



SUBMISSION ON THE *CLEAN WATER* CONSULTATION

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This submission is from the Land and Water Forum.

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The Land and Water Forum

1. The Land and Water Forum (the Forum) comprises 53 organisations including iwi, primary industry groups, infrastructure operators, environmental NGOs, universities and Crown Research Institutes (CRIs). It also has 13 active observers from central and local government agencies. The Forum adopts a multi-party collaborative approach and strives to reach consensus across commercial, environmental and cultural interests and form recommendations to Government on land and freshwater management policy. The Forum has received three sets of mandates from the Government to provide it with advice on freshwater management. The Forum has provided a suite of recommendations over four reports from 2010 to 2015, spanning strategy to detailed implementation. Most recently we provided a letter to the Minister on 19 August 2016 containing advice on further population of the National Objectives Framework (NOF) – much of that advice is still relevant to this submission.
2. A full list of Forum members and participants are provided as **Appendix 1**.
3. Members of the Forum may make submissions of their own, but the Forum has agreed to make this common submission.

General comments

4. The Forum supports the general thrust that *Clean Water* makes to improve water management in New Zealand. There are, however, matters of detail which the Forum recommended in August 2016 which are missing. This detail, arrived at with expert science and technical advice and agreed through consensus by the members of the Forum, is important and in the Forum's view must be included. It will improve the way fresh water is managed.
5. The key points in the Forum's submission cover how the macroinvertebrate community index (MCI) is used and conditions that apply to its use; how dissolved inorganic nitrogen (DIN) and dissolved reactive phosphorous (DRP) are treated; clarifying the criteria for measurement, monitoring and reporting for primary contact (swimmability); and the timing and way primary contact requirements are implemented.
6. The submission then addresses other points that the Forum has recommended in the past which will also improve the *Clean Water* proposals. These involve an aspect of the stock exclusion proposals; and addressing hydrologically modified catchments.
7. We also make comments on other proposals in *Clean Water* dealing with: how Te Mana o te Wai relates to other national values; the place of economic well-being within the national framework; and details about the requirement to "maintain or improve" waterbodies.
8. Finally, we suggest further action on sediment, copper and zinc. These contaminants are not yet dealt with satisfactorily in the NPS-FM. The Forum's second report noted their

significance and regarded them as important elements that affect the quality of New Zealand's fresh water and require management.

MCI

9. Measurements of macroinvertebrates are regarded as the best proxy for determining the ecological health of wadeable rivers.¹ In 2016 the Forum was asked for its advice on the use of such a measure. The Forum received advice from practitioners and an expert science panel. There are several similar measurement methodologies but the advice we received was to rely, at least for the near future and to provide certainty, on the traditional MCI methodology. MCI is a commonly used measure, has a long history of use, and is fit-for-purpose as a composite measure of ecosystem health - which the NPS-FM currently lacks. This advice and the Forum's debates and consensus formed the basis of recommendations we made in August 2016.
10. In its letter of August 2016 the Forum included a flow chart that illustrated how a council should respond to an MCI score or trend. The key points in the recommended process were:
 - a. A trigger for action if there was a downward trend in MCI, or if it was below 80.
 - b. The action was a requirement to investigate and develop an action plan to either maintain or improve MCI scores in a wadeable river. The key points in this process were:
 - i. If the natural state is below 80, then the requirement is to maintain MCI at that level.
 - ii. If the MCI score in a waterbody is below 80 for human-induced reasons, then the requirement is to develop an action plan to improve the MCI score.
 - iii. If there is a downward trend in MCI in a waterbody, then the requirement is to develop an action plan to reverse the trend.
11. There are two important caveats to point b ii above where the score is below 80 for human-induced reasons:
 - a. There can be instances where major infrastructure has altered hydrological flows. Any requirements to take action to improve an MCI score in this situation need to account for the effects of significant hydrological modification. Depending on the way that this requirement is included in the NPS-FM, this would need to be reflected through recognition in Appendix 3, the way the monitoring requirement is worded in the NPS-FM, or another way. In its letter of August 2016, the Forum noted that its advice was contingent on outstanding matters relating to Appendix 3. Appendix 3 is still undeveloped. A subsequent section of this submission deals with this issue.

