

4 February 2014

File No: M02-17

Freshwater Reforms
Ministry for the Environment
P O Box 10362
WELLINGTON

Email: watercomments@mfe.govt.nz

Dear Sir or Madam

Proposed Amendments to the National Policy Statement for Freshwater Management 2011

Thank you for providing Mighty River Power Limited (“Mighty River Power” or “the Company”) with the opportunity to comment on the proposed amendments to the National Policy Statement for Freshwater Management 2011 (“NPS-FM”).

1. Introduction to Mighty River Power Limited

Mighty River Power is a cornerstone participant in New Zealand’s electricity sector, generating about 17% of the country’s power and supplying about 1 in 5 New Zealand homes and businesses. More than 90 per cent of our annual generation is from renewable sources – hydro and geothermal. The Company generated 6,462 gigawatt hours (GWh) of electricity for the most recent financial year (ending 30 June 2013)¹ which was down 9% on the previous year primarily due to lower hydro volumes.

The Company’s Waikato Hydro Scheme, which produces an annual average of about 4,000GWh, has been complemented by significant growth in geothermal generation over the past decade – with this reliable, renewable base-load generation now accounting for more than 40% of the company’s annual production.

Mighty River Power also sells electricity through multiple channels and retail brands,² to about 390,000 homes and business customers. Mighty River Power’s metering business, Metrix, is one of New Zealand’s largest providers, supplying electricity retailers with enhanced information solutions particularly Advanced Metering Infrastructure for their residential and commercial customers.

Mighty River Power’s generation assets play a pivotal role in meeting national electricity demand and in maintaining New Zealand’s security of electricity supply. Electricity generated from the Company’s geothermal and hydro power stations in the central North Island are well placed to

1 Mighty River Power Annual Review 2013 ‘Smart Thinking’, p7.

2 Retail brands include Mercury, GLO-BUG, Bosco Connect, and Tiny Mighty Power.

serve the requirements of the upper North Island, including the major commercial and residential demand from Auckland. An enduring characteristic of the Waikato Hydro Scheme is the ability to adapt to a wide range of national supply and demand conditions. Given its storage component and flexible generation capability, the Scheme can supply electricity to market at relatively short notice.

2. Mighty River Power Operations

The generation assets owned or operated by the Company includes nine hydro stations on the Waikato River (known as the Waikato Hydro Scheme with an operational capacity of approximately 1044 MW), five geothermal power stations in the Waikato and Bay of Plenty regions (operational capacity of 466MW, and a gas-fired power station in Auckland (operational capacity of 175 MW).³

Water is required to operate geothermal and thermal power stations. Water is primarily utilised for cooling purposes and in the case of geothermal operations also for drilling operations. Water is an essential resource for such operations and should be distinguished from other industrial activities. The Waikato Hydro Scheme is the largest hydro scheme in the North Island, is strategically located to serve upper North Island electricity demand, and has created a series of hydro lakes that are highly valued by the community.

The Waikato Hydro Scheme essentially operates as a run of river scheme whereby water used to generate electricity is available down-stream of Karapiro for other users. There is little direct influence on water quality from the operation of the Scheme but the Waikato River is the receiving environment for contaminants arising from land use.

3. Why Mighty River Power has an interest in the proposed amendments to the National Policy Statement for Freshwater Management 2011

In the Environment Court decision on Variation 6 (Water Allocation) to the Proposed Waikato Regional Plan,⁴ the Court expressed the importance of electricity in the following way:

“Electricity is an essential non-substitutable commodity. New Zealand’s economic and social well-being are inextricably dependent on a secure and cost-effective electricity supply system.”

The recognition of the central role that electricity plays in our society is important, as the Court is acknowledging that electricity is the fundamental underpinning of our society: it is a critical component of enabling people and communities to provide for their social and economic wellbeing, and for their health and safety. That is, the supply of reliable and affordable electricity is an integral component in meeting the purpose of the Resource Management Act 1991 (“RMA” or “the Act”).

This position was also succinctly summarised by the Environment Court in *Genesis Power Limited v Franklin District Council*⁵ in the following terms:

³ Mighty River Power Investment Statement and Prospectus, 5 April 2013, p46, 50 and 51.

⁴ *Carter Holt Harvey Limited & Ors v Waikato Regional Council*, [2011] NZEnvC 380, para 142.

“Electricity is a vital resource for New Zealand. There can be no sustainable management of natural and physical resources without energy, of which electricity is a vital component.”

Given the importance of electricity, security of electricity supply is essential to achieve economic growth. In New Zealand security of supply is maintained by ensuring all available plant is operational (that is, the continued operation of existing generation), and ensuring there is adequate construction of new plant to keep pace with increasing demand. This may also involve efficiency improvements to existing plant or its replacement.

Any impact on the elements contributing to security of supply can lead to disruptions in the supply of electricity with the potential to result in negative impacts on the economy. In the past, winter electricity savings campaigns have been needed to maintain security of supply during times of high demand and constrained generation.

Since 1975, national electricity generation has increased at an average annual rate of 2.1%,⁶ resulting in a doubling of the electricity generation since the mid 1970’s, but this demand growth has slowed considerably in recent years (as little as 0.3% growth from 2007 to 2012).⁷ Current MBIE forecasts are that as the economy picks up pace again growth could return to around 1.1% per annum.⁸ Expressed in another way, the predicted electricity demand growth per year could again approximate the average annual generation from Karapiro Power Station.

The need to maintain security of supply as well as the generation capacity to meet forecast demand, demonstrates the importance of avoiding new restrictions on the ability of existing generation to operate. Maintaining the generation output from existing renewable electricity generation activities is also an important element of the National Policy Statement for Renewable Electricity Generation which sits side by side with the NPS-FM.

The primary interest of Mighty River Power in the proposals set out in this discussion document is to ensure that hydro-electricity and geothermal operations are able to continue into the future. As such the core concerns with the proposals outlined can be summarised as follows:

- (a) Assurance that freshwater management objectives that are already contained in regional plans and which meet the requirements for freshwater objectives under the NPS-FM will remain legitimate objectives.
- (b) Where bottom lines cannot be practically met, there is a means to address a circumstance where the ability to operate nationally significant infrastructure is or may be compromised.
- (c) Where regional plans set freshwater objectives that are higher than current state and where those freshwater objectives cannot be met, there is a means to address that circumstance where the ability to operate nationally significant infrastructure is or may be compromised.

5 Decision A148/2005, at para 64.

6 Annual generation data sourced from: New Zealand Energy Data File 2012, Table G:2A, p108.

7 New Zealand Energy Data File 2012, p105.

8 Ministry for Business Innovation & Employment *New Zealand’s Energy Outlook Electricity Insight 2013* p5&7.

- (d) Retain recognition of hydro-electric power generation as a national value and use for freshwater but improve the manner in which this value is described. There is also need to give equal recognition to the use of water for other forms of electricity generation such as geothermal.
- (e) National values for freshwater should be readily identifiable, regionally transferable, and have clarity as to application and impact.
- (f) In applying water quality attributes, there should be recognition of differences between hydro reservoirs and natural lakes.
- (g) The limitations in the methodologies for monitoring some of the science parameters need to be clearly understood to ensure that they are appropriately applied to lakes, rivers and modified water bodies such as dam reservoirs.
- (h) A need for on-going governmental support for the advancement of sound science to underpin any national objectives and ensure that any objectives developed at the regional level are supported by sound science.

4. Certainty of Investment

Mighty River Power acknowledges upfront that the water permits it holds for the use, take, damming and diversion of water are not property rights in a resource management sense. The RMA clearly spells this out in section 122 of the Act. However, the holders of water permits have a legitimate expectation that if consent conditions are complied with then there is a right to be able to fully exercise a consent.

Considerable investment is made on the basis of being able to fully exercise such consents and, in the case of the Waikato Hydro Scheme, over \$500 million is being committed over the next ten years to upgrading infrastructure to ensure its efficient operation during and beyond the term of the currently held consents.

