



28 April 2017

Vicky Robertson
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Genesis Energy Limited

By email: watercomments@submissions.mfe.govt.nz

Dear Ms Robertson

Clean Water Package 2017

Genesis Energy Limited (“Genesis Energy”) welcomes the opportunity to provide a submission to the Ministry for the Environment (“MfE”) on the discussion paper “Clean Water”; particularly the proposed amendments to the National Policy Statement for Freshwater Management (“NPS-FM”).

Genesis Energy, as New Zealand’s largest electricity retailer, has been closely engaged in the Government’s water reform programme since it began in 2009 as we have a significant interest in ensuring that New Zealand electricity customers are not negatively impacted by decisions made in a vacuum. While acknowledging the need for review, Genesis Energy is concerned that the progressive amendments to the NPS-FM, without recognition of nationally significant electricity generation assets, will adversely affect New Zealand electricity generation and ultimately electricity consumers.

Efficient electricity generation in New Zealand is inherently linked to continued access to water resources for hydro-electric generation, and with a continual focus on renewable energy, it is imperative that MfE does not lose sight of the potentially significant downstream consequences of decisions made today. If, for example, the way in which electricity generators access water resources changes, or if that water is diverted for a less efficient purpose, the ultimate result will be adverse economic impacts on end consumers.



Fundamentally, if flow regimes are altered as a result of the implementation of the NPS-FM without explicit recognition of electricity generation infrastructure, there is the potential for a significant reduction in the amount of electricity generated (gigawatt hours) from renewable sources. Therefore:

- New Zealand electricity customers will be negatively affected through higher electricity prices.
- New renewable generation will need to be commissioned. These new generation sources are likely to be less efficient (and potentially less reliable) than the hydro electricity generation that it is replacing (for example, geothermal or wind generation), will come at an additional cost that will need to be recovered from New Zealand consumers, and will have an environmental impact.
- New thermal power stations may need to be built, or retired thermal generation capacity will need to be brought back into the electricity market to make up the shortfall if water is diverted away from electricity generation.

Genesis Energy's concerns with the proposed amendments require further consideration if a sustainable long-term solution is to be developed. Genesis Energy is willing to engage on these issues as outlined below:

- The continued operation of nationally significant hydro-electric generation infrastructure must be explicitly recognised and provided for under Appendix 3. The proposed changes, as drafted, pose a significant risk to national electricity infrastructure, particularly hydro-electric generation, as long as Appendix 3 remains unpopulated.
- The proposed changes as currently proposed are likely to compromise efforts to achieve other national targets such as the 90 per cent renewable electricity generation by 2025 target, and 2030 climate change targets. They will also act as a barrier to the effective implementation of the National Policy Statement for Renewable Electricity Generation ("NPS-REG").
- The reordering of values in Appendix 1 potentially creates a hierarchy, which was never intended at inception. This is inappropriate and may have unintended consequences on infrastructure, including nationally significant hydro-electric generation assets.
- As worded, the Compulsory National Value for Human Health for Recreation is unlikely to be achievable at many locations because of factors other than pathogens.
- Macroinvertebrate Community Index ("MCI") should not be included as an attribute in the National Objectives Framework ("NOF") because it fails to

appropriately measure the special attributes of particular ecosystems. It is better included as an indicator monitoring tool for councils.

Recognising and providing for nationally significant infrastructure

The importance of Appendix 3 of the NPS-FM

Appendix 3 was specifically included in the NPS-FM to ensure that existing nationally significant infrastructure was recognised and provided for. For example, to ensure that electricity generation infrastructure was not required to change operations to fix broader water quality issues in a catchment.

Genesis Energy supports the inclusion and retention of Policy CA3 in the NPS-FM in that it provides councils and communities the option of setting objectives below or at national bottom lines. However, as Appendix 3 remains unpopulated, Policy CA3 does not currently apply to any nationally significant infrastructure.

