



Established 1968

New Zealand Freshwater Sciences Society

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NEW ZEALAND FRESHWATER SCIENCES SOCIETY

SUBMISSION ON THE NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT

Dear Board of Inquiry

The New Zealand Freshwater Sciences Society (Inc) was established in 1968 as the New Zealand Limnological Society and has recently celebrated its 40th Anniversary. It is a constituent society of the Royal Society of New Zealand. It has some 370 current members, drawn from the freshwater academic and research, teaching and management communities. The Society's members have a diversity of freshwater research interests and promote freshwater science in the community. The Society has recently joined with the New Zealand Hydrological Society in publishing a book, 'Freshwaters of New Zealand', which summarises the recent 'state of freshwater research' in this country.

The Society holds an annual conference to facilitate exchange of information and ideas. This year, the proposed National Policy Statement was a focal topic, with a workshop devoted to the topic attracting some 50 members in animated discussion. Subsequent discussion papers from Society members on the Society's website have attracted comments from a variety of members which have been distilled into this submission.

We wish to speak to this submission on behalf of the Society and its membership, should such an opportunity arise.

Yours faithfully

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For the New Zealand Freshwater Science Society (Inc).

1. PREAMBLE

1.1 Vision & Goals

Oppose the lack of an over-arching aspirational and forward-looking vision.

The NPS needs a vision that challenges New Zealanders to be smarter about the way freshwater ecosystems and human needs intersect. Freshwater bodies are continually referred to as 'resources' throughout the proposed NPS. This imparts a very anthropocentric philosophy to the document and gives the impression that freshwaters are, first and foremost, resources for human use. Several key statements fail to acknowledge the key values of New Zealand's freshwater ecosystems. For example, the following statements would acknowledge these values:

"Freshwater systems are New Zealand's key asset which showcase our 'Clean, Green' brand."

"The maintenance of freshwaters in a clean condition maximises the ecosystem services¹ they provide."

The definition of resource management in the RMA includes the non-use of resources. In the case of water resources, with the exception of nationally 'outstanding' water resources for which a person has applied for a water conservation order, there is no long term protection mechanism for water resources. Regional plans may have protection as one of their objectives for the life of their plan, but this is not always made explicit and will be reviewed at the end of each 10 years of the plan's life. The NPS needs to cause local authorities to consider the intrinsic and other non-exploitative values of water bodies to ensure these are recognised and provided for in those plans as appropriate, taking a longer term perspective than just the next 10 years.

Oppose the lack of acknowledgement of the importance of "natural character"

The "Proposed NZ Coastal Policy Statement" (Objective 3) gives recognition to natural character, and this should also be reflected in the Freshwater Management NPS with a specific objective or policy as follows:

"The natural character of wetlands, and lakes and rivers and their margins is preserved, through the protection or restoration of natural landscapes, features, processes and indigenous biodiversity"

Oppose the lack of a framework and timetable for achieving desired outcomes.

The European Water Framework Directive (WFD) sets out a timetable running from 2000, when it became operative, until 2027, which is when their 3rd management cycle ends and is the final deadline for meeting all objectives. There is a requirement to achieve "good ecological status" and "good chemical status" within 15 years of the directive becoming operative. There are provisions for exceptions, of course, but if Europe can aspire to do that

¹ The NPS must recognise that freshwater provides many goods and services to society and that they have immense value. Resource managers have to balance economy and environment but this is made difficult because the important and diverse values of freshwater ecosystems have been neglected. Thus, it is imperative that a methodology is developed to value ecosystems. Ecosystem services can be classed as market (drinking water, electricity generation, pollution assimilation and irrigation) and non-market (biodiversity, habitat, aesthetic, cultural).

with all the water quality problems they have, surely New Zealand can do better than achieving the status of “swimmable by 2035”.