The Ministry need to ensure that the introduction of the National Objective Framework (“NOF”) will not derogate the rights of the holders of water permits where the water is being used to operate and maintain nationally significant infrastructure. To do so would raise issues of compensatory actions necessary to ensure continuance of the nation’s power supply.

5. General Comment in Respect of Application of Freshwater Objectives

The introduction of the NOF into the NPS-FM is intended to provide an overview of the purpose for establishing freshwater objectives and identification of values and uses for freshwater that is both nationally consistent and recognises local and regional situations. It is unclear that the uses and values listed in Appendix 1 are applicable to considerations of water quality and water quantity, although this is not precluded as currently drafted but neither is it explicit. Deletion of the list of

values from the preamble may have had an unintended consequence in this regard. Interpretation of the NPS in this regard is reliant on the relevant definitions.

Relief sought: Mighty River Power seeks that the definition of freshwater objectives makes clear that the 'outcomes' can be both quality and quantity related.

6. Freshwater Objectives

A number of regional policy statement and plans have already been developed and include objectives that would fulfil the requirements of the NPS. Any new freshwater objectives developed should also be able to be taken into account in any decision made under the RMA.

There is some ambiguity in the NPS-FM as to the status of freshwater objectives in relation to objectives formulated under s67 of the RMA. Clarity is required in the NPS-FM that a freshwater objective formulated so as to meet the requirements of the NPS-FM is also an objective for the purpose of s67 of the RMA. For example, it is entirely consistent that a freshwater objective be given the same status when applying the provisions of s104D of the RMA. The only difference is that a freshwater objective must, in addition to the usual requirements of the RMA, achieve the outcomes specified in the NPS-FM.

7. Exceptions

It has been a matter of some controversy throughout the Land and Water Forum ("LAWF") engagement as to whether or not there ought to be exceptions to any freshwater management regime. Recommendation 7 of the second LAWF report contemplated 'exceptional circumstances'. A system for applying exceptions was to be defined nationally and the criteria for exceptions to national objectives were described as follows:

"Exceptions should apply in the following circumstances:

- (a) *where there is the inability to meet a minimum state objective due to natural conditions of a waterbody; **OR***
- (b) *a regional decision has been made to set a numeric state objective in a water quality band lower than the current state because:*
 - (i) *an exceptional economic benefit will result from the relevant activity **AND***
 - (ii) *a net environmental gain will result, taking into account compensatory actions".⁹*

Proposals for exceptions set out in the discussion document attempt to describe a process whereby regional councils will deal with some exceptions through the normal plan development process whereas others may be dealt with by central government. The criteria by which an exception may be considered however differ from those recommended by LAWF.

In Mighty River Power's view, where there are natural causes for water quality to be below the national bottom line thresholds, such as where there are natural geothermal discharges to the

⁹ Land and Water Forum (April 2012) *Second Report Setting Limits for Water Quality and Quantity Freshwater Policy- and Plan-making Through Collaboration*, p34.

environment or indigenous bird populations, a regional council should be able to deal with those exceptions.

Circumstances that may give rise to a need for exceptions, such as from historical activities or from future economic development activities, involve exercise of greater judgement and discretion in their determination. LAWF was unable to resolve any greater guidance on such circumstances other than to say they should be exceptional. The current proposal is that an exception would apply only where an historical activity has caused the freshwater management unit to be below the bottom line and “*the reversal of those impacts is not reasonably practicable, either physically or ecologically, even in the long term*”.¹⁰

It would also be possible for a freshwater management unit that may be eligible for exceptions to be listed in Appendix 3¹¹ once further consultation has identified the appropriate water bodies to be included in this Appendix.

Looking to the European Union Water Framework Directive¹² there is an exceptions regime that has become stranded in an impenetrable bureaucracy serving neither the purposes of those who would contest such a regime nor those who would benefit from it. This is evidenced by the slow progress made in implementing the reforms.¹³ It is not a model that offers a solution for the New Zealand circumstance.

Despite the currently flat demand for electricity Government has recognised in its Infrastructure Plan¹⁴ that further development of renewable energy sources will be necessary to supply electricity and to meet increases in demand into the future. With the continuance of flat demand, Treasury¹⁵ has also observed that there are new opportunities for improved utilisation of energy infrastructure. It would be prudent to recognise the value of infrastructure that can utilise renewable resources in an enduring and sustainable way and that is adaptive and flexible to supply and demand requirements over time. The infrastructure that makes up New Zealand’s renewable electricity generation fits these criteria.

It is important that the NPS-FM recognises the value of the use of water for electricity generation and that national freshwater objectives are set in a way that do not unduly compromise such nationally significant infrastructure. Any potential effect on existing infrastructure should in particular be able to be anticipated and addressed.

There are three general situations where the ability to continue to operate nationally significant infrastructure could be compromised:

10 Ministry for the Environment (November 2012) *Proposed Amendments to the National Policy Statement for Freshwater Management 2011*, p27

11 Relates to freshwater management units eligible for exceptions under Policy CA2(c).

12 Directive 2000/60/EC of the European Parliament and of the Council 23 October 2000.

13 European Parliament (14 November 2012) *Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC) River Basin Management Plans*.

14 The Treasury, National Infrastructure Plan 2011, pp17&18.

15 National Infrastructure Unit (October 2013), *National State of Infrastructure Report 2013*, p10.

- (a) where the currently proposed national bottom lines cannot be practically met where there is existing infrastructure; and
- (b) where additional attributes and bottom lines are added in the future and those attributes cannot be practically met where there is existing infrastructure; and
- (c) where new significant infrastructure is proposed and a bottom line cannot be met.

On the basis of current monitoring information Mighty River Power understands the proposed bottom lines could be met on the Waikato River upstream of Karapiro Dam. However, an issue may arise if water quality measures are unable to be met in the lower Waikato River (i.e. below Karapiro Dam) and the community looks to the hydro scheme operator to alter its operating regime as a means to achieving freshwater objectives set for that part of the catchment. The NPS-FM therefore needs to contemplate a situation where new attributes are added to Appendix 2 and the new bottom lines cannot be met, and the process a new activity could follow if a bottom line cannot be met. In these circumstances, exceptions for renewable electricity generation activities (such as hydro and geothermal) should be contemplated and provided for in the NPS-FM where it is found to be necessary to do so.

Relief sought: Mighty River Power seeks that the following guidance be added to the NPS-FM:

1. The process by which new attributes are to be added into the NPS-FM at a later date and how parties potentially affected by any such attributes are to be involved through a consultation process.
2. Mighty River Power seeks the inclusion in Appendix 3 of the water bodies that cannot meet the bottom lines defined in the NPS, due to the fact that these water bodies have been modified due to nationally significant infrastructure being located on them.

8. Process for Exceptions

The process as proposed by which exceptions are able to be secured via central government seems onerous and impractical. It would create a system not unlike the European Union Water Framework Directive approach and would be protracted and costly to all parties involved. It suggests a consultative process that is as onerous as, if not more demanding than, a notified resource consent process. If there are matters of national significance to be considered, and if a process is to be useful at a national level, then greater discretion to the Minister is required to be able to decide if a water body is to be included in Appendices 3 or 4 of the NPS-FM.

A superior process would be for the Ministry for the Environment to identify and include now in the NPS-FM Appendix 3 those water bodies that cannot meet bottom lines as a consequence of modifications made to the water body through the existence of nationally significant infrastructure.

A process for future applications to gain approval for an exception from bottom lines should involve applications to the Environmental Protection Agency (“EPA”) who could report on the request for an exception. The EPA could invite submissions from parties it considers having a direct interest in the water body concerned, and an independent report on the merits of the application could be commissioned. A recommendation could then be made to the Minister who would decide the request and the NPS-FM updated through a notice in the New Zealand Gazette. Such a process would be a more streamlined approach than that proposed in the Discussion document. It would not be too dissimilar to the process than this NPS-FM proposed change is going through and would reduce the time and cost involved with the process for all parties.

Relief sought: Mighty River Power seeks that a streamlined process be added to the NPS-FM to consider exceptions to the NOF for nationally significant infrastructure where activities are no longer able to meet the bottom lines defined in the NPS-FM as a result of new attributes being added.