¹ The scientific consensus is that MCI should not apply in non-wadeable rivers, standing water (wetlands, lakes), tidal reaches, or geothermal areas.

- b. There will be waterbodies where the MCI score might be declining or below 80 due to pest species problems (e.g. didymo). This also needs to be recognised where there is no practicable way of addressing the issue.
12. The Forum's recommendation for compulsory monitoring and reporting of macroinvertebrate communities has been adopted, but not the use of MCI. There is a requirement "to develop (for example) an action plan" if monitoring suggests freshwater objectives are not being met, but these requirements lack the specificity and discipline of the Forum's recommendations. The Forum is concerned that without a specific requirement to take action to remedy a downward MCI trend or a low absolute level, that the monitoring requirement would not change the outcome.
13. Since the publication of the *Clean Water* proposals the Forum has had no satisfactory scientifically based explanation for why its recommendations should not apply. The Forum, through its own members and the NOF Reference Group, has discussed again the scientific basis for these recommendations and remains convinced they are robust.
14. Finally, the Forum agrees with the new monitoring requirements around indigenous flora and fauna. The group would like it clarified in the text that this should explicitly include fish i.e. "... indigenous flora and fauna (including fish)".

DIN and DRP

15. The Forum recommended in August 2016:
 - a. that the NPS-FM should have a requirement to set in-stream concentrations for dissolved inorganic nitrogen (DIN) and dissolved reactive phosphorus (DRP), as objectives in regional plans, to support the existing periphyton attribute in Appendix 2 of the NPS-FM.
 - b. the development of a mandatory decision support tool councils would have to use to derive and set the DIN and DRP concentrations.
 - c. that there would be benefit in a multi-variate lookup table for DIN and DRP concentrations, which should be provided in guidance to give councils and communities a broad idea of what nutrient concentration ranges were appropriate in a variety of conditions. The mandatory decision support tool in b. (above) should describe when to use the lookup table.
16. While a "note" has been added to the bottom of the periphyton attribute table in Appendix 2 of the NPS-FM, it is not clear that this has any legal force to require councils to set DIN and DRP concentrations in their plans for rivers where periphyton is being managed. The Forum recommends that the NPS-FM be clarified to make it clear councils are legally required to do this using the mandatory decision support tool.
17. The wording of the "note" implies that DIN and DRP concentrations must be set before setting periphyton objectives. This is incorrect. We suggest it be reworded as follows:

"The attribute for nitrate toxicity is not applicable for controlling Periphyton (Trophic state) in rivers. When using this attribute to set an objective for

periphyton, annual medians or other appropriate statistics for dissolved inorganic nitrogen and dissolved reactive phosphorus, together with a threshold plus an exceedance criterion (i.e. percentile exceedance), will need to be set as objectives in the regional plan. Within a region it may be appropriate to set these values separately within each Freshwater Management Unit and consideration will need to be given to the sensitivity of downstream ecosystems.”

18. The process set out in the note above should be set out in detail in the mandatory decision tool.
19. Our recommendation of a mandatory decision-support tool has simply not been addressed. While the steps in the process have already been developed and can be used, the technical support that sits behind each step in the process has not yet been developed, despite the fact that there has been ample time since August last year to do so.
20. We re-recommend the development and mandatory use of a decision-support tool for setting these concentrations based on the flow chart presented in the Appendix to the Forum’s letter to Ministers in August 2016. The flow chart, with any necessary modifications, and the detailed technical support that sits behind each step in the process, can be developed in 3-4 months. This is important to support a consistent nationwide process for addressing nutrients, which will reduce costs and prevent litigation.²
21. In the future, as more data on nutrient-periphyton relationships is gathered, the use of a multi-variate lookup table for DIN and DRP concentrations should be investigated.

“Swimming”

22. The Forum strongly supports the concept of a time-based approach to human health for recreation. It is a more robust way of dealing with temporal and spatial variability than the current ANZEC single-standard guidelines. There are, however, important matters in the current proposals that need sorting out, both to make them more fit-for-purpose and to clarify confusion that has arisen from the unfortunate way the proposals have been presented.