We therefore strongly recommend the population of Appendix 3 so that policy CA3 actually applies to physical infrastructure, or to adopt an alternative policy approach that recognises nationally significant infrastructure without dependence on a populated Appendix 3. Genesis Energy considers that the Waikaremoana Power Scheme, Tongariro Power Scheme and Tekapo Power Scheme are nationally significant infrastructure that should be listed in Appendix 3.

Failure to populate Appendix 3, or to provide an alternative policy approach within the NPS-FM, will compromise the ability to give effect to the NPS-REG, and will likely result in reductions in renewable electricity generation. At the same time, broader water quality issues are unlikely to be resolved by focusing on seemingly simple 'fixes' such as requiring increased flows from existing nationally significant infrastructure. This would be a lose-lose scenario.

MfE has previously undertaken work to determine the economic consequences of the introduction of national bottom lines¹. Scenarios involving an increase in minimum flows in selected rivers have been modelled to assess the impacts on individual hydroelectricity schemes and the electricity market as a whole. This analysis demonstrated that there would be:

- An absolute loss of hydro generation output across the year due to reduced diversions and increased spill; and
- A temporal shifting of hydro generation output between time periods. In general such shifting is away from higher value periods (i.e. peak demand periods on both a seasonal and diurnal basis) and to lower value periods.

¹ <https://www.mfe.govt.nz/sites/default/files/evaluation-potential-electricity-sector-outcomes-from-revised-minimum-flow-regimes-selected-rivers.pdf>

- Increases to electricity consumer bills.
- The need to replace the lost hydro generation with alternative sources (for example, thermal generation).

National Objectives Framework: risks to hydro-electric generation

The establishment of national bottom-lines in the NOF creates a significant risk for existing hydro-electric generation sites, and to electricity consumers.

An example of this risk is where councils may require upstream electricity generators to release more water to ensure that downstream waterbodies meet water quality standards. This has an economic cost for the electricity generator, to the detriment of electricity consumers.

In several cases - including for the Tekapo Power Scheme, Waikaremoana Power Scheme and the Tongariro Power Scheme - this undermines the fundamental basis on which power schemes have been designed, constructed and operated and could threaten the ongoing viability of these schemes.

Further to this point, there are a number of waterbodies influenced by Genesis Energy's hydro-electricity generation assets that have low or no flows downstream of intake structures. These assets have been through robust, collaborative and often lengthy Resource Management Act 1991 ("RMA") processes where the current flow regimes were set. These processes have resulted in rigorous resource consent conditions and third party agreements that address specific community concerns that relate to the affected waterbody.

There is uncertainty as to how, in the absence of Appendix 3 or policy provisions recognising electricity generation assets, waterways where there are low or no minimum flows below infrastructure will be considered in regards to the NOF attributes. The continued operation of these assets is contingent upon them being able to operate in the manner they were designed, constructed and consented under the RMA.

Swimmability standards: further risks to hydro-electric generation

The introduction of swimmability standards also present risks to nationally significant hydro-electric generation.

We are concerned that there is no recognition that there are other factors, aside from *E. coli*, that influence a waterway's swimmability. For example, a number of sites shown in the regional swimming maps are downstream of major infrastructure and subject to extreme flow variability that makes these locations unsuitable for swimming at all times.

It should therefore be made clear these maps only reflect areas where water quality, as determined by an extremely limited range of characteristics, indicates water bodies as 'potentially' being suitable for swimming. Other factors such as public safety concerns, natural hazards, existing infrastructure or natural water quality may determine whether the water body can in fact be used for that purpose.

Genesis Energy also considers it important that it is made clear that these maps do not form part of the NPS-FM, and should not be considered as part of a regional planning document or resource consent application.

Getting the balance right: freshwater values

Wording of the Compulsory National Value; Te Hauora o te Tangata

Genesis Energy supports the overall intent to recognise freshwater values for recreation purposes.

However, the recreational values identified all relate to active recreation primarily in a water body rather than generally associated with it, and rely on factors such as pathogens, clarity, deposited sediment, plant growth, cyanobacteria, and other toxicants. There is no reference to other factors which may compromise such active uses, such as natural hazards, natural water quality (e.g. in geothermal areas) or existing infrastructure that may cause significant flow variability.