The process would involve:

- Applications made to and processed by the EPA.
- Decisions made by the Minister for the Environment following consideration of reports and recommendations of the EPA.
- Approved exceptions included in the NPS Appendix 3 by notice in the New Zealand Gazette.

9. Electricity Generation Value Descriptors

The currently proposed descriptor¹⁶ for use of water for electricity generation is inadequate. It does not provide for all of the circumstances where water is used for electricity generation. Further, it does not fully describe the value of electricity in the same way that other use values have been described.

Electricity is an essential service in a modern economy. Modern society cannot function without electricity. It is a lifeline utility in a civil defence and emergency management context. Special recognition has been given to renewable electricity generation activities through the National Policy Statement for Renewable Electricity Generation.

In order to increase the proportion of New Zealand’s electricity generated from renewable energy sources to meet or exceed the target of 90% of generation from renewable energy sources, it is necessary that the capacity and output of existing renewable electricity generation activities is maintained, and options for the development of renewable energy resources retained for the future.

Where water resources are currently utilised for electricity generation purposes, the NOF in the NPS-FM should provide for the on-going operation, maintenance, and upgrading of existing

¹⁶ Contained on p68 of the discussion document under the heading ‘Au Putea/economic or commercial development’.

renewable electricity generation activities as contemplated by the National Policy Statement for Renewable Electricity Generation.

It is stated in Appendix 1 that the supply of electricity contributes to Mana Tangata through Au Putea/economic or commercial development. Cultivation to support primary production and drinking water are included in their own categories yet electricity contributes more broadly to society in a similar way to drinking water and food security. Primary production for domestic use and food security is a small component of the broader primary production economic activity in New Zealand. A parallel can be drawn with electricity generation whereby it is relied upon for health and safety, warmth and security through the services provided to homes and businesses. It also underpins and is necessary for business development and economic activity. Currently the description of the national value for economic and or commercial development significantly underrates the social and community benefits of electricity.

Appendix 1 already contains precedent for this to occur. For example, irrigation is defined to meet irrigation needs, and commercial and industrial use provides for economic opportunities. However no such end purpose is articulated for hydro-electric power generation.

Relief sought: Mighty River Power requests that a separate section for Electricity Generation attributes is inserted into Appendix 1 'National values and uses for freshwater' and that the heading to that section reference both the economic and social benefits of electricity supply.

The current description for hydro-electric power generation contains the core elements of a river's hydrology that provides the potential to harness energy for hydro-electricity. The descriptor requires expansion to fully describe the values associated with existing and future opportunities for hydro-electricity.

Mighty River Power is principally concerned with the unintended consequences of the NOF for existing nationally significant infrastructure. It could be helpful to distinguish between existing activities where effects have already occurred and where the existing environment has adjusted to the hydro scheme in place, from future options for new hydro-electricity projects.

As context for developing the following attribute descriptions, terminology has been used that speaks to s5 RMA, but also to the National Policy Statement for Renewable Electricity Generation.

Relief sought: Mighty River Power proposes the following amendments to the description for the National values as they relate to electricity generation (additions shown underlined):

“Hydro-electric power generation –

The freshwater management unit has, or units have, physical qualities that are suitable for power generation as required to provide a reliable and secure supply of electricity where either:

The physical qualities, including the continued availability of water (levels, flow and allocation), for existing power generation are retained, maintaining the potential generation output, or

The physical qualities, including hydraulic gradient, volume of water, and flow rate, required for new power generation would be retained, and water storage for power generation may also be possible” (proposed amendments underlined).

There is also an omission for the water used by geothermal and thermal generation. Mighty River Power seeks the addition of a value for use of freshwater for geothermal power production activities as follows:

“Power generation from renewable geothermal water and energy

The freshwater management unit provides for use of renewable geothermal resources to provide a reliable and secure supply of electricity.

Freshwater of a suitable quantity and quality is available for drilling, cooling and process water purposes and enables continuous drilling operations and the power station to operate at all times, whether to maintain existing renewable electricity generation activities or to support new generation activities”.

Mighty River Powers seeks the addition of a value for use of freshwater for thermal power production activities as follows:

“Water used for thermal power stations

Freshwater of a suitable quantity and quality is available for cooling and process water and enables a power station to operate at all times”.

10. Principles for identifying values and setting Freshwater Management Objectives

10.1 LAWF recommendations for Setting Objectives & Limits

Recommendations from LAWF around setting objectives and limits for freshwater are contained in the second LAWF report.¹⁷ The essence of the approach was set out in recommendation 3 and 4 of that report. Much of this approach has been adopted in the NPS-FM amendments. It is important to retain the ability to integrate nationally and regionally set freshwater objectives as set out in the new Policy CA1.

Relief sought: Mighty River Power requests the retention of the general form of Policy CA1 as it is consistent with the recommendations made by LAWF in its second report and further requests the inclusion of the amendments suggested in this submission. As a direction to regional councils, the Policy sets out the essential steps required to incorporate the national objectives into regional plans, and to identify values and apply appropriate water quality attributes where these are better applied at a water management unit or regional level.

10.2 Maintain and Improve

Objective A2 of the NPS-FM states that “*the overall quality of freshwater within a region is maintained or improved*”. The amendments proposed for the NPS-FM do not address how this may be achieved.

¹⁷ Land and Water Forum (April 2012) *Second Report of the Land and Water Forum Setting Limits for Water Quality and Quantity Freshwater Policy –and Plan-Making Through Collaboration.*

What is clear from the NPS-FM as it is currently drafted is that water quality can be maintained or improved in the context of a region as a whole. The main issue is whether it is acceptable to have some degradation of water quality in part of a water management unit and offset this with improvement in some other part of a water management unit. Alternatively, is it acceptable that water quality in one management unit be degraded if water quality in another management unit is improved within the same region? Either way, the bottom lines (C/D numeric thresholds) need to be maintained or improved.

It is a matter of some importance for both the health and wellbeing of our rivers and lakes and the economy that there is a clear expectation as to what is meant by the requirement to maintain and improve water quality in a region overall. Communities are going to be asked if they want to set water quality objectives within the band that reflects the current state of water quality in the management unit or if some improvement is desired and a higher band is sought. Central to such a discussion is what the costs and benefits of achieving such an improvement are. In a similar way, if water quality within a management unit or between management units is to be degraded and offset then very transparent accounting is required of the nature of the offset and where the costs and benefits are to lie.

As an activity that is central to economic and social wellbeing, the electricity industry has had to confront such issues for a long time. Its infrastructure is not without environmental effect and it is a reality that those environmental effects have been incurred to secure for New Zealand a reliable and secure supply of electricity. There have been intensive consultation and engagement processes with communities when resource consents were obtained under the RMA. Extensive conditions of consent are in place to deal with operational requirements, and mitigation measures to deal with environmental effects. Even accounting for the fact that this was a somewhat retrospective process for infrastructure built under previous legislative frameworks, there was a level of pragmatism and practicality applied to the solutions devised to address effects.

The NPS-FM should state more clearly what is intended in Objective A2. It is an issue that is linked to the RMA reforms in the sense that there is a need for a clearer mandate for offsetting effects in the light of the High Court's recent determination.¹⁸ Where such choices have already been made for nationally significant infrastructure, the NPS-FM should require recognition of such modifications. In many instances this can be achieved without compromising water quality attributes. In other situations it may not be practical to improve a water quality attribute given engineering and operational constraints.

The current form of Objective A2 is supported as it provides some optionality for communities and the country to make decisions about resource use, and to consider and address the implications of that resource use. There should be an ability to consider trade-offs where environmental

18 *Royal Forest and Bird Protection Society of New Zealand Inc v Buller District Council*, High Court, [2013] NZHC 1346.

enhancement can be achieved while at the same time enabling communities to advance economically.

Such a policy should not be viewed as an excuse to externalise adverse environmental effects. Those creating adverse environmental effects should internalise those effects wherever it is practical to do so. The policy should enable a trade-off to be made where a net environmental gain will result, taking into account any compensatory actions, including on existing resource users.