Changes requested:

- Include an overarching goal such as:
"To sustainably manage New Zealand's freshwater assets by maintaining, restoring and protecting their physical, chemical and biological integrity, while providing for appropriate human use".
- Recognise the significance of natural character:
"The natural character of wetlands, and lakes and rivers and their margins is preserved, through the protection or restoration of natural landscapes, features, processes and indigenous biodiversity"

Furthermore, the NPS should require regional councils to actively identify and protect the natural character of their region's water bodies.
- Develop a framework and timetable for achieving revised vision and goals. For example:
 - By 2012, appropriate state of the environment monitoring of key freshwater ecological and other public resource values (e.g. biodiversity, amenity, natural character) will cover most of the country's degraded fresh waters and will guide efforts to achieve desired conditions.
 - By 2015, all degraded natural waters will have been identified and measures to improve/restore their water quality and life supporting capacity will have been actioned.
 - By 2025, whole catchment analysis of freshwater and contaminant pathways will be used to manage the quality and quantity of all freshwater resources.

1.2 Use of the Precautionary Principle

Oppose the lack of a precautionary principle in freshwater management.

To be successful, management should be adaptive and adopt a precautionary approach, especially when there is a high degree of scientific uncertainty, the values at risk are high, or the consequences of getting it wrong are great. Such a precautionary approach includes starting at a point with a low degree of risk (i.e. a low degree of alteration to natural or underlying high water qualities) and is especially important because it will enable the following issues to be addressed:

- 1) the potential for cumulative effects and changes that accrue over long timescales before ecological thresholds are exceeded and foodweb collapse becomes apparent;
- 2) scientific knowledge may be imperfect and policy should go some way towards reflecting this;
- 3) some adaptive management may be required as understanding of effects is developed; and
- 4) getting it wrong, i.e., ecosystem degradation is unacceptable and precautionary approaches should over-ride opportunity costs.

There must be scope, if adaptive management principles are to be adopted, to reverse water uses or allocations if adverse effects occur as a result of an approved activity. The alternative

to adaptive management and the application of the precautionary principle in freshwater management is a higher level of certainty in decision-making.

Article 174 of the EU Treaty says the Community policy on the environment is "to contribute to pursuit of the objectives of preserving, protecting and improving the quality of the environment, in prudent and rational utilisation of natural resources, and to be based on the precautionary principle and on the principles that preventive action should be taken, environmental damage should, as a priority, be rectified at source and that the polluter should pay." The Society supports such an approach for freshwater management in New Zealand.

1.3 Lack of clear bottom lines

Oppose the lack of clear bottom lines to prevent further degradation of freshwater resources.

This omission cuts across all Objectives, and is a result mainly of the philosophy behind this NPS, which is about compelling local government agencies to develop policy that guides the continued compromise of natural and physical resources to facilitate "land use development". This appears not to provide for any active protection of some freshwater bodies. For example, land use development is included in the text of Objectives 2, 4 and 5 and in none of these is it stated or implied that further development is to be halted in specific circumstances. Nor is there an acknowledgement that in many areas land use development has already gone too far. The term "development" should be removed from "land-use development" or it should be qualified as "existing and future development".

Given the importance of wetlands to biodiversity, recreation, ecosystem services, etc., and the fact that <10% of wetlands that existed 150 years ago remain today, a moratorium on the conversion of wetlands in New Zealand would be appropriate. In the preamble the NPS states that only 60% of NZ's freshwater swimming spots meet the applicable guideline, but in the face of such degradation discusses the need to limit (not cease) and remediate the degradation of water quality.

Compare this approach to that of the EU's WFD, which provides clear direction in relation to future degradation and requirements (and deadlines) for enhancement, and strong statements requiring that all member states must "protect, enhance and restore all bodies of surface water". The WFD clearly states that its primary objectives are "preserving, protecting and improving the quality of the environment, in prudent and rational utilisation of natural resources, to be based on the precautionary principle and on the principles that preventive action should be taken, environmental damage should, as a priority, be rectified at source and that the polluter should pay." Below is a copy of the Purpose of the Water Framework Directive for comparison with the Purpose and objectives of the NPS for Freshwater Management.

“Article 1- Purpose

The purpose of this Directive is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which:

- (a) prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;
- (b) promotes sustainable water use based on a long-term protection of available water resources;
- (c) aims at enhanced protection and improvement of the aquatic environment, *inter alia*, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;
- (d) ensures the progressive reduction of pollution of groundwater and prevents its further pollution, and

- (e) contributes to mitigating the effects of floods and droughts and thereby contributes to: the provision of the sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use, a significant reduction in pollution of groundwater, the protection of territorial and marine waters, and achieving the objectives of relevant international agreements, including those which aim to prevent and eliminate pollution of the marine environment, by Community action under Article 16(3) to cease or phase out discharges, emissions and losses of priority hazardous substances, with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.”