All of these factors are likely to determine whether people can "connect with the water through a range of activities such as swimming, waka, boating, fishing, mahinga kai and water-skiing". Yet, the NPS-FM requires the universal consideration of the compulsory values in every freshwater management unit ("FMU"), irrespective of whether those values can ever realistically be achieved for that water body.

Reordering of values in Appendix 1 potentially creates an unintended hierarchy

Genesis Energy supports the intent to recognise Te Mana o te Wai in the management of freshwater.

However, there is a conflict in the proposed amendments to the NPS-FM in that the Te Mana o te Wai values may be viewed as being paramount to other values. This is reflected in the structure of the Additional National Values, where a separation is made between the "compulsory", "in-stream" and "extractive" values.

The NPS-FM requires the universal consideration of the compulsory values in every FMU, but this is not to the exclusion of consideration of other 'additional' values in the process of setting freshwater objectives. These additional values should be utilised and recognised for the FMU's they are relevant for, alongside the compulsory values and irrespective of whether they are classified as "extractive" or "additional" values.

In addition, the hydro-electric power generation values of a water body can rarely be considered an “extractive” use of a water body. The hydro-electric power generation value is predominantly shown in the values of the water body itself (in that the electricity is generated in a waterway), not in the ability to extract that water for use elsewhere.

Recognition of economic wellbeing

New Zealand’s economic and social well-being is dependent on a secure and cost-effective electricity supply, with most of the electricity generation in New Zealand dependent on the continued access to freshwater resources. Any change in the way in which freshwater is managed in New Zealand will have significant implications for these nationally significant infrastructure assets. Therefore it is entirely appropriate to have recognition of social and economic wellbeing in the NPS-FM.

We consider that water quality, environmental health and human health should be considered equally alongside economic and social well-being as part of the sustainable management of natural and physical resource as per the purpose of the RMA. Therefore, Genesis Energy supports the inclusion of economic wellbeing considerations as proposed in the NPS-FM amendments.

MCI as an indicator rather than an attribute

Genesis Energy supports the inclusion of MCI as a compulsory monitoring requirement for councils, rather than MCI being an attribute in the NOF. It is typically described as a biological indicator of ecosystem health rather than as a specific measure of the attributes of a particular ecosystem.

Genesis Energy has submitted previously that our data shows that MCI can vary significantly from year to year within a single waterbody. This is because MCI is influenced by a range of factors: dissolved oxygen, gradient of the river, flow, time since last flood, ambient temperature, substrate, sediment size & composition, pH, periphyton build ups, and shading, to name a few.

It is also important to note that MCI is not an appropriate monitoring tool in all water bodies, particularly soft bottomed streams and rivers. It was designed specifically for stony riffle substrates in flowing water.

The range of factors that affect MCI make it more suitable as an indicator of ecosystem health rather than an attribute. The range and type of macroinvertebrates present at any particular site will provide an indication of the health of the site, but the presence or absence of a particular species will not determine whether the system is healthy.

The best way forward

We invite MfE to consider our submission, including further comments below, as Appendix 1. We also include information about Genesis Energy, as Appendix 2. We would appreciate the opportunity to take part in any subsequent conversations on this issue, and are committed to engaging further with the best interests of New Zealand electricity consumers at the forefront.

If you would like to discuss any of these matters further, please do not hesitate to contact me on 021 681 360 or via email bonny.lawrence@genesisenergy.co.nz.

Yours sincerely



Bonny Lawrence
Environmental Manager

Appendix 1

Specific submission points and relief sought by Genesis Energy are detailed in the table below. Genesis Energy changes are shown in **red**, ~~strikethrough~~ for deletions, and underlined for insertions.