Revised human health for recreation value

23. The revised text of the human health for recreation value proposed to be included in Appendix 1 of the NPS-FM now includes important aspects of the swimming experience other than infection risk. However, it is unclear what the intention of the phrase “a range of different flows” is.

² It may also be worth making an addition to the Ministry for the Environment’s draft guide to attributes that, while nitrate toxicity is relevant to both lakes and rivers the attribute table applies only to rivers because the A-band toxicity level for Nitrate Toxicity is lower than the Total Nitrogen national bottom line for lakes. Thus if lakes are appropriately managed according to the NOF then nitrate toxicity levels cannot be breached.

24. Given these changes, the name of the value - human health for recreation – may no longer be appropriate as aspects not specifically related to human health – flows, clarity and weed growth – are now included. The Forum recommends that term ‘primary contact’ should be used here and elsewhere throughout the NPS-FM. This recognises the importance of non-swimming activities such as cultural practices and kayaking that can involve full immersion.
25. The use of the term “swimming” in the consultation material is misleading as swimming is just one of many activities involving primary contact with water.

Appendix 2 attribute tables

26. The proposed new Appendix 2 E.coli attribute table outlined in the *Clean Water* consultation document is misleading and inaccurate – it includes only one of the four tests of water quality outlined on the Ministry for the Environment (MfE) website and the narrative attribute state column does not accurately reflect the risk of campylobacter infection for the E.coli levels of each attribute state outlined in the tables on the website.
27. The Forum considers the expanded E.coli tables, as set out on the MfE website³, to be robust and in line with the time-based approach the Forum recommended to the Minister in its letter of 19 August 2016.
28. The Forum recommends that the final E.coli attribute table included in Appendix 2 of the NPS-FM integrate the information in Tables 1 and 2 on the MfE website. These tables are more detailed and express the level of primary contact risk to human health more accurately.
29. There is also some confusion around cyanobacteria in *Clean Water*. It is difficult to tell what is actually being proposed. The current planktonic cyanobacteria attribute table in Appendix 2 of the NPS-FM differs substantially from the cyanobacteria table (Table 3) on MfE’s website.⁴ The planktonic cyanobacteria attribute table in Appendix 2 of the NPS-FM also differs from what is outlined on page 11 of *Clean Water*. The former has three bands: A, C and D. There is no “B” band. However, on page 11 of *Clean Water* there are five coloured bands for indicating the swimmability of ‘rivers and lakes’. It is not clear how these coloured bands relate to the existing planktonic cyanobacteria attribute for lakes. Unless the five coloured bands only apply to rivers (which is not indicated by the text), there needs to be some indication of equivalence between the attribute bands and the mapped coloured bands.

Removal of the secondary contact bottom line for smaller streams

30. The government’s “swimming” proposals only apply to large waterways (defined as rivers fourth order and above and lakes with a perimeter over 1.5km.) This excludes the vast majority of waterways. The secondary contact bottom line – which did apply to all lakes

³ <http://www.mfe.govt.nz/fresh-water/freshwater-management-reforms/water-quality-swimming-categories-attribute-states-detail>

⁴ <http://www.mfe.govt.nz/fresh-water/freshwater-management-reforms/water-quality-swimming-categories-attribute-states-detail>

and rivers – has been removed. As a result there is no *E.coli* bottom line at all for smaller waterways – just the requirement to ‘maintain or improve’ within that FMU.

31. In its letter of 19 August 2016 the Forum recommended retaining a secondary contact bottom line. This remains our recommendation as it would mean that smaller waterbodies would still be required to meet a minimum *E.coli* standard. The risk is that some, either rightly or wrongly, might interpret the absence of a secondary contact standard to mean there is no standard.