Changes requested:

- Re-draft the Preamble to include:
 - an acknowledgement of the current state of freshwater resources, including discussion of the quantitative loss of freshwater resources nationally, i.e. more than 90% of wetlands drained since the 1840s as well as the loss trends in water quality and quantity (i.e. only 60% of swimming spots are swimmable).
 - a discussion of the benefits derived from the use of freshwater resources in the context of the four bottom lines - cultural, economic, social and environmental – and including significant ecosystem services (see footnote 1).
 - an acknowledgement that in many areas we are at, or past, an asymmetric tipping point where the restoration of critical ecosystem services will cost more than the economic gain associated with their development or alteration.
 - some narrative on national trends in nutrient enrichment as well as the degradation and loss of lowland freshwater habitats.
- Make it clear that this is an NPS on "sustainable" freshwater management NOT on land use development and that its intention is to set a framework and bottom lines that will enable local authorities and communities to protect and enhance remaining freshwater ecosystems both in terms of quality, quantity and ecological values. The term "development" should be removed from "land-use development" or it should be qualified as "existing and future development". This change should be made throughout the NPS and in the Definitions.

Policy response:

- Change the Policy framework to include a set of national bottom lines to be implemented by, and through, regional councils and territorial local authorities, and not left to be relitigated at the time of resource management planning processes. As it is, the NPS simply defers all the tough decisions to regional councils to make on their own whereas, in reality, they require some detailed guidance and national standards to follow, adhere to and/or aim for. In many cases the Policies in the NPS have merit if applied at a national level; however, in every case the NPS defers the decisions on value, levels of protection, etc. to local government and simply offers the guidance that these issues have to be addressed by way of an RPS. The issue this then creates is the same one we face now, that some councils, due to local politics or accidents of history, take a develop-at-all-costs approach to resource management, whereas others (many of whom have already developed at all costs) are starting to take the opposite approach at huge expense and to little effect if the national policy remains so focused on "provincial self management". If the NPS, instead, sets the bottom lines on critical freshwater resources and values regardless of region (such as no further loss or degradation of wetlands, and minimum water quality standards such as the 'good status' adopted by the EU WFD) then councils can determine how and where to implement these requirements as opposed to whether or not to implement them.

- Policy 1 – change to include provisions such as ..."every regional policy statement specifies objectives, policies and methods that -
 - prevent further loss of, or damage to, freshwater habitats (wetlands, lakes, rivers, springs) as a result of physical or hydrological alteration;
 - require a progressive reduction in the discharge of contaminants (including, but not limited to, nutrients and sediment) to water from all land use types with priorities for action being those water bodies at or near ecological tipping points as a result of actual or potential contamination/degradation;
 - provide for land use development that prevents further deterioration and/or protects and enhances the status of freshwater ecosystems.
 - provide for the protection of the habitat of native biota."

As it currently stands, Policy 1 would allow each council to determine its own, as yet undefined, "notable values" or decide for itself what is and isn't degraded and then draft policy accordingly. This would provide no protection from development-driven councils or from continuous compromise due to the adversarial policy development process in NZ.

- Change Policy 2 (c) (iii) to encourage investment in improved industry best practices that set a minimum standard such as "no increase in the effects of land use development and discharges of contaminants on the quality and available quantity of freshwater resources". As it stands, (c) effectively allows for the degradation of freshwater resources by land use development as long as this is managed in an integrated way and uses industry good practice.

1.4 National framework to define environmental standards

Support Policies 1 and 2 that require the values of freshwater resources to be identified and water quality standards to be defined to protect their values.

Oppose the lack of a nationally consistent framework to define water quality standards and the lack of other standards for freshwater assets (e.g., sediment quality, habitat quality).

