating soil is the problem but can also be the solution.

84. Primary options to address this include the following:

    i. Reduce any exogenous inputs being used at rates that exceed a limit
    ii. Reduce stocking rates and/or change type of stock/enterprise
    iii. Reduce current impacts with improved Good Management Practice (GMP), and/or confine more contaminating systems to less leaky soils

85. GMP has been tried but has so far proven inadequate for the scale and intensity of the contamination and shifting landuse enterprises to safer sites is likely to be widely unrealistic. Reducing stocking rates and/or exogenous nutrient inputs is where the focus needs to go. Accordingly, nitrogenous fertilizer should be managed as a contaminant which, where it has exceeded a safe limit, is subject to proportionate input control (NPSFM 3.14(1)(c)(ii)).

86. **Cutting synthetic fertilizer use will drive a transformation in farming practice that brings multiple benefits, including more climate adapted landuse systems, improved water retention and carbon sequestration and reduced exposure to energy and economic shock.** Accordingly, Wise Response recommends that a sinking cap to nil synthetic nitrogen fertiliser is employed as the primary policy lever for the necessary change. The common assumption that his will automatically result in significant financial cost to individual landowners is not borne out by many farmers who have successfully taken this step.

87. So, establishing such a mechanism in this RPS/pORPS to extend and quicken that process is where the real opportunity lies for a response proportionate to the enormity of the challenge.

88. Any enhancement in soil hydraulic properties achieved through this transition would enhance the flow regime and thus, directly help address freshwater quality issues.

89. Moreover, adoption of this approach at a farm level opens the way to making the whole-of-catchment approach possible for a more resilient and more effective climate change adaptation and mitigation (NPSFM). The huge scope for transforming

resource use and environmental effects of this straightforward policy change means it is the single most important submission point to Wise Response.

90. Such policy would satisfy the primary objective of the NPSFM (2.1 (i)(c)), the future focus in the 6 principles of Te Mana o te Wai (1.3 (4), (5)). It is also a specific requirement of Council at under NPSFM 3.14(2)(a)) i) ii).

Other statutory and policy considerations

91. Regarding our proposal for new policy to restrict synthetic nitrogen use, provisions exist (or are proposed in this pORPS) to enable such a provision when its use must not exceed safe limits. (Our highlighting)

- NPSFM 1.4 (Interpretation), states that *"**limit means** either a **limit on resource use** or a take limit"*

- At NPSFM 1.4 (Interpretation), *a limit on resource use means the maximum amount of resource use that is permissible **while still achieving a relevant target attribute state or a nutrient outcome** needed to achieve a target attribute state*

- The NPSFM, Appendix 2B states that ***attributes requiring limits on resource use** include Phytoplankton, Periphyton, **total nitrogen,** total phosphorus, **ammonia, nitrate,** dissolved oxygen, suspended fine sediment, E. coli, cyanobacteria*

- And at NPSFM *3.14 (1) Limits on resource use may: (a) apply to any activity or land use; and (b) apply at any scale (such as to all or any part of an FMU, or to a specific water body or individual property); and (c) be expressed as any of the following: (i**) a land-use control (such as a control on the extent of an activity) (ii) an input control (such as an amount of fertiliser that may be applied** (iii) an output control (such as a volume or rate of discharge); and **(d) describe the circumstances in which the limit applies.***

- At NPSFM 1.4 (interpretation) over-allocation or over-allocated in relation to both the quantity and quality of freshwater, means the situation where: (a) **resource use exceeds a limit; or** (**b) if limits have not been set, an FMU or part of an FMU is degraded or degrading**; or…

- Policy LF-FW-P7 (5) - Fresh water in the pORPS/FPI concerning over allocation states that **"Environmental outcomes… and limits ensure that existing over-allocation is phased out…**".