Relief sought: Mighty River Power seeks that a new policy should be added to support Objective A2 of the NPS–FM that explicitly provides for the ability to include in plan objectives that allow for some decline in water quality within a management unit or between management units provided this is offset with a proportional improvement in water quality and water quality is maintained above bottom lines. Any such offset would need to be clearly transparent, accounted for and monitored.

10.3 Te Mana o te Wai

It is helpful that the NPS-FM advances Maori concepts and values of water as this has been an area of uncertainty in water management. Iwi have expressed dissatisfaction with the lack of acknowledgement of their values in the planning process. A key recommendation of the LAWF report¹⁹ was to better integrate Maori concepts of water management and the expression of those values in Appendix 1 makes a start on that journey.

Consultation on the concept of Te Mana o te Wai will no doubt result in further elaboration of its meaning from respective Iwi.

If Te Mana o te Wai is to be added as an objective there would need to be greater clarity as to the concept and how it is to be interpreted as an outcome. As the NPS-FM amendments are currently proposed, there are a number of values and attributes that could contribute to Te Mana o te Wai. This would appear to be a more workable outcome than having regional councils interpolate what may be meant by the more generic concept of water quality currently described in the definition provided for Te Mana o te Wai.

Greater certainty will be achieved both in terms of giving meaningful effect to Te Mana o te Wai, and for those developing and implementing plans if objectives can be formulated that can be readily interpreted and understood. This will also enable the implications of adopting the objectives to also be evaluated. Where numeric attributes are unable to be prescribed, narrative objectives could be used to provide Councils with uniform descriptors where that can ideally be achieved.

An alternative approach may be to amend the existing NPS Objective D1 “Tangata whenua roles and interests” to refer to Te Mana o Te Wai, and describe a process as to how the other provisions

¹⁹ Land and Water Forum (April 2012) *Second Report of the Land and Water Forum Setting Limits for Water Quality and Quantity Freshwater Policy– and Plan-Making Through Collaboration*, Appendix 2 Recommendation 1a and Appendix 2.

of the NPS may be developed in the future by Councils to develop objectives and ascribe attributes to the value.

Relief Sought: Officials should continue to work with Iwi representatives to formulate objectives that contribute to Te Mana o te Wai and provide regional councils with clear direction as to how the concept is to be implemented.

10.4 Distinguishing Hydrologically Modified Water Bodies

It was also a recommendation of LAWF²⁰ that there be recognition of hydrologically modified catchments. Specific examples cited were hydro-generation, urban water supply or irrigation storage dams that have resulted in modifications to catchments on a significant scale and for an intergenerational timeframe. It was contemplated that there would be a 'use layer' overlay of any biophysical classification however this has not been carried forward into the Government proposal.

Mighty River Power believes that this is a significant omission and risks placing such infrastructure in a framework that leads prematurely to a reconsideration of environmental effects that have been rigorously tested through consenting processes under the RMA. An outcome already achieved through the consenting processes has been the development of sophisticated conditions of consent and mitigation measures developed with community input.

Relief sought: Mighty River Power seeks the insertion of an addition point to the considerations in Policy CA1, clause (f) as follows:

"(##) the extent of any existing hydrological modification in the freshwater management unit or units associated with nationally or regionally significant infrastructure".

There are a number of factors that would differentiate a reservoir from a natural lake. Examples of such factors are summarised in the lists below. The factors are generalised as opposed to relating to any particular river or lake.

Reservoirs compared with natural lakes may have the following characteristics:

- The rates of lake level fluctuation will differ and be dependent on operating rules as dictated by resource consent conditions, and there may be a greater range that occurs in the fluctuations.
- The draw down rates from reservoirs will tend to be greater than natural lakes due to the need to abstract water to meet energy demands.
- Reservoir morphology differs in that natural lakes tend to be deepest in the middle whereas reservoir lakes are deepest behind the dam and tend to be shallower as distance increases beyond the dam.

Reservoirs compared with rivers may have the following factors:

20 Land and Water Forum (April 2012) *Second Report of the Land and Water Forum Setting Limits for Water Quality and Quantity Freshwater Policy –and Plan-Making Through Collaboration*, Recommendation 10 with the supporting text at paragraphs 91 and 92.

- Water body classification changes from a river to a reservoir as a result of impoundment due to the establishment of a dam in the water body.
- Nutrients can be retained in reservoirs.
- Ground water levels adjacent to reservoirs are likely to rise.

The factors listed in the table above are, by way of illustration, reasons that warrant a different management regime than would otherwise have been adopted if the water body had not been so modified. There are many other factors relevant to reaches of rivers both upstream and downstream of reservoirs and any water management regime should recognise the changes that have occurred and manage accordingly.

These factors show that there is a need for recognition in the NPS-FM of the differences which exist between natural freshwater bodies and water bodies formed as a result of modifications such as hydro-electricity generation dams.

It is essential for the continuity of nationally significant infrastructure that the NPS-FM directs regional councils to acknowledge the existence of modified waterways and hydro-electric schemes in particular when developing freshwater objectives. Where such infrastructure is present in a water management unit, or units, there should be a requirement to consider its existence and apply the NOF and any freshwater objectives to the modified catchment. This is akin to a policy overlay in a plan. To achieve this, the NPS-FM requires further amendment.

Relief Sought: Mighty River Powers seeks that a new clause is added to Policy CA1 that acknowledges the situations where a water management unit, or units, or part of a water management unit has been hydrologically modified by nationally significant infrastructure such as hydro dams and water supply dams and apply the national freshwater objectives and regional freshwater objectives in a manner that recognises and provides for the maintenance of the modified environment.

10.5 Methodologies for applying attributes

National guidance will be required as to the methodology to be used to measure and monitor the attributes included in the national objectives framework. This guidance would best be provided in technical guidelines that can be updated as best practice develops. There are some critical elements however to determine how issues such as averaging is to be accounted for. Many of these methodologies are particular to the attribute. Without such guidance the aim of having consistency of outcome nationally could be undermined. An equally important consideration is that the thresholds established in the NOF for the water quality bands A to D could be inappropriately applied if measured or monitored incorrectly.

The issue of methodologies is covered in further detail in the section below which addresses the specific questions asked in the discussion paper.

11. Specific Responses to Questions²¹

Section 2 Questions

1. *Have we correctly identified the problems currently associated with implementing the NPS-FM?*

Yes, the identified problems associated with the current implementation of the NPS-FM are valid. The implementation of the NPS-FM is occurring in a fragmented way without national guidance. For this reason, the general approach to updating the NPS-FM is supported in order to achieve transparency and consistency with how the NPS-FM should be applied.

2. *If not, what problems, if any, have you faced with implementation?*

Mighty River Power has experienced that a uniform approach for the management of freshwater does not work across the board. There is a significant variability in the physical characteristics of water catchments that needs to be reflected in water management at a regional level. A level of national prescription is appropriate where principles can be applied nationally while accommodating catchment specific solutions.

In addition, use values are invariably underrepresented in water management policy which makes it difficult to balance the actual uses of a water body against the desired uses and outcomes for the same water body prescribed in plans at regional and district levels.

Section 3 Questions

3. *Do you agree that amending the NPS-FM would solve the problem identified in section 2?*

Mighty River Power agrees that the amendment of the NPS-FM will help solve the problems identified in section 2 over time. Amending the current NPS-FM in light of additional and new information is appropriate. In addition, specifying national values of freshwater in the NPS-FM as opposed to the preamble would give greater direction to Councils to ensure use values are identified and considered alongside ecological health and human health considerations.

4. *If not, would additional guidance be sufficient to solve the problems identified?*

From Mighty River Power's perspective there is an urgent need for additional guidance to be given on how the NPS-FM should be applied. An NPS can incorporate measures that are nationally applicable but because of the variability in catchment characteristics, there is still a substantial body of work required at a regional and catchment level to deliver effective water management.