NPS Policies 1 and 2 require that regional councils identify 'notable values' of the freshwater resources and set water quality standards. Some regional councils already have water quality standards in their operative regional plans, and quite a few have more or less recently defined water quality standards in second-generation regional plans - most of them not operative yet. Few, if any, regional plans presently restrict land uses that directly or indirectly affect water quality and quantity; most regions have specifically avoided setting rules to ensure the cumulative effects of land use change on water bodies can be avoided, remedied or mitigated. This NPS must ensure that all regional councils are obliged to consider and provide for means of maintaining minimum water quality and quantity standards to meet community aspirations for swimmable, harvestable and ecologically healthy water bodies. In particular, methods of controlling land uses to avoid, remedy or mitigate cumulative adverse effects from land uses by controlling land use outputs are essential if NZ is to retain the 'clean, green' image that is so important to the country's character and self-image.

Identifying the values associated with waterbodies, and defining water quality standards to protect these values, can be very demanding tasks that place significant pressure on regional council resources. A large part of the work is actually defining and justifying a framework and a package of methodologies to define water quality standards. Currently, and in the foreseeable future, each regional council has to go through the whole process independently. It is hardly surprising that there is limited consistency across the different regions: some regional councils have defined water quality standards (beyond the RMA s107 narrative standards), some have not, and different approaches have been used in different regions.

Although identifying the need to define water quality standards, the NPS fails to provide any clear direction about how to bring this about and does not encompass the whole suite of values that sustain freshwater ecosystems.

Changes requested:

- A nationally consistent framework to define water quality standards is required. There is no need to reinvent the wheel, as there are a number of examples of such frameworks being put in place nationally (at a regional scale) and internationally (e.g., E.U., USA).
- Expansion of the standards required to reflect other ecosystem and public interest values such as sediment quality and habitat quality.

2. OBJECTIVES

Objective 1: Enabling well-being of people and communities. *To ensure that Freshwater Resources are managed in a way that enables the people and communities of New Zealand to provide for their social, economic and cultural well-being, and their health and safety.*

Oppose the inclusion of this objective.

This Objective is inappropriate in that it clearly indicates a desire to move away from "sustainable management" to a regime of managing for human benefit only, and subordinates freshwater issues to social, cultural and economic considerations. Some of the actions that are required to attain the goals of the NPS (e.g. limiting fertiliser application and stock densities, and discharge limits) will often be in direct conflict with the "economic" well-being of those who face such limits. This objective may as well read "Keep everyone happy", which is obviously impossible. The fact is, we cannot extract all the economic value out of freshwaters while maintaining and enhancing social, cultural and environmental values into the future.

Change requested:

- Delete this objective

Objective 2: Ensuring integrated management of effects on fresh water *To ensure effective integrated management of the effects of land use development and discharges of contaminants on the quality and available quantity of fresh water.*

Oppose the absence of a precautionary approach to freshwater management

Much could be achieved by altering Objective 2 to adopt a precautionary principle similar to that of the EU water framework directive (see Section 1.2).

Oppose omission of habitat quality, biodiversity, ecological connectivity and invasive species management from the concept of "integrated management".

Integrated management of land and freshwater is required to protect a whole suite of freshwater values, not just "the quality and quantity of freshwater". The role of "integrated management" in freshwater ecosystem management in general needs to be recognised. The above matters also need to be included in the definition of 'integrated management' for the purposes of this NPS.

Oppose the absence of mechanisms or policies to ensure a requirement to coordinate specific policies among regional and district councils that lead to effective land use controls that benefit water resource management.

Under the RMA both Regional and District Councils have a responsibility to control the effects of land use on water quality. Section 31 1 (b) of the RMA states that District Councils must control the actual and potential effects of land use. Section 30 1 (c) of the RMA, however, also directs regional councils to manage the effects of land use on water. There is an important distinction, however, in that land use constraints by territorial councils appear overall to be directed towards the effects of the activity on land itself or land uses, while regional council purposes are more likely directed towards effects on water. This appears to be related to the status of water as a publicly managed resource, rather than land use which is generally assumed to be a private property matter. There is a presumption that land uses can occur unless plans restrict them, while for regional rules the presumption is reversed. Regional land use rules, for example, are established retrospectively, rather than district land use rules that are only effective after a plan becomes operative. Similarly, land use activities have 'existing use' status, unlike similar regionally administered activities.

It appears that at a national scale almost all regional councils have focused on managing water while district councils have taken on the management of land use. It would appear that regional councils have considered that District Plans, which are compulsory, were adequate mechanisms for controlling the effects of land use; hence, some regional councils have not developed Land Plans as these are optional. On the other hand, most regional councils have focused on the management of water and most have operative plans that attempt to control abstraction and point source discharges but few address the diffuse effects of land use on water quality and/or quantity.