The issue of fourth order rivers

32. The use of fourth order rivers and above is very coarse – it misses out smaller tributaries that people often use for primary contact activities, and urban streams are largely excluded. The Forum does not accept the argument that improving the ‘swimmability’ of large waterbodies will necessarily result in improvements to all tributaries because many smaller tributaries containing popular swimming spots flow directly into the sea, rather than into fourth order rivers; and sometimes a smaller tributary is not suitable for primary contact, but the dilution effect means that the larger waterway it flows into is fine.
33. The Forum’s letter of 19 August 2016 did not distinguish between different water body types. It recommended an approach “where councils and communities set objectives for, and assess the infection risk from, primary contact activities according to the proportion of time a waterway exceeds a primary contact *E.coli* threshold”.
34. However, the fourth order river approach provides one way of setting national targets and measuring progress both nationally and between regions⁵. If the government decides to maintain its proposal, then in addition to fourth order rivers and large lakes, regional councils should be required to identify, through a public process, all current or historical sites that the community values for primary contact. These sites should also be captured by the government’s overarching goal of making 90% of large rivers and lakes swimmable.
35. Further clarification of “maintain or improve” will also assist with the clarity and effectiveness of the new swimming requirements. We discuss this later in the submission.

Monitoring requirements

36. The Forum supports the inclusion of the monitoring requirements for *E.coli* outlined in Appendix 5 of the NPS-FM. These are in line with the Forum’s proposals.
37. However, the NPS-FM should more clearly state that there are two separate monitoring requirements around ‘swimmability’:
- a. monitoring for meeting *E.coli* objectives (i.e. long-term grading); and

⁵ Another way of measuring progress would be to track progress over time at all monitored waterbody sites. They wouldn’t necessarily have to be fourth order.

- b. surveillance and monitoring for informing the public on the suitability for immersion at various times and places.
38. The content of Appendix 5 has been taken from the 2003 microbiological guidelines and is relevant to (b) above, but policy CB to which it is linked relates to monitoring for the meeting of freshwater objectives and values. This is confusing.
39. The monitoring requirements in Appendix 5 also need to be updated to better reflect the more efficient and advanced monitoring and notification practices that some councils use. The microbiological guidelines include a risk based assessment as part of the Suitability for Recreation Grade (SFRG) and this concept could be further developed. Eventually, predictive rather than retrospective information needs to be provided to the public on the suitability of waterbodies for primary contact activities. Currently LAWA is retrospective.
40. There is no mention of updating the 2003 microbiological guidelines for recreation in the document. The Forum continues to recommend they be reviewed as a matter of urgency to support consistent implementation of the new monitoring requirements.

Overarching goal

41. The government has proposed an overarching goal of 90% of large rivers and lakes swimmable by 2040 – the Minister will require regional councils to identify specific targets for improving the swimmability of their waterways and the mitigations they'll use to get there.
42. There are two related issues with the detail of meeting this goal. First, the process for setting regional targets does not set out any expectation that regional councils and central government will engage with stakeholders and the community, and they should do. There is still the opportunity for this to happen within the Government's timeframes. Such engagement would also allow relevant requirements for transparency, participation and benefit and cost evaluation to be met. Some regions have implemented the 2014 version of the NPS-FM for some catchments. In the absence of any other statement we presume that policies to achieve the targets will be inserted by councils into plans during the normal planning cycle, but by then the targets will be 'set in stone'.
43. Second, the goal doesn't seem to be legally enforceable. At present it is just outlined in a letter from the Minister to regional councils, and too much depends on Ministerial direction. The Government should investigate whether it is possible following a robust process for engagement with stakeholders and communities for the targets to be included in the NPS-FM.
44. Resolving the process for establishing the targets and their enforceability will improve regulatory clarity.

Maps

45. The inclusion of the maps in the Clean Water consultation document was designed to visually highlight the extent of 'swimmability' in the various regions. It is desirable to have reliable maps to inform people about primary contact recreation but the published

maps do not always do this. The Forum acknowledges that the maps rely on a substantial computer modelling exercise, supplemented by some checking, and inevitably reflect data limitations.

46. There are a few apparent errors, and an inability to show the full picture for smaller streams, so that the maps exclude most, but not all, streams smaller than fourth order used for primary contact.
47. The way the maps are presented in the discussion document is also potentially misleading as they refer to 'swimming' and 'swimmability' but they are really only about E.coli risk in rivers and additionally cyanobacteria risk in lakes (and the cyanobacteria proposals are misleading, as noted in paragraph 29 above), and only include large lakes and rivers (as defined). They do not include the broader aspects of the rewritten value of "human health for recreation" expressed in Appendix 1. For example, they show some diverted rivers as excellent for swimming when in reality they are dry for most of the year.
48. We strongly support the government's intent of providing people with accurate information on when and where a waterbody is safe for swimming. However, the maps in the discussion document only provide a long-term average risk, which is not that useful for making a decision on whether a particular spot in a waterway is safe for primary contact at a particular time. Perhaps it is better to point people toward council monitoring and surveillance activities than the maps the document contains.
49. It would have been helpful to add a note to the maps saying they are separate from the proposed requirements of the NPS-FM and are for information purposes only.