Water quality and allocation are undoubtedly the biggest resource management issue in New Zealand. The vexed nature of the issues involved is reflected by the complex discussions and

²¹ Mighty River Power has chosen only to provide comment on the questions which are relevant to its operation. Where a question has been omitted, Mighty River Power has nothing further to add.

recommendations of the LAWF. Some of those recommendations are reflected in the current proposals and in part, Mighty River Power's submission is that some important elements of the recommendations have been overlooked. In particular, the Company has commented on the failure to address hydrologically modified catchments where there is infrastructure such as dams for electricity, water supply or irrigation storage as was contemplated by the LAWF report. Similarly the exception policy has only selectively implemented the LAWF recommendation.

5. *Is there another solution to the problems? Why would that be preferable?*

Mighty River believes that amending the NPS-FM is preferable to the development of a National Environmental Standard as it provides a more integrated approach between the national instrument and regional planning.

A regional planning process will be required that is open and transparent and involve consultation with all affected communities, iwi and industry and organisations. It is difficult to comment fully on this element until the parallel proposals for collaborative planning are announced. The NPS-FM could however be successfully implemented using the First Schedule, RMA process.

There is a need for the greater use of watering metering in order to allow the collection of accurate information and data by Councils.

Any solutions to the problems identified need to be holistic in order to achieve the objectives proposed for the NPS-FM. It will be the solutions as a whole that will achieve the best possible outcome for the use and management of New Zealand's freshwater resource.

Section 4.1 Accounting

6. *Do you agree with requiring Councils to account for all water takes?*

Yes, it is virtually impossible to implement a sound water management regime until managers know and account for actual water allocation and utilisation rates, all sources of discharges, and have a clear understanding of the nature of connections between ground and surface water.

Improved accounting for water use is critical to inform both water management and allocation decisions and to enable more efficient use of water while the improved accounting of discharges is required to better manage water quality.

There are a large number of decisions made across the country at present by Councils involving the use, take, damming and/or diversion of water which are based on estimations of the state of the water bodies involved which have too greater a margin of error. There is an urgent need for clarity to be given on the process being followed by the various Councils in implementing the NPS-FM. In turn, this clarity will help Councils formulate and implement their water objectives and policies at district and regional levels and will hopefully lead to a more consistent approach being adopted nation-wide.

In respect of actual water accounting, it would be appropriate for the NPS-FM to support the use of water meters by water supply organisations as metering will allow for accurate water use records to be collected.

7. Do you agree with requiring Councils to account for all sources of contaminants?

Yes, Mighty River Power believes that there is an urgent need to define what the minimum acceptable levels for water quality are to be (i.e. for ecosystem health and human health) so that land use decisions can be better informed.

In order to be able to define the minimum acceptable levels for water quality and make sound judgements when consenting new discharges, Councils need to know what is being discharged into water bodies on a physical level as well as what is consented. It is probable that consent holders and water users are in some cases discharging less than the amounts authorised in water permits. If Councils do not know exactly what is being discharged into water bodies through monitoring, it will not be able to fully understand or address any adverse effects of contaminants in freshwater bodies.

Councils need to know who the polluters of our water bodies are, the extent of the contamination occurring, and what can be done about it individually, as an industry, and as a community (noting that there is a significant historical legacy that is not of the current generation's making).

8. Do you think that the requirements in policies CC1 and CC2 of the proposed NPS-FM amendments have the right balance between national prescription and regional flexibility?

The policies as they are currently written contain too much flexibility. They need to be stronger in their mandate. A Council should be required to analyse the information from the freshwater accounting systems required in Policy CC1. If it is not mandatory to analyse the information then these new policies lack compulsion for the Councils to take the next step required.

In addition, the establishment and operation of a freshwater quality and quantity accounting system should be mandatory across all of the objectives and policies of the NPS-FM, not just in the circumstances defined under Policy CC1, clause (a). Water accounting systems need to be applied at a holistic level in order to ensure that water management units as a whole are being looked after.

Policy CC2 requires that Councils take reasonable steps to make the information collected under the water accounting system available and accessible. The definitions for 'freshwater quality accounting system' and 'freshwater quantity accounting system' allow the information collected to be "measured, modelled or estimated". However, it is preferred that the NPS-FM expresses a strong preference for the "measurement" end of the spectrum as, at the other end of the spectrum, "estimation" could be very loosely used, noting the difficulties with issues such as diffuse discharges or water flows in some circumstances. In addition, Policy CC2 ensures that the

information collected by a freshwater quantity accounting system will be accessible to water users and the public at a minimum at yearly intervals. This timeframe for water quantity updates could be inadequate in catchments approaching full allocation and with a lot of activity. A more “real time” online calculator such as that used by Horizons Regional Council would be much better in this respect.

The minimum 5 yearly intervals for water quality updates are probably reasonable given the generally slower rate of land use change.

Section 4.2 National Objectives Framework Values

National Objectives Framework Values

10. *Should there be a national set of values as outlined in appendix 1 of the proposed NPS-FM?*

Mighty River Power agrees with the proposed compulsory national values (being the health and mauri of water and the health and mauri of people) as these are consistent with the settlement legislation and the Vision and Strategy for the Waikato River. The two compulsory values also fit within the definition for sustainable management contained in section 5 of the RMA.

In addition, Mighty River Power supports the use of contact recreation as the measure for human health with the option of primary contact recreation being applied to specific water bodies identified during the value setting process to contain primary contact recreation values.

Mighty River Power supports the inclusion of hydro electricity generation in the NPS-FM as an additional national value. However, the Company feels that the national value as proposed weakens the national value of electricity generation as previously reflected in the preamble to the operative NPS FM. The new proposed value is narrow in its focus as it only refers to hydro and effectively excludes the use of freshwater for other types of generation including renewable electricity generation activities such as geothermal.

The Company also has concerns that it is implied that hydro electricity generation is only for mana tangata, i.e. economic or commercial development. Electricity generation has wider benefits and application including social wellbeing and contributes to cultural wellbeing at times. This issue is discussed in more details in the main body of Mighty River Power’s submission above.

There are also inconsistent references to water management units throughout the document and in particular any reference to management units is absent when considering animal drinking water and irrigation. There is no apparent reason for this.

In addition, there are inconsistencies with how the values in Appendix 1 have been described. Some values refer to the end purpose of the water use while other values do not. If the end purpose of use of water is to be referenced it should be done consistently throughout Appendix 1.

As well there should also be consistent references made to freshwater management units throughout the appendix.

There remain difficulties in differentiating values that apply to natural water bodies and those that may relate to modified water bodies such as reservoirs impounded behind a dam. In some instances the new environments created over a period of time have “natural” qualities that become valued by communities. A good example of this is the Waikato River hydro lakes that are utilised for a number of recreational pursuits and have also become places that people like to live close to because of the amenity provided by the hydro lake. Currently the NPS-FM does not account for such circumstances and amendments to either Policy CA1, clause (f), or Appendix 1, are required to reflect such values.

Mighty River Power would also reiterate its request for a new section in Appendix 1 to deal with electricity generation use. Renewable electricity generation is a nationally significant use of water in its own right and should be recognised as such.²² It seems anomalous that water use for any primary sector activity is recognised as a value when the use of water by nationally significant infrastructure is omitted.

11. *Are there any additional values that should be included? Why are these values nationally significant/important (recognising that Councils can use other values if they wish)?*

From Mighty River Power’s perspective, and as has been discussed previously, there is a need for the NPS-FM to recognise the use of water for more than just hydro generation. The use of water for geothermal and thermal power production is just as critical in supporting a secure and reliable electricity supply system for New Zealand.

National Objectives Framework Attributes

14. *Do you agree with the attributes associated with the values in appendix 2 of the proposed NPS-FM?*

As is described in section 4.2 and the Table on page 21 of the NPS-FM, the attributes are appropriate for inclusion in the NPS-FM are those that can be applied nationally and will be complemented by other attributes that can be applied regionally.

Any attributes that are added to the national set need to be supported scientifically and meet the test of national applicability otherwise greater remediation costs or operational costs could be incurred by the community and users of the freshwater resource respectively.