This approach has often failed to integrate and address land use effects on water resources. Under section 75 (4) of the RMA, District plans cannot be inconsistent with Regional Plans. Although District and Regional Plans may not necessarily be inconsistent, their implementation does not link effects on water resources with land uses in a way that ensures incompatible land use effects are avoided, remedied or mitigated. Often water quality outcomes, for example, are loosely or inadequately defined, making their achievement impossible. When several District Plans within a region all have different approaches or rules on land use, and each tries to be consistent with another single set of regional water quality rules, the mechanisms for management can become complex and inefficient.

The NPS could assist in setting a clear requirement for regional councils to coordinate specific policies at various tiers to improve the effectiveness of land use controls to benefit water resource management. The outcomes of these would be specific plan provisions that would need to be given effect to by district councils in their plans. When trying to deal with a complex issue such as diffuse discharge effects on water quality, it is a flawed approach to have one set of rules to control land use and another set of rules to control the effects of that land use. Currently district and regional councils debate responsibility and effectiveness, with neither tier of local government addressing the difficult issues of land use impacts on water.

Changes requested:

- Change Objective 2 to:
“Ensuring an integrated and precautionary approach to freshwater management: To provide for land use and other development that prevents further deterioration or protects and enhances the status of aquatic ecosystems and freshwater resources.”
- At present there is no clearly expressed national expectation of what is an appropriate level of water quality. Rather than having policies and rules under a

District Plan that must not be inconsistent with those in a Regional Plan, NZFSS considers clear narrative objectives linked to scientifically rigorous standards or guidelines are essential (see Section 1.4). The NPS needs to link goals for water quality and other aspects of freshwater ecosystems to National Environmental Standards (N.E.S.) involving specific levels of nutrient enrichment and bacterial contamination and then give a time line for when those levels must be achieved. As with the N.E.S. for air quality, regional plans would state how the standard will be achieved and district councils may have a role in implementing the necessary controls.

- Given that regional plans are optional, the NPS should outline activities or effects that a regional council must take into account when considering whether a Regional Plan is an appropriate action. Such effects could include deteriorating water quality trends, intensification in land use, and increased frequency or duration of low flows.

Policy response:

- Have a requirement or policy in the NPS such as:

"Where water quality or other freshwater outcomes have been defined in a Regional Plan, District Plans must develop a land use strategy to achieve those goals in co-operation with the Regional Council in a way that gives effect to this National Policy Statement".

Objective 3: Improving the quality of fresh water. *To ensure the progressive enhancement of the overall quality of Freshwater Resources, including actions to ensure appropriate Freshwater Resources can reach or exceed a swimmable standard."*

Oppose the uncertainties associated with the use of vague terms that have not been defined ("appropriate", "overall quality") and the singular goal of achieving "swimmable" status.

What is an "appropriate" Freshwater Resource and who decides this? What about the quality of surface waters in wetlands and groundwaters where people don't usually swim? What does swimmable mean and what is "overall quality"? The quality of fresh water can be determined in multiple ways, including ecologically-based approaches that assess habitat quality and the biological life sustained by the prevailing conditions. An interesting feature of the EU Directive is its focus on biological response variables, with water chemistry as a 'supporting variable'. The NPS should take a similarly enlightened, ecologically-based approach.

Changes requested:

- Re-word Objective 3 to take account of:
 - Ecological and biological response variables that reflect water quality, habitat quality and other ecological/biodiversity values.
 - Ecosystems where humans do not swim.
 - Develop policy to determine what is and is not "appropriate".
 - Define "overall quality".

A suggested improvement in the wording is as follows:

Improving the quality of fresh water resources. *To ensure the progressive enhancement of the overall quality of Freshwater Resources nationally, including actions undertaken by all*

authorities under the Act to ensure Freshwater Resources can reach or exceed a defined swimmable, harvestable and ecologically healthy standard by 2025."

Objective 4: Recognising and protecting life supporting capacity and ecological values. *To ensure the life-supporting capacity and ecological values of Freshwater Resources are recognised and protected from inappropriate (a) taking, use, damming or diverting of freshwater; and (b) land-use development, and (c) discharges of contaminants.*

Support inclusion of the term “ecological values” and “life-supporting capacity” but note that they need to be defined.