NPS-FM Provision	Support / Oppose	Relief Sought
Policy AAA1	<p>Support with amendments</p> <p>Genesis Energy considers that policy AAA1 b) should be amended to link it back to Appendix 1 which identifies the national values and uses for freshwater that should be considered when setting freshwater objectives.</p>	<p>Amend Policy AAA1</p> <p><u>By every regional council making or changing regional policy statements and plans to consider and recognise Te Mana o te Wai, noting that:</u></p> <p><u>a) Te Mana o te Wai recognises the connection between water and the broader environment - Te Hauora o te Taiao (health of the environment), Te Hauora o te Wai (health of the waterbody) and Te Hauora o te Tangata (the health of the people; and</u></p> <p><u>b) local and regional values, including those described in Appendix 1 for particular freshwater management units, identified through engagement and discussion with the community, including tangata whenua must inform the setting of freshwater objectives and limits.</u></p>
Objective A1	<p>Support with amendments</p> <p>Genesis Energy considers that this objective should be amended to explicitly state that as part of sustainably managing the use and development of land, and discharges of contaminants, the economic and social wellbeing of a community are considered alongside the environmental considerations.</p> <p>Environmental, cultural, social and economic wellbeing should be considered equally alongside each other by communities, as part of the sustainable management of natural and physical resource as per the purpose of the RMA.</p>	<p>Amend Objective A1</p> <p>Objective A1 To safeguard:</p> <p>a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and</p> <p>b) the health of people and communities, at least as affected by secondary contact with fresh water; in sustainably managing the use and development of land, and of discharges of contaminants <u>while providing for economic and social wellbeing.</u></p>
Objective A2	<p>Support with amendments</p>	<p>Amend Objective A2</p>

NPS-FM Provision	Support / Oppose	Relief Sought
	<p>We consider that 'then' in Objective A2 should be replaced with 'while' to recognise that economic wellbeing needs to be considered alongside environmental considerations by communities as part of the sustainable management of natural and physical resource as per the purpose of the RMA.</p> <p>We consider that the recognition of economic wellbeing should be moved to d) as it enshrines the overall objective of maintaining or enhancing overall quality within the FMU, and would mean that economic well-being can be provided for but not at the expense of water quality.</p> <p>Genesis Energy considers that reference to 'productive economic opportunities' should be removed as it is inappropriate to include one specific economic use of freshwater and does not add anything additional to the policy (as these productive economic opportunities are provided for in the Appendix 1 values).</p>	<p>The overall quality of fresh water within a region freshwater management unit is maintained or improved while:</p> <p>a) protecting the significant values of outstanding freshwater bodies;</p> <p>b) protecting the significant values of wetlands;</p> <p>c) improving the quality of fresh water in water bodies that have been degraded by human activities to the point of being over-allocated; and</p> <p>d) providing for economic well-being, including productive economic opportunities, within environmental limits.</p> <p>then providing for economic well-being, including productive economic opportunities, within environmental limits.</p>
Objective A3	<p>Support with amendments</p> <p>Objective A3 introduces another spatial level of freshwater management to the NPS-FM. Currently, the NPS-FM requires that councils implement the NPS-FM and set freshwater objectives within a FMU. Objective A3 requires councils to improve the quality of freshwater in large rivers and lakes rather than FMUs.</p> <p>Genesis Energy considers that the management of freshwater at different spatial scales creates additional complexity for councils, and that the objective should be amended to ensure that it is the FMU that is being managed.</p>	<p>Amend Objective A3 as follows</p> <p><u>The quality of fresh water in large rivers and lakes a freshwater management unit is improved so the risk to human health is reduced and they are suitable for immersion more often.</u></p>
Policy A5	<p>Oppose without the population of Appendix 3, and without clarification that "swimmability" or "immersion" in terms of the NPS-FM does not mean that a lake or river is suitable for swimming or immersion in terms of factors other than an <i>E. coli</i> attribute.</p> <p>Genesis Energy considers that if this policy is to be retained, that Appendix 3 needs to be populated or an alternative policy option be included in the NPS-FM.</p>	<p>Populate Appendix 3 to provide councils and communities the option to set freshwater objectives below national bottom lines if influenced by nationally significant infrastructure; and amend the interpretative text at the bottom of Policy A5 to read:</p> <p><u>For purposes of A5(a), suitable for immersion means large rivers and lakes freshwater management units in Attribute State A, B or C in the E. coli attribute table in Appendix 2 of this national policy</u></p>