Stock exclusion

50. The stock exclusion proposals differ somewhat from the Forum's recommendations.
51. First, it is vital to get a workable and practicable scheme for deciding on what slope class a parcel of farmland falls into. The mapping tool that communicates this must:
 - make it clear where stock must be excluded,
 - avoid impractical requirements like short intermittent stretches of fencing (e.g. 5 metres of fencing here, no fencing here, 5 metres of fencing here, etc.) on land with variable slopes,
 - discourage overuse of exceptions (i.e. the alternative option).
52. The Forum is concerned that the "alternative option" outlined in *Clean Water* that landowners can use when they cannot meet the national stock exclusion requirements (e.g. due to significant practical restraints) might not correctly circumscribe when exceptions are allowed. In its Fourth Report the Forum outlined a number of "...circumstances, some of which cannot be foreseen, where it would be unreasonable to exclude stock because it would be impractical and/or result in large costs relative to the expected environmental benefit. Some examples include:

- Where small streams branch into a number of small 'fingers' that if fenced would seriously impede the ability of farmers to graze the land
- In emergencies – e.g. during a snowstorm when the troughs are frozen stock should be able to be temporarily watered in a creek
- Where effective alternative exclusion measures have been implemented (e.g. Westland)
- Water races used for stock drinking water.”

The Fourth Report went on to recommend that:

“Exceptions from national and regional stock exclusion requirements should be provided in limited situations where large costs and significant impracticalities relative to the environmental benefits can be demonstrated...”

53. The Forum’s wording, arrived at by consensus, is a clearer formulation than the “alternative option” proposed in *Clean Water* document.

54. Secondly, the Forum is concerned about the lack of reference to riparian management. Recommendations 31 and 39 and 41 of the Forum’s fourth report stated that:

“The national stock exclusion regulation should include a requirement that when permanent fences are erected to exclude stock, they should be placed the appropriate distance back from the waterway. The appropriate setback distance will vary at different points along the waterway and will be determined by an on-farm assessment required as part of GMP, as per recommendation 39 of this report.”

and

“Riparian setbacks and management strategies should be included in GMP requirements, either as part of industry GMP schemes or council GMP rules, where they are an appropriate mitigation...”

and

“Councils should impose riparian setback and management rules over and above GMP requirements in catchments with specific water quality issues, where this is an effective way of managing a particular issue. Councils should also consider catchment-specific riparian management rules for critical source areas and areas of specific ecological, social or cultural value.”

55. The Forum recommends that the stock exclusion policy in *Clean Water* recognise the importance of an effective riparian management regime, and that to achieve this that on-farm riparian assessments are added to the Government’s good management practice (GMP) work programme.

Spatial classification

56. The Forum believes that its original recommendations around spatial variability and hydrologically modified catchments are still relevant. As further attributes are developed, it will be very important in some circumstances that they are able to vary spatially, for example according to the presence of significant hydrological modification. Some water quality indicators are significantly affected by hydrological modification.
57. Currently, each attribute listed in Appendix 2 has its own classifications, but these are quite limited. Providing a national set of waterbody classes according to which attribute bands and bottom lines varied would assist in setting more specific and relevant freshwater objectives across the range of different waterbodies. Officials should give this piece of work priority in their forward work programme.

Existing Infrastructure Exceptions and Appendix 3

58. It is of concern that Appendix 3 still has not been populated. The proposed revisions to the exceptions framework outlined in Policy CA3 seem to depend on infrastructure being listed there in order for an exception to be granted.
59. While the Forum still affirms its position on the need for a Spatial Classification system, Policy CA3 and Appendix 3 of the NPS-FM have been the operative Government policy since 2014. As such, Appendix 3 should be populated, and the government should engage with stakeholders on how this is best done.