92. Regarding the authority the Panel has to make such a policy recommendation we note the following regulations under the RMA

> ***43B Relationship between national environmental standards and rules or consents***
>
> *(1) A rule or resource consent that is more stringent than a national environmental standard prevails over the standard, if the standard expressly says that a rule or consent may be more stringent than it.*
>
> *(2) For the purposes of subsection (1), —*
>
> *(a) a rule is more stringent than a standard if it prohibits or restricts an activity that the standard permits or authorises:*
>
> *(b) a resource consent is more stringent than a standard if it imposes conditions on an activity that the standard does not impose or authorise.*
>
> …

And

> *National Environmental Standard for Fresh Water*
>
> ***Relationship between regulations and plan rules and resource consents***
>
> 1. *A district rule, regional rule, or resource consent may be more stringent than these regulations.*

93. The philosophy of setting standards and then letting the users determine how they get there, used for the development of the likes of Plan Change 6A (Water Quality) and the operative RPS, has been recognised as a failure. The expectation is therefore, that this new RPS will set a more directive framework. This is supported by objectives and provisions in the NPSFM/NES giving priority to the health of water ways and ecosystems under Te Mana o te Wai.

94. Should the Panel conclude that the RPS itself is not the place set the necessary limit and/or pathway to a safe limit for synthetic nitrogen fertilizer, then it must ensure it will be specified as rules in the L & W Plan. The principle of the RPS requiring a

pathway to re-establish a sustainable condition applies just as much to the likes of recovery from wetland loss and over-allocation of freshwater. The method is synonymous with the emissions reduction strategy for zero net carbon.

Appendix Table

95. As noted at the outset of these Opening Submissions, we have attached an Appendix Table that sets out the submission points we made, the s42A Report response and an update of our position/views on each submission point.

Final remark

96. Our Society formed in 2012 with the purpose of promoting the effective recognition of biophysical limits in the planning system, as an alternative to the dominant unremitting growth narrative. Rather than using other litigation methods under consideration at the time, we were advised by a Queen's Counsel to use the existing RMA framework to promote the changes we sought.

97. Since about 2015, we have been more or less continuously a party to policy reviews both Nationally and Regionally, promoting those same principles. In the case of the ORC, this has included Plan Change 6A, 6AA, the operative RPS, PC7 PC8 and now a new RPS almost before the last one hit the road, involving 5 hearings. Following this, we have the prospect of trying to lever useful policy into the new L &W Plan.

98. Sadly, it's fair to say that despite endless hours of group voluntary time and pro-bono input from experts (equally worried about our environmental legacy) none of these efforts have delivered what is needed. And over the same 8-year period, the environmental crisis has escalated hugely on multiple fronts and the warnings about passing a point of no return have become ever shriller.

99. For example, following the release of the third Intergovernmental Panel on Climate Change (IPCC) on 4 April 2022, the UN Secretary-General said:

> "We are on a fast track to climate disaster. Major cities under water. Unprecedented heatwaves. Terrifying storms. Widespread water shortages. The extinction of a million species of plants and animals. This is not fiction or exaggeration. It is what science tells us will result from our current energy policies. We are on a pathway to global warming of more than double the 1.5°C limit agreed on in Paris. Some Government and business leaders are saying one thing, but doing another. Simply put, they are lying. And the results will be catastrophic. This is a climate emergency."

100. How do we break this suicidal path? When will some forum actually have the courage to make the difficult call that changes the trajectory? Isn't this RPS process where what "sustainable management" really means is decided? Are we so hidebound by our procedures that we cannot respond to the elephant in the room? All parties to this process know children, have children, and some, grandchildren. What the Secretary General is telling us is that on current trends, their future will become a living nightmare – perhaps before 2050 (25 years). Under these circumstances, the nearer planning time horizons are to 2050, the more unlikely are they to be achieved. At the very least milestones become essential.

101. Last, we have Mana Whenua to thank for the concept of Te Mana o te Wai and putting nature first. If we can be true to that kaupapa in this RPS, it will go a long way to addressing not just freshwater, but also the way we manage the land, and hence, confront climate change.