²² In 2012, hydro electricity generation contributed 56.25% and geothermal generation contributed 14.3% of the national power supply (excluding co-generation plants), being over 70% in total from renewable electricity generation that is reliant on freshwater to operate (Source: Ministry of Business, Innovation & Employment Electricity Data Table 6. <http://www.med.govt.nz/sectors-industries/energy/energy-modelling/data/electricity>).

15. Do you agree with the numeric attribute states in appendix 2 of the proposed NPS-FM?

Mighty River Power has some concerns over the numeric attribute states contained in Appendix 2. For example, there is currently no explanation in the documentation as to how the break points for Total Nitrogen and Ammonia Toxicity have been derived.

In addition, it is not clear as to how each of the various attributes is to be monitored and measured. It is important that there is national guidance to ensure that there is consistent application of the attributes. It is also critical to have national guidance as to the measurement and monitoring conventions to be followed and reporting undertaken. For example, the supporting report on cyanobacteria band testing²³ recommends further research on the manner in which testing is carried out. It is important that any methodology is well founded in science and is well documented so that those undertaking the measurement and monitoring do so consistently. It is of some importance in the case of cyanobacteria testing where samples are taken and how the results are averaged to give a representative result. Testing at the shoreline will not necessarily be representative of conditions in the centre of a lake.

Relief sought: Mighty River requests that additional research is undertaken to confirm whether results are to be averaged over 2 years or 3 years, and to determine the allowable number of exceedences. In general, a longer averaging timeframe would suggest a more representative result may be obtained.

16. Do you agree with the narrative attribute states in appendix 2 of the NPS-FM?

Yes, the narrative attributes are relatively clear as to intent. The more critical issue is that the numeric thresholds set for each narrative attribute state are scientifically robust.

National Objectives Framework Timing

17. Do you agree with putting in a NOF into the NPS-FM now, including only the attributes for which there is adequate evidence, and updating it as the scientific basis for further attributes and states become available?

Yes, it is preferable that the national objectives chosen can be applied nationally with confidence and with the potential costs and benefits of their application fully understood. This allows fully informed decisions to be made based on the best possible information being available.

It should also be noted that not all water quality attributes will be able to be applied nationally given regional and catchment variability, and in those instances it would be appropriate for regional councils to establish objectives for such attributes.

²³ Wood SA, Mallet RJ, Hamilton DP, McBride CG, Hamilton DP, Cutting BT, Muraoka K & Tempero GW (2013) Cyanobacteria band testing; Examining applicability for the National (NZ) Objectives Framework, Environmental Research Institute Report No 12. (The University of Waikato, Hamilton) p24.

18. Or should the Government delay putting the NOF in place until a more comprehensive set of attributes has been developed?

Mighty River Power does not believe that the government should delay putting the NOF into place. There is an urgent need for a framework to be provided to aid in the implementation and application of the NPS-FM.

As more information comes to light the NPS-FM can be amended to incorporate more comprehensive sets of attributes. When more data and more reliable scientific evaluation are available it is better to add further attributes at a later date.

National Objectives Framework Processes for freshwater objective setting

19. Do you agree with having the process requirements to link values and freshwater objectives directed in policy CA1 in the proposed amendments? If not, why?

Policy CA1, clause (b) outlines how the identification of freshwater management units should occur. At present clause (b)(ii) contains a discretion for Regional Councils over whether or not they include any other national values or other appropriate values when identifying freshwater management units.

Mighty River Power believes that this consideration should be mandatory and not be left to the discretion of a Regional Council. Policy CA1, clause (b)(ii) should include any national value that is present in the water management units as well as any other relevant value. By doing this, an accurate identification of the values applicable to each freshwater management unit will occur followed by the selection of attributes applicable to those values.

Relief sought: that Policy CA1, clause (b)(ii) be amended to make it mandatory for Regional Councils to take into account any other national values present in a water management unit after which any other appropriate values may also be identified.

Policy CA1 should be amended to make clear that freshwater objectives are set and attributes established in regional plans. By way of example, Policy CA1, clause (c)(ii) states that Councils will have to identify attributes which support use values (which include hydro-generation, commercial/industrial, and other uses). A potential way of achieving this is to amend the opening sentence to Policy CA1 by adding the words “in regional policy statements and plans” at the end of the sentence.

Relief sought: Mighty River Power seeks the amendment of the opening sentence to Policy CA1 so that it reads:

“To provide for an approach to establishing freshwater objectives for national values and any other values in regional policy statements and plans that...” (additional text sought shown underlined).

Policy CA1, clause (e)(ii) states that in those cases where an attribute is not contained in Appendix 2, a freshwater objective can be formulated in narrative terms (although the NPS-FM proposal still prefers numeric terms where practicable).

Mighty River Power believes that it is important to retain the option to express freshwater objectives in narrative terms. There are regional policy statements and plans where objectives have already been established using a combination of narrative and numeric terms (for example, the Horizons One Plan and the Waikato Regional Plan and RPS). Where such objectives meet the requirements of the NPS-FM as freshwater objectives, they should be given that status to avoid unnecessary cost and litigation.

It should be noted that the definition of “freshwater objectives” does not specifically relate to a regional plan objective under s67 of the RMA and, therefore, neither does Policy CA1, clause (e). Given that freshwater objectives would have to be incorporated into RMA documents, the definition of ‘freshwater objective’ given in the NPS-FM should be amended to make explicit that freshwater objectives are also objectives for the purpose of s67 of the RMA.

In respect of Policy CA1, clause (f), Mighty River Power supports the retention of the current matters for considerations along with the addition of the consideration of hydrologically modified catchments. The issue of hydrologically modified catchments is discussed in detail in the main body to this submission.

Policy CA3 relates only to freshwater objectives for compulsory values with clause (c) providing exemptions for freshwater management units in Appendix 3 ‘Freshwater management units eligible for exceptions under Policy CA2’ (yet to be specified and discussed earlier in this submission). A more workable and streamlined process is required for the inclusion of exceptions both now and in the future.

In respect of Policy CA3 which allows Councils to set a freshwater objective below a national bottom line on a transitional basis for a freshwater unit for the periods of time specified in Appendix 4 ‘Freshwater management units and periods of time for transition under Policy CA3’, it is unclear as to the process that would be followed to include water management units in Appendix 4.

In order to promote clarity and transparency it would be good if the process for the further public consultation and the elements involved were outline in the NPS-FM during this round of amendments and not at a later stage.

Relief sought: Mighty River Power seeks the retention of the option in Policy CA1, clause (e)(ii) to have narrative objectives while retaining the preference for numeric objectives where these are possible.

Mighty River Power also seeks the amendment of the definition of 'freshwater objective' given in the NPS-FM to make explicit that freshwater objectives are also objectives for the purpose of s67 of the RMA or amend s67 of the Act should that be necessary.

Mighty River Power seeks that the process for further public consultation and the elements in order to populate Appendices 3 and 4 in the future should be included in the NPS-FM through this round of amendments.

20. Do you think the process outlined will work? If not, why not?

The process outlined is a start and provides actual guidance to the Councils on how things are to be done. This is better than the current position where Councils are struggling to start implementing the NPS-FM and are uncertain about whether existing rules and provisions are actually consistent. Any reservations about the proposal are set out in other sections of Mighty River Power's submission.

23. Do you agree that regions should have discretion to determine timeframes for meeting freshwater objectives?

It is very clear that a comprehensive, and fundamentally new, regulatory setting needs to be urgently established to arrest the decline in water quality and that firm timetables are also required. It would however be ineffective to set a timetable nationally for water quality improvement given the variable circumstances that exist. Each community will need to assess what is achievable and affordable and over what timeframe. However, central government could set out some clear expectations as to the timeframes it expects Councils to achieve milestones toward meeting freshwater objectives.

24. Are there any aspects of the process that are not clear?

There is considerable uncertainty as to how regional councils will undertake the objective setting process as this is dependent upon the outcome of the RMA reform process. A critical element of the RMA reform is the form of the collaborative process that is being designed in response to the LAWF engagement model. A matter considered by LAWF on which there was disagreement, was the ability to access the Environment Court where national interest elements were inadequately assessed alongside local and regional interests in a regional council process.