Freshwater funding

60. The Freshwater Improvement Fund is targeted on the principle that resources should be spent in the areas where they will achieve the greatest improvements in water quality per dollar spent. In this case by targeting vulnerable catchments that are close to a tipping point where they will become severely degraded and much more expensive to restore.
61. While the fund is up and running now, the Forum would like to submit the following thoughts for future consideration:
- We consider that the minimum funding request of \$200,000 is too high and will potentially exclude a lot of smaller projects that provide better value for money.
 - Providing for smaller projects with good value for money will also be assisted by considering whether changes to the Fund's policy that indirect funding (through volunteer efforts) is not recognised, should be reviewed.
 - We have some reservations about favouring vulnerable waterbodies over severely degraded ones, but understand the need to avert tipping points to get value for money. For example, vulnerable catchments have been identified on the maps in eastern Wairarapa, but we think the catchments in central and western Wairarapa are the ones that should be prioritised.

- Some of our members also contend that the “economic significance” criteria used to identify vulnerable catchments⁶ is not appropriate. The tourism industry “relies” on water at least in some sense, yet is excluded from the list of identified industries. As a result, Lake Tarawera for example, a deteriorating lake which is at risk of tipping into an algae-dominated state, has been excluded from the list of vulnerable catchments on the basis of its low economic significance – even though it is of high economic significance to the tourism sector.
- In future it would be desirable to provide more than three months for applications. Some advance notice about future application dates would be good so that councils and communities can develop and plan for applications.

Te Mana o te Wai and rewritten and reordered Appendix 1 values

62. *Clean Water* proposes “further clarification of the meaning of Te Mana o te Wai in the preamble, the inclusion of a descriptor in the section ‘National significance of fresh water’ and some of the descriptions of the national values in Appendix 1 of the Freshwater NPS”. It also proposes a new objective and policy, requiring regional councils to consider and recognise Te Mana o te Wai when giving effect to the Freshwater NPS.
63. The Forum understands that Te Mana o te Wai is intended to be a lens through which all freshwater management decisions are considered to ensure both the health and wellbeing of the waterbody is protected and the values of iwi and the community supported by that waterbody are sustained.
64. The Forum’s second report recommended the “incorporation of the substantive content of the material developed [the ‘Mana Atua Mana Tangata’ model set out in Appendix 2 of that report] by iwi on (tangata whenua) relationships with fresh water ... into the preamble to the NPS-FM ...”. The 2014 NPS-FM was broadly in line with that approach. The formulation of the values in the proposed changes to the NPS-FM to reflect Te Mana o te Wai differs from that expressed in our second report.
65. It is not clear what is intended by the proposed reformulation of the values in Appendix 1 of the NPS-FM. The draft Regulatory Impact Statement (RIS) for the proposed amendments to the NPS notes that “they impose minimal new impacts on what is already required” and that “increased clarity will reduce uncertainty costs for regional councils and stakeholders”. The explanatory material in *Clean Water*, the Cabinet paper leading to its development, and the draft RIS however do not explain what is intended, or how councils and communities are expected to interpret the relationship between Objective AAA1 and the values expressed in Appendix 1. Neither is it clear how the proposed recognition of Te Mana o te Wai sits alongside the process set out in Policies CA1 to CA4.
66. The structure of Appendix 1: National Values could be perceived to place what are currently labelled ‘Extractive uses’ outside the scope of Te Mana o te Wai. We

⁶ http://www.mfe.govt.nz/sites/default/files/media/summary-data-vulnerable-catchments_0.pdf

recommend that Appendix 1 be revised to clarify that the values currently labelled 'Extractive uses' are clearly incorporated into Te Mana o te Wai.

67. The Forum also recommends a consistent approach be taken to the use of Maori and English in the headings and value names within Appendix 1.
68. The heading 'Extractive uses' should be relabelled 'Productive Values' or another better description to indicate that not all of the uses set out are extractive, and acknowledge that they are not merely 'uses', but 'values' that communities, including iwi, have.
69. Forum members have a range of positions on the proposed treatment of Te Mana o te Wai in the NPS-FM, and will continue to discuss whether it is possible to align those positions. The positions of members include:
 - There should be no priority expressed between competing values;
 - The current compulsory national values for ecosystem health and human health for recreation should have higher priority;
 - The values currently under 'Extractive uses' should be part of Te Hauora o te Tangata (under 'Additional National Values') and have the same significance as them.
 - Support for the current set of proposals as expressed in the *Clean Water* document.