Oppose the lack of recognition that life-supporting capacity and ecological values can be enhanced as well as being recognised and protected.

Oppose the inclusion of "development" in "(b) Land-use development".

Oppose the omission of “piping” from the activities listed.

Development suggests changes in land use, but this should be broadened to include existing land use activities because life-supporting capacity and ecological values may be compromised by current conditions, not just by future land use change or intensification. An increasing practice during development is to pipe small streams to increase the area of land available for development, a practice that leads to incremental and irreversible loss of headwater stream habitat that may provide high biodiversity values and can help maintain downstream water quality (see Discussion below on definition of “Freshwater Resources”).

Changes requested:

- Definition of "life-supporting capacity" to include, but not be limited to, connectivity, provision of sufficient food for aquatic and related terrestrial consumer (e.g. bird) populations, maintenance of energy flows and processes required for life-history completion and the maintenance of self-sustaining populations.
- Definition of "ecological values" to include, but not be limited to, habitat quality, ecosystem function, ecosystem services, biodiversity, and the avoidance of spread and impacts of invasive freshwater species.
- Removal of "development" from "(b) land-use development" OR qualify “land use development” as “existing and future development”. This change should be made throughout the NPS and in the Definitions (see 1.3 above).
- Definition of "discharges" in "(c) discharges of contaminants" to include diffuse or non-point source discharges, and to include, but not be limited to: industrial or agrichemicals known to be have detrimental effects on aquatic life, faecal matter, microbes (whether indicators or pathogens), inorganic nutrients (nitrogen and phosphorus), heavy metals, hazardous organic chemicals and fine or contaminated sediment.
- Change to “*taking, use, damming, piping or diverting of freshwater*”

Objective 5: Addressing freshwater degradation. *To control the effects of land use*

development and discharges of contaminants to avoid further degradation of freshwater resources.

Oppose the inclusion of this Objective in its current form

This objective is so vaguely written and so interrelated with Objective 3 and 4 as to make it difficult to see what it will accomplish. It will provide ammunition for lawyers to argue interpretation and cloud the real issues that need addressing.

Change requested:

- This objective is deleted and the intent of future protection explicitly acknowledged in Objectives 3 and 4.

Objective 6: Managing demand for freshwater. *To ensure that demands (including social, economic and cultural demands) for freshwater are sustainably managed in a manner that has regard to the following: (a) available supply of fresh water, (b) the need to provide for resilience against the biophysical effects of climate change (such as through infrastructure for supply, storage and distribution of fresh water), (c) the adverse effects that arise from those demands.*

Oppose the inclusion of “the need to provide for resilience against the biophysical effects of climate change (such as through infrastructure for supply, storage and distribution of freshwater)”

Although it is possible to predict fresh water supply with some certainty based on historical data, how are water managers meant to predict with any certainty the biophysical effects of climate change? The intent of the term “biophysical” is not clear and is confused by the reference following it to infrastructure, etc. It is unclear whether this clause is intended to protect ecological values. Could it provide developers with an argument to create larger reservoirs and more diversions in the guise of providing resilience against the effects of climate change when the focus should be on reducing demand for water and managing allocation smartly.

Changes requested:

- Omit or clarify the clause: “the need to provide for resilience against the biophysical effects of climate change (such as through infrastructure for supply, storage and distribution of freshwater)”
- Include a clause to give effect to the need to reduce demand for fresh water.

Objective 7: Efficient use of fresh water. *To ensure that allocated freshwater is used efficiently particularly in terms of the following (a) avoiding wastage, (b) avoiding excessive contamination, (c) facilitating opportunities to increase benefits from the use of fresh water*

Support the concept of “avoiding wastage”.

Oppose the vague concepts presented in (b) and (c)

What is “excessive” and who determines this? How can efficient use avoid contamination – is this through dilution of contaminants? What “benefits” are being referred to – are they human and ecological benefits? These vague concepts need clarifying. In addition, there are some circumstances in which the non-use of water resources will be the most appropriate means

of promoting the sustainable management of the water resource. This also needs to be recognised and provided for, where appropriate.