If a collaborative process is effective there should be only the most contentious issues remaining and it is probable that the issues will have narrowed considerably. Any court process should therefore be focussed on points that parties simply cannot agree about. There are important natural justice and legitimate expectation elements in having access to an adjudication process in such circumstances. There may well be other elements in the collaborative process that will determine the level of comfort with the process. It is difficult to comment further on this issue without the RMA reform package details.

Section 4.3 Compulsory Values

25. Do you agree that ecosystem health should be a compulsory value?

Yes, ecosystem health should be a compulsory value as it contributes to water quality which then contributes to the social and cultural wellbeing of communities which rely on the water, provided that the constituent elements are clear.

26. Do you agree that human health for secondary contact recreation (such as boating and wading) should be a compulsory value?

As has been previously discussed, Mighty River Power believes that it is the quality of the water management unit as a whole (the catchment) and its ecosystems which are more important and this is where the focus of the NPS-FM needs to be directed towards.

Human health for secondary contact recreation is a reasonable indicator to use for a catchment as a whole whereas the community should decide specific areas within water management units, or agree where water management units should meet the higher primary contact recreation standards (such as beaches popular for swimming or areas where food gathering is a regular (e.g. daily or weekly) practice).

27. Do you think there should be more compulsory values? If so, what should they be, and why?

Yes. Given the importance of electricity generation and the need to ensure the security of electricity supply for New Zealand, there is the potential for inserting an additional compulsory value which addresses electricity generation (including hydro, geothermal and thermal). Should such a value be included it would alleviate a significant number of exceptions that would otherwise be required.

It is questionable that there is either sufficient scientific justification for other attributes to be added at this point or whether some attributes identified in the table on page 21 of the document should ever be included given the potential for regional or catchment variability.

Attributes that would be problematic for electricity generation infrastructure if included are:

- **Macroinvertebrate Community Index (MCI)** - MCI is a macro invertebrate biotic index developed to assess the ecological condition of rivers and streams. The index has been successfully applied to wadable streams and a variant methodology has been developed for hard and soft bottomed streams. There are a number of variants that need to be applied and the limitations of the methodology need to be recognised including the limited range of flows to which the index applies. These issues are set out more fully in Appendix 1. The index has not been applied to lakes and it would be inappropriate to apply it to a large soft bottomed non-wadable river such as the Waikato River.

- **Temperature** - It is unclear what maximum temperature limits would be applied and the geographical application of different temperature regimes. The cost implications of any temperature regime on the operation of electricity generation infrastructure should be fully investigated prior to implementation.
- **Fish** - If there were to be a requirement for continuity of fish passage in a national objective there would be a number of hydro schemes that could not meet such a requirement. An exception regime would be required in that event. It may however be better to deal with this issue at a regional level where regional management approaches can be adopted. There are a number of initiatives underway that should be supported rather than be unnecessarily regulated without any practical benefit being derived.
- **Sediment** - Sediment load characteristics in rivers are highly variable and highly dependent on the nature of the land uses being undertaken in a river catchment. Sediment is clearly an important attribute for water quality management.

Regional councils should establish objectives to deal with the effects of sediment in a manner that deals with distinguishing elements such as slope, geology, morphology, and land use. While it would be problematic to develop a numeric objective at a national level the NPS could include a direction to Regional Councils to include sediment as an attribute when developing regional plans and strong guidance could be given as to relevant elements to consider. It is also unclear whether sediment is a contaminant for the purpose of the NPS and further clarity in s2 of the RMA may be necessary.

- **Flow** - Mighty River Power agrees with the exclusion of flow from the national objectives. While flow is a relevant consideration it is highly variable in rivers and streams and is highly variable in terms of climatic influence and geomorphology.

In a report to LAWF, Generators set out the potential impact of minimum flow regimes²⁴ and its consequences for the operation of hydro-electricity schemes in New Zealand. In the particular case of the Waikato Hydro Scheme flow is already regulated through the conditions of the resource consents held to 2041. It is a flow that provides for all resource users downstream of Karapiro Dam and is set above a level that meets the ecological services functions of the river. Mighty River Power continues to oppose any introduction of flow as a national freshwater objective.

Further consultation is required on the thresholds to be applied if any additional attributes are to be included in this iteration of the NOF.

²⁴ Concept Consulting Group Limited (July 2010) "Power Generation and Water in New Zealand, An information paper prepared for Contact Energy, Genesis Energy, Meridian Energy, Mighty River Power, and TrustPower.

Relief sought: Mighty River Power seeks the inclusion in the NPS-FM of a narrative objective requiring Regional Councils to include sediment as an attribute in regional plans and for government to provide national guidance as to the relevant elements to consider in establishing regional objectives for sediment.

The Ministry should also ensure that sediment is included in the accounting requirements for contaminants through amendment of the definition of contaminant in s2 of the RMA if necessary.

In addition, the Ministry needs to ensure that further consultation occurs amongst key stakeholders before it adds any additional attributes to the NPS-FM.

Section 4.4 National Bottom Line

28. *Should there be numeric bottom lines for attributes of the compulsory values?*

If it is possible to apply numeric bottom lines consistently across all catchments, and there is definitive science supporting them, then yes. The inclusion of numeric bottom lines for the attributes of the compulsory values would remove the possibility for standards differing across regions.

31. *Do you agree that transitional arrangements should be provided to allow Councils and communities to set objectives below a national bottom line for a short time?*

It will be necessary to distinguish the transitional arrangements from the situation of exceptions. Where the cost of remediation is prohibitive or there are physical limitations on achieving improvement some consideration could be given to utilising transitional arrangements.

Setting out the limited circumstances where this may be the case would ensure the transitional approach does not become the default on achieving the objectives set in the NPS-FM. Failure to arrest contamination of waterways potentially transfers costs to others in the community or to the public in general through taxpayer funded restoration. Realisation of delays in groundwater transport of nutrients has already resulted in an intergenerational challenge to arrest water quality decline in some catchments.

Section 4.5 Exceptions to bottom lines

32. *Do you agree that there could be exceptions where the natural state of the freshwater management unit breaches bottom lines? Where in your region do you think this type of exception might apply?*

33. *Do you agree that there could be exceptions where historical activities have created impacts on water quality and the reversal of those impacts is not reasonable, either physically or ecologically, even in the long term? What region do you think this type of exception might apply?*

34. Do you agree that there could be an exception for significant existing infrastructure (e.g. dams), where a choice is made to manage a freshwater management unit below bottom lines? Where in your region do you think this type of exception might apply?

Refer to the discussions on exceptions included in the main body of Mighty River Power's submission on the proposed amendments to the NPS-FM.

35. Do you agree that freshwater management units eligible under the first two exceptions above should be decided by regional Councils?

Refer to the discussions on the process for exceptions included in the main body of Mighty River Power's submission on the proposed amendments to the NPS-FM.

36. Do you agree that freshwater management units eligible for an exception due to the effects of significant existing infrastructure should be decided at a national level and included in appendix 3 of the NPS-FM?

37. What should the criteria be for allowing exceptions based on significant existing infrastructure?

Mighty River Power supports the exclusion proposed for the effects of significant existing infrastructure discussed in section 4.5 of the discussion document. However the amendments to the NPS do not fully reflect the intentions expressed in section 4.5. The discussion document proposes the following set of criteria for use by the government when considering an exception to the proposed bottom lines to allow for significant existing infrastructure. The criteria are (as set out on p28 of the discussion document):

1. The need for an exception must arise because of limited efficient or effective management options for significant existing infrastructure.
2. The significant existing infrastructure affecting the water body must enable economic benefits which have a significant impact on national or regional GDP.
3. The economic benefits can only be realised if the objectives for the water body are set below bottom lines (i.e. setting a long-term objective at or above bottom lines will not provide the same or similar economic benefit).