Economic well-being

70. The Government has proposed including requirements to provide for economic well-being, including productive economic opportunities, within the objectives of the NPS-FM. This is reflected in Objective A2, Objective B1, and Policy CA2(f).
71. The treatment of economic well-being differs between the water quality and water quantity sections – Objective A2 states that “the overall water quality ... is to be maintained or improved while [protecting outstanding waterbodies and wetlands, and improving waterbodies that are over-allocated] **then** providing for economic well-being ...”; Objective B1 on water quantity safeguards “the life-supporting capacity ... **while** providing for economic well-being ...”. It is not clear why these differ, what the policy intent is, and how they relate to the relationships between the Appendix 1 values discussed above.
72. The Forum's previous reports set out a framework for setting objectives and limits. This framework provided for:
 - National bottom lines to protect the mana and ecological health of waterbodies and instream values
 - The setting of an acceptable environmental state involving consideration of economic, environmental, social and cultural values
 - Discretion for regional councils to set the timeframe and policies for achieving objectives and limits, taking into account the circumstances of each catchment.

73. This framework was supported by changes to governance and decision-making systems (both in terms of regional planning and the involvement of iwi in freshwater management), and proposals for more active and dynamic water management.

Maintain or improve

74. The clarification of the 'maintain or improve' requirement proposed in *Clean Water* leaves a number of matters outstanding. In the Forum's view, without further clarification the judicial system will be called on to settle disputes over its interpretation. This is not ideal, as it creates uncertainty and legal risk for councils and communities. We recommend further clarification of the 'maintain or improve' requirement within the NPS-FM. This submission addresses some, but not all of the matters requiring clarification.

Limiting the application of 'maintain or improve' to within an FMU

75. The Forum supports the proposal to limit the 'maintain or improve' requirement to within FMUs. This recognises the fact that it is not always possible to have every attribute 'maintaining or improving' at every site, everywhere, all of the time. Urban development (for example) almost always results in some localised deteriorations in water quality.
76. Allowing this flexibility within FMUs makes sense because it is at this scale that objectives are set. The problem is that FMUs are being defined in a variety of different ways.
77. The Forum recommends the government should monitor and report on FMU setting and engage with councils to ensure FMUs are set at the correct scale. Most of the time this will be at the sub-catchment scale, or at maximum the catchment-scale, unless the waterbody(s) are ecologically and hydrologically homogenous and used by a single coherent community. These considerations are largely already set out in MfE's FMU guidance, but this guidance is not mandatory.

It is unworkable to 'maintain or improve' all values

78. It is unworkable to apply 'maintain or improve' to all values, because values are often in conflict and requiring conflicting values to be maintained implies that the community has no option but to stick with the status quo.
79. To fix this problem, the Forum recommends that the NPS-FM be clarified to require that 'maintain or improve' only applies to some values. This should at minimum include the two compulsory values.

Sediment, copper and zinc

80. Appendix 2 of the NPS-FM does not reflect the full range of attributes that regional councils need to manage, sometimes skewing attention and diverting resources away from other important areas. The most important missing parameters are sediment, copper and zinc.

81. The Forum's second report listed the measurable numeric parameters that need to be reflected as freshwater state objectives in regional plans. This included sediment and toxic contaminants. The second report also recommended that the national framework should provide narrative objectives for those contaminants that could not be set numerically.
82. We have not reached consensus or firm recommendations on sediment, copper or zinc, but as we set out in our second report we think they are important and need to be addressed. The following section of this submission outlines some ideas for addressing them which we hope will be useful.

Sediment

83. Sediment is the largest water quality problem in some catchments in New Zealand, but the absence of explicit requirements for sediment in the NPS-FM is seeing a focus on other attributes leading to unintended consequences in some places.
84. The government should continue to work on potential sediment attributes and should signal that it may introduce new requirements for sediment in the medium-term, so that councils and communities are aware and can plan for it.