Changes requested:

- Add to (a) “*avoiding wastage and reducing demand*”
- Clarify meaning of “*avoiding excessive contamination*”
- Clarify meaning of “*facilitating opportunities to increase benefits from the use of fresh water*”
- Provide for non-use or protection of water resources, where this is appropriate, by ensuring local authorities recognise and provide for water resource protection and set and uphold limits on water use and development.

Objective 9: Ensuring effective monitoring and reporting. *To ensure that regional councils and territorial authorities undertake effective monitoring and reporting of the matters specified in Objectives 1-8.*

Oppose the lack of clarity around (i) which "matters specified in Objectives 1-8" should be monitored (is it really meant to include monitoring of "well-being" and "health and safety" as in Objective 1), and (ii) what the aims of the monitoring should be.

Support requirement for effective monitoring and reporting but note that "effective" needs defining.

To be effective, monitoring should be rigorous and comprehensive. This involves carrying out monitoring at a scale (local vs. regional vs. national), intensity and frequency relevant to the issue(s) being addressed (e.g., determining effects of a point source discharge or restoration activity vs. measuring regional trends vs. reporting national patterns). It is particularly important to ensure that monitoring prior to environmental alteration and any change in management (i.e. baseline data) is of an appropriate timescale to provide confidence that an effect can be detected. In addition, data should be collected in a way that gives sufficient statistical power to detect an effect or define a pattern over the required spatial scale. It follows that more rigorous monitoring will be required if there is greater exploitation of water resources. The costs of this increased monitoring should be borne by those who achieve benefit from the use of that water resource rather than the public at large, to ensure that the appropriate and necessary monitoring requirements are met.

Support monitoring of water quality and quantity, and recognition of life-supporting capacity and ecological values, but note that "recognition" cannot be monitored.

Monitoring typically addresses "state" and "trends" to define spatial patterns and changes over time. "Ecological values" and "life-supporting capacity", like water quality, can also be enhanced through appropriate management and restoration work. Monitoring needs to be implemented to measure the magnitude and timescales of improvements as well as declines.

Changes requested:

- State that the aim of effective monitoring is to provide accurate and precise assessments of the state and trends in water and, where appropriate, sediment quality, water quantity and use, and ecological and community aquatic values at relevant scales, intensities and frequencies.

- Definition of "effective" to include but not be limited to (i) statistically sound monitoring design to provide valid estimates of the effects of an activity on the state of wetlands, waterbodies and waterways in an area with an acceptable level of accuracy and precision, (ii) use of methodologies consistent with nationally established protocols and best practice, (iii) consistent use, calculation and interpretation of nationally established indicators that reflect state and trends, (iv) integration of data into publicly-available national databases, (v) at least 5-yearly reporting of national state of wetlands, waterbodies and waterways, and 3-yearly regional reporting. Wherever possible the NPS should require monitoring in a fashion consistent with, and to enable, national and local awareness of trends and changes in freshwater resources.
- Explicit recognition that monitoring needs to be implemented to measure positive as well as negative changes.

3. DEFINITIONS

“Degraded freshwater resources”

Degraded Freshwater Resources are defined as "Freshwater Resources whose notable values have been so degraded by inappropriate land-use development, discharges of contaminants and/or the taking, use, damming or diverting of freshwater as to require that priority be given to enhancement or restoration in order to achieve the purpose of the Act".

NZFSS supports the enhancement of degraded freshwater resources but opposes the implication that the more degraded a resource the higher the priority for enhancement or restoration.

If limited resources are solely focused on degraded systems, some of which may be beyond cost-effective help, other more healthy systems with a better chance of recovery may become degraded. The EU Water Framework adopts an alternative approach whereby some systems can be below 'good' health status as long as the relevant polluters apply for non-compliance status and identifies a plan for trying to remediate the situation. Perhaps a similar system is needed in the NPS so that heavily degraded systems don't get all the attention, and to place the onus on the polluters rather than society as a whole to address the issue. A triage approach where regional councils are asked to identify 'good' and relatively unthreatened resources, 'degraded and probably unfixable' resources in the medium term, and 'at risk' resources of value but under threat, should be the first priority for a management response.