NPS-FM Provision	Support / Oppose	Relief Sought
	<p>As detailed above, this policy introduces another spatial level of freshwater management to the NPS-FM (large rivers and lake rather than FMUs). We consider that this policy should be amended to ensure that the spatial scale requiring management is the FMU and consistent across NPS-FM provisions.</p> <p>Genesis Energy considers that <i>E. coli</i> is not the only measure that affects a river's swimmability. There are a range of factors that determine whether a waterbody is suitable for swimming.</p> <p>Genesis Energy is concerned that a number of the waterbodies identified in the regional swimming maps are impacted by infrastructure, or other parameters such as access concerns, public safety and extreme flow variability that make them unsuitable for immersion, or may be influenced by natural hazards or water quality.</p> <p>An example of this is Lake Moawhango, in the Manawatu-Whanganui Region. Lake Moawhango is an artificial lake (with a 15 metre operating range) that was created to provide water storage for the Tongariro Power Scheme. While this lake has excellent water quality (i.e. low <i>E. coli</i> levels) access to the lake is restricted as it is located within New Zealand Defence Force land and is therefore not a swimmable lake.</p> <p>Genesis Energy considers that it should be made clear that these maps do not form part of the NPS-FM, and therefore are not to be considered as part of a regional planning document or resource consent application and instead should remain on the MfE website as an information tool only.</p>	<p><u>statement but does not mean that the freshwater management unit is suitable for immersion with respect to other hazards that may be present at that location.</u></p>
Objective B1	<p>Support with amendments</p> <p>Genesis Energy considers that reference to 'productive economic opportunities' should be removed as it is inappropriate to include one specific economic use of freshwater and does not add anything additional to the policy (as these productive economic opportunities are provided for in the Appendix 1 values).</p>	<p>Amend Objective B1 as follows:</p> <p>To safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water, in sustainably managing the taking, using, damming, or diverting of fresh water-, <u>while providing for economic well-being, including productive economic opportunities.</u></p>
Policy C1	<p>Support with amendments</p>	<p>Amend Policy C1 as follows</p>

NPS-FM Provision	Support / Oppose	Relief Sought
	<p>Genesis Energy recommends that infrastructure be included in Policy C1 b) as a number of catchments include significant infrastructure that influences freshwater objectives, and there is a need to manage the effects (including economic and social effects) of infrastructure in a sustainable way.</p>	<p>By every regional council: managing fresh water and land use and development in catchments in an integrated and sustainable way, so as to avoid, remedy or mitigate adverse effects, including cumulative effects.</p> <p><u>a) recognising the interactions, ki uta ki tai (from the mountains to the sea) between fresh water, land, associated ecosystems and the coastal environment; and</u></p> <p><u>b) managing fresh water, infrastructure, and land use and development in catchments in an integrated and sustainable way, so as to avoid, remedy or mitigate adverse effects, including cumulative effects.</u></p>
<p>Policy CA2</p>	<p>Support with amendments</p> <p>Amend Policy CA2 e) iia. a. to remove reference to 'at least'</p> <p>Amend Policy CA2 f) iaaa to ensure it is the freshwater management unit that is managed, rather than large rivers and lakes, and is consistent with other NPS-FM provisions.</p> <p>Amend Policy CA2 f) iaab to delete the reference to 'productive economic opportunities' as these are provided by way of the Appendix 1 values.</p> <p>Amend Policy CA2 f) to include a new provision recognising nationally significant electricity generation assets. Genesis Energy considers that it is appropriate to include a provision in policy CA2 so that councils consider the implications of freshwater objectives on the ability of existing renewable electricity generation infrastructure to meet the performance levels established for that infrastructure.</p>	<p>Amend Policy CA2 as follows</p> <p>By every regional council, <u>following discussion with communities, including tāngata whenua</u>, applying the following processes in developing freshwater objectives for all freshwater management units:</p> <p>a) considering all national values and how they apply to local and regional circumstances;</p> <p>b) identifying the values for each freshwater management unit, which</p> <p style="margin-left: 20px;">i. must include the compulsory values; and</p> <p style="margin-left: 20px;">ii. may include any other national values or other values that the regional council considers appropriate (in either case having regard to local and regional circumstances); and</p> <p>c) identifying:</p> <p style="margin-left: 20px;">i. for the compulsory values or any other national value for which relevant attributes are provided in Appendix 2:</p> <p style="margin-left: 40px;">A. the attributes listed in Appendix 2 that are applicable to each value identified under Policy CA2(b) for the freshwater body type; and</p> <p style="margin-left: 40px;">B. any other attributes that the regional council considers appropriate for each value identified under Policy CA2(b) for the freshwater body type; and</p> <p style="margin-left: 20px;">ii. for any national value for which relevant attributes are not provided in Appendix 2 or any other value, the attributes that the regional council considers appropriate for each value identified under Policy CA2(b) for the freshwater body type;</p>