There is an issue with creating an exception for a water body without relating that exception to an activity. It is entirely conceivable that infrastructure could operate and meet the bottom lines for some attributes and not others. Equally other land use activities may breach completely different attributes but may or may not meet the criteria for an exception. It is therefore recommended that the criteria for exceptions be amended to limit its application as was intended by LAWF and to relate the exception to an activity and the relevant water body. The criteria also lack a national significance test, and fail to recognise the societal function performed by infrastructure.

Criteria for exceptions should be incorporated into Policy CA2, clause (b)(i) and be revised as follows:

1. The need for an exception must arise because of limited efficient or effective management options for nationally significant existing infrastructure.
2. The nationally significant existing infrastructure affecting the water body must enable economic and social benefits of national significance.
3. The economic and social benefits can only be realised if the objectives for the water body are set below bottom lines (i.e. setting a long-term objective at or above bottom lines will not provide the same or similar benefits). The need for an exception must arise because of limited efficient or effective management options for nationally significant existing infrastructure.
4. Granting the exception would serve to meet the targets and directions of central government set out in the National Policy Statement for Renewable Electricity Generation 2011, the New Zealand Energy Efficiency and Conservation Strategy and New Zealand Energy Strategy.
5. Granting the exception would enable the use value as defined in Appendix 1 'National values and uses for freshwater' to the NPS-FM to be realised.

In the case of new nationally significant infrastructure it would be expected that bottom lines would be met wherever it is practicable to do so however there may be situations where this may not be able to be achieved. Some thought needs to be given to a process and criteria that could be applied in such circumstances.

The inclusion of the exceptions criteria into Policy CA2 ensures that all the criteria for deciding exceptions is included in the NPS-FM not just the criteria to be used by Councils. There may be a need to reword the policy to help the additional criteria sit comfortably within the policy as, at present, the policy is focused on the situations where it is the role of the regional Councils to decide whether or not to allow an exception to the national bottom lines set for freshwater.

The process for exceptions should be streamlined as noted in the discussion on the process for exceptions above.

Relief sought: Mighty River Power seeks the inclusion of the following new criterion into Policy CA2, clause (b)(i) and to the criterion listed on page 28 of the discussion document (suggested additions underlined and deletions shown in strikethrough):

1. The need for an exception must arise because of limited efficient or effective management options for nationally significant existing infrastructure.
2. The nationally significant existing infrastructure affecting the water body must enable economic and social benefits of national significance ~~which have a significant impact on national or regional GDP.~~

3. The economic and social benefits can only be realised if the objectives for the water body are set below bottom lines (i.e. setting a long-term objective at or above bottom lines will not provide the same or similar benefits).
4. Granting the exception would serve to meet the targets and directions of central government set out in the National Policy Statement for Renewable Electricity Generation 2011, the New Zealand Energy Efficiency and Conservation Strategy and New Zealand Energy Strategy.
5. Granting the exception would enable the use value as defined in Appendix 1 'National values and uses for freshwater' to the NPS-FM to be realised.

Section 4.6 Tangata whenua values

38. *Do you think the proposed NPS-FM adequately provides for Te Mana o te Wai²⁵?*

Refer to discussion on Te Mana o te Wai in the main body of this submission.

40. *Do you support adding Te Mana o te Wai to objective A1 of the amended NPS-FM as a matter that must be safeguarded? What would be the implications of adding this to objective A1 in the NPS-FM?*

It would be better to rely on more precise objectives to give effect to Te Mana o te Wai which appears to be a broad concept and one that writers of plans would find otherwise difficult to implement.

Section 4.7 Monitoring

41. *Do you agree with the new section in the NPS-FM requiring monitoring plans? If not, why not?*

Requiring Councils to produce plans for the monitoring of progress against the freshwater objectives will allow the Government and the appropriate Ministries to gauge the level of progress being made in achieving the objectives of the NPS-FM. In turn, this will allow the effectiveness of the objectives to be measured as well as highlighting any difficulties that are being experienced by the Councils in implementing these objectives.

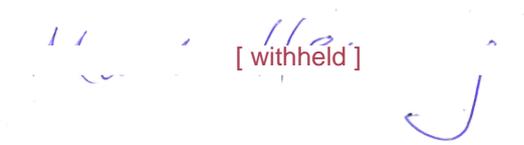
In addition, the requirement for monitoring plans will enable Councils will also be able to more accurately determine what is occurring in a region in respect of water quality and allocation. This is a positive step towards the sustainable management of the freshwater resource.

²⁵ Represents the innate relationship between the health and mauri of water and the health and mauri of the environment, and their ability to support each other while sustaining the health and mauri of the people.

Further Consultation

Mighty River Power would welcome discussion with officials on its submission should clarification of any point made be of assistance and would also be willing to participate in any forum that may be held to discuss the further development of the NPS-FM should that be contemplated by officials.

Yours sincerely



[withheld]

[withheld]

Consents, Planning and Compliance Manager
for Mighty River Power Limited

[withheld]

Email: [withheld]

[withheld]

Appendix 1: *Macroinvertebrate Community Index (MCI)*²⁶

1.0 MCI Review

1.1 MCI Overview

The current amendments of the NPS-FM do not include an attribute for using MCI as a measure of ecological health. The NOF table of proposed and potential attributes identify invertebrates as a potential attribute for rivers under consideration for 2016 – 2019. Lakes on the other hand have been described as an attribute that is not applicable or not available in the near term.

MCI is a macroinvertebrate biotic index used to assess the ecological condition of streams and rivers. The MCI was originally developed for stony riffles in streams in the Taranaki Region as a means of assessing organic enrichment (Stark, 1985). Since then a variant has been developed for soft-bottom streams (sb-MCI) (Stark & Maxted, 2007a).

MCI places a “score” on invertebrate species found within a stream invertebrate community. Species that are found to be tolerant to pollution have a lower score than those more sensitive to pollution. A MCI score is then calculated based on species present within the system. Changes in MCI score reflect changes in community taxonomic composition. If a high number of ‘sensitive species’ become absent from a system the overall MCI score will drop indicating a potential reduction on stream water quality condition.

1.2 MCI applicability to large rivers

The MCI as it currently stands has been developed for wadable streams with regards to both the hard-bottom and soft-bottom substrate variants. Similarly, national macroinvertebrate sampling protocols have been developed for wadable streams (Stark et al, 2001), however, no such protocols exist for lakes, or non-wadable or large rivers (Stark & Maxted, 2007b).

A study was undertaken in 1993 on the performance of the MCI scores from stony riffle sites and the effects of sampling method, sampling replication, water depth, current velocity and substrate (hard bottomed substrate size) had on index scores (Stark, 1993). The study found that MCI and QMCI (a quantitative variant of the MCI) were relatively independent of depth, velocity, and substrate. “However, to avoid possible complications brought by extreme values” (Stark, 1993), the study recommended the following ranges:

- Depth 0.1-0.4 m
- Velocity 0.2-1.2 m s⁻¹
- Substrate size 60 – 140 mm diameter

To date there have been no MCI indices developed for lakes and the use of MCI (as it currently stands) on large – non wadable rivers such as the Waikato River is considered inappropriate. This

26 Tonkin & Taylor Review 2014 of the Proposed Amendments to the National Policy Statement for Freshwater Management 2011

is the likely reason why an MCI attribute for lakes has not been outlined in the NPS-FW. With regards to rivers, the NPS-FM does not subdivide rivers into categories such as small streams vs large rivers. Instead they are included under one heading (Rivers). Due to uncertainty around the applicability of MCI scores on large non-wadable rivers such as the Waikato, further research would need to be carried out. This may include the potential development of tolerance values (or confirmation of present values) for invertebrates found in specific systems and well as determining an appropriate sampling methodology.

Other uncertainties around the use of MCI as an indicator of ecological health is that macroinvertebrate communities within a stream system can be influenced by a range of parameters within a catchment including but not limited to geology, land use, depth, habitat, flow, water quality and periphyton growth. Although changes in MCI scores (collected under similar conditions) will identify changes in the stream macroinvertebrate community structure, the specific cause of these changes can be difficult to identify without further research being undertaken. As a result MCI may be a good indicator of wider change within a catchment, but in many cases further analysis would need to be undertaken to determine why this change has occurred.

1.3 References

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