“Freshwater resources”

The proposed definition of "Freshwater Resources" in the NPS is: "Freshwater Resources means the fresh water of New Zealand's rivers, lakes, wetlands and groundwater systems [but does not include fresh water of any ephemeral stream or artificial watercourse]."

NZFSS opposes the explicit recognition of non-use values from the definition of freshwater resources.

“Resource” infers something for human use (see Section 1.1). It should be explicitly stated in the definition of freshwater resources that freshwater resources include non-market values such as biodiversity, ecosystem services, habitat and aesthetics. The active protection of

these resources and/or their potential, and the avoidance of irreversible adverse effects to them are important.

Change requested:

- Expand the definition of Freshwater Resources to explicitly include non-market values.

NZFSS opposes the exclusion of ephemeral streams and artificial watercourses from the definition of freshwater resources.

Several questions arise from the proposed definition:

1. Why are ephemeral rivers/streams singled out here? How are they different from intermittent, episodic, seasonal or non-perennial streams? In native forest settings, ephemeral streams contribute to overall invertebrate biodiversity by harbouring species that are not found in perennial systems. For example, in the Waikato, non-perennial streams that became isolated pools, or mud, increased overall diversity by 18 and 25 additional macroinvertebrate taxa not found in perennial stream sections². All too often developers will write off small streams as "ephemeral" if there is no flowing water visible at the height of summer without recognising their potential value. This often leads to piping or damming and incremental loss of habitat and biodiversity. It can also encourage land use changes to render permanent streams intermittent to facilitate further exploitation.
2. What about other temporary waterbodies (e.g., ponds and wetlands)? It should be noted that mudfish, some species of which are endangered such as the Canterbury mudfish, are adapted to live in ephemeral systems. Also, springs and seepages, often not recognised as freshwater habitats, have been shown to harbour previously unknown elements of biodiversity, as have gully seepages, for example in Hamilton City, and braided rivers.
3. What is the definition of an artificial watercourse? Would hydroelectric or irrigation canals be excluded? Artificial watercourses (or reservoirs) are often offered as mitigation for loss of natural waterways (e.g. in the case of an inundated stream/river) - under the proposed provision, these would not be subject to Objectives 1, 3-5 or 8 of the NPS. In some places artificial watercourses can be the dominant aquatic habitat in highly modified environments. For example in the Waikato lowlands, where much of the wetlands have been drained, drainage channels have the potential to provide alternative and significant aquatic habitat even if they are artificial. Similarly, on the Canterbury Plains, water canals provide permanent, flowing water habitat that sustains sensitive invertebrate species through the summer in a notoriously water short area.
4. Ephemeral reaches of streams and artificial watercourses are usually linked to water bodies that are defined as "freshwater resources". Ignoring the management of ephemeral streams and artificial watercourses may have direct and deleterious consequences for downstream receiving waters. This is analogous to the concerns expressed above in respect of the cumulative effects of land uses on water quality and quantity. Excluding some water bodies from definitions may enable water or land uses that have detrimental effects on water bodies downstream.

The definition of freshwater resources seems like an attempt to re-define definitions included in the interpretation section of the RMA, including the term "intermittent". The introduction of

² Parkyn et al. 2006. Aquatic invertebrate biodiversity and spatial characterisation of non-perennial streams in native forest in the Waikato Region. NIWA client report HAM2006-041.

a new term, “ephemeral”, will confuse. Note that “intermittent” waters are included in the definition of “rivers”. The RMA states:

- **Fresh water** means all water except coastal water and geothermal water.
- **Lake** means a body of fresh water which is entirely or nearly surrounded by land.
- **River** means a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal).
- **Water** -
 - Means water in all its physical forms whether flowing or not and whether over or under the ground;
 - Includes fresh water, coastal water, and geothermal water;
 - Does not include water in any form while in any pipe, tank, or cistern.
- **Water body** means fresh water or geothermal water in a river, lake, stream, pond, wetland, or aquifer, or any part thereof, that is not located within the coastal marine area.

These definitions seem transferable to the NPS with the caveat that artificial watercourses be included where they provide important habitat for freshwater species.

Changes requested:

- Delete the sentence excluding ephemeral and artificial watercourses from the definition of freshwater resources and include these in the definition of "freshwater resources".
- Use the RMA definitions above but change the River definition to: “a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; and any artificial watercourse that provides important habitat for freshwater species.”