NPS-FM Provision	Support / Oppose	Relief Sought
		<p>d) for those attributes specified in Appendix 2, assigning an attribute state at or above the minimum acceptable state for that attribute, where a minimum acceptable state is specified;</p> <p>e) formulating freshwater objectives:</p> <ul style="list-style-type: none"> i. in those cases where an applicable numeric attribute state is specified in Appendix 2, in numeric terms by reference to that specified numeric attribute state; or ii. in those cases where the attribute is not listed in Appendix 2, in numeric terms where practicable, otherwise in narrative terms; <ul style="list-style-type: none"> <u>ii.a. in those cases where a freshwater objective seeks to maintain overall water quality in accordance with Objective A2, by every regional council ensuring:</u> <ul style="list-style-type: none"> <u>a. where an attribute is listed in Appendix 2, that freshwater objectives are set at least within the same attribute state as existing freshwater quality; and</u> <u>b. where an attribute is not listed in Appendix 2, that freshwater objectives are set so that values identified under Policy CA2(b) will not be worse off when compared to existing freshwater quality; and</u> iii. on the basis that, where an attribute applies to more than one value, the most stringent freshwater objective for that attribute is adopted; and <p>f) considering the following matters at all relevant points in the process described in Policy CA2(a)-(e):</p> <ul style="list-style-type: none"> <u>iaaa. how to improve the quality of fresh water in large rivers and lakes freshwater management units so the human health risk is reduced and they are suitable for immersion more often;</u> <u>iaaab. how to provide for economic well-being, including productive economic opportunities, within the context of environmental limits;</u> <u>iaaac. the national significance of renewable electricity generation (including the need to give effect to the National Policy Statement for Renewable Electricity Generation), and the effect of the freshwater objectives on the ability of existing renewable electricity generation infrastructure (that was operational on 1 August 2014) to meet the performance levels established for that infrastructure.</u>

NPS-FM Provision	Support / Oppose	Relief Sought
		<ul style="list-style-type: none"> i. the current state of the freshwater management unit, and its anticipated future state on the basis of past and current resource use, including community understandings of the health and well-being of the freshwater management unit; ii. the spatial scale at which freshwater management units are defined; iii. the limits that would be required to achieve the freshwater objectives; iv. any choices between the values that the formulation of freshwater objectives and associated limits would require; v. any implications for resource users, people and communities arising from the freshwater objectives and associated limits including implications for actions, investments, ongoing management changes and any social, cultural or economic implications; vi. the timeframes required for achieving the freshwater objectives, including the ability of regional councils to set long timeframes for achieving targets; and vii. such other matters relevant and reasonably necessary to give effect to the objectives and policies in this national policy statement, in particular Objective AAA1 and Objective A2.
Policy CA3	<p>Support with Appendix 3 populated.</p> <p>Alternatively, Policy CA3 could be modified to remove the reliance on an unpopulated Appendix 3.</p> <p>Genesis Energy inherently supports the retention of a policy that provides councils the <i>option</i> of setting freshwater objectives at or below a national bottom line where nationally significant infrastructure is influencing that waterbody. We also support reference to renewable electricity generation and economic wellbeing within the explanatory text.</