Copper and zinc

85. Copper and zinc are heavy metals commonly found in urban stormwater.⁷ These are currently managed by territorial authorities mainly through stormwater infrastructure and treatment and some point source controls. Source control is often the most efficient way of managing contaminants but local government cannot control some of the more significant sources of these contaminants, including copper associated with vehicle brake pads and zinc from roofs.

Suggestions to address these missing parameters

86. The earliest timeframe for numeric attributes for sediment, copper and zinc to be incorporated into the NPS-FM is 2018-19. In the interim MfE could support councils to set local objectives where relevant and in a way that is consistent with the direction of the ongoing science and policy work. In parallel with this:
- More work should be done to better understand the nature and size of the copper and zinc problem across New Zealand
 - Central government should consider enacting national regulation for vehicle brake pads to control copper discharges
 - Central government should investigate whether councils can effectively control sources of heavy metals from building materials using their existing powers.

⁷ They may also be found in rural waterways, but come from different sources. For example, copper is extensively used in orchards as a fungicide and was a key element of the PSA response in Bay of Plenty. Zinc is commonly used in footrot treatments.

Additional comments

87. The Forum notes that the current policy framework to improve freshwater management is based on ideas of integrated catchment management. The proposals set out in the *Clean Water* document (with, we argue, the amendments set out in this submission) will assist integrated catchment management. But also it requires introducing catchment-wide good management practice nationally and systems of allocation that both improve the efficiency of resource use within environmental limits and address rights and interests. The Forum has made recommendations on ways to address these issues and urges action.
88. Finally, it would be remiss not to comment that the roll-out of the *Clean Water* proposals caused confusion and an unnecessary level of controversy. The result has unsettled some members and caused some to withdraw (hopefully temporarily). New policy proposals always involve debate. The material in the proposals, especially that dealing with “swimmability” standards is very complex and challenging to communicate. However, the degree of controversy and withdrawal of some members could have been avoided through greater transparency of process, rigour and openness in the interactions between officials and the Forum in the lead-up to the launch of the proposals. The Forum welcomes the undertaking by the Minister to correct this and we look forward to ongoing effective engagement that will mark an important step forward for freshwater management.

APPENDIX 1: LAWF MEMBERSHIP

Plenary Organisations

Aqualinc Research Ltd
Ballance Agri-Nutrients
Beef + Lamb New Zealand
Business NZ
Contact Energy
DairyNZ
Ecologic
Environmental Defence Society
Federated Farmers
Fertiliser Association of NZ
Fonterra
Foundation for Arable Research
Genesis Energy
Horticulture New Zealand
Ihutai Trust
Institute of Public Works Engineering
 Australasia
Institution of Professional Engineers New
 Zealand
Irrigation New Zealand
King Country Energy
Landcare Trust
Lincoln University
Massey University
Mercury
Meridian Energy
MWH
National Institute of Water and
 Atmospheric Research
Oceana Waihi Gold
Our Land and Water Science Challenge
Ngati Kahungunu
NZ Farm Forestry Association
NZ Forest Owners Association
NZ Institute of Forestry
NZ Winegrowers
Oji Fibre Solutions
Opus International Consultants Ltd
Pioneer Generation
Rural Women New Zealand
Spiire
Straterra Inc
Sustainable Business Council

Te Arawa Lakes Trust
Te Runanga o Ngai Tahu
Tourism Industry Aotearoa
Trustpower Limited
Tuwharetoa Maori Trust Board
Waikato River Authority
Waikato-Tainui
Water Action Initiative New Zealand
Water New Zealand
Watercare Services Limited
Whitewater New Zealand
Wood Processors and Manufacturers
 Association of New Zealand
Zespri

Small Group Organisations

Beef + Lamb New Zealand
Contact Energy
DairyNZ
Ecologic
Environmental Defence Society
Federated Farmers
Fonterra
Horticulture New Zealand
Irrigation New Zealand
Mercury
Meridian Energy
National Institute of Water and
 Atmospheric Research
Ngati Kahungunu
NZ Forest Owners Association
Oji Fibre Solutions
Our Land and Water Science Challenge
Te Arawa Lakes Trust
Te Runanga o Ngai Tahu
Tuwharetoa Maori Trust Board
Waikato-Tainui
Water New Zealand
Whitewater New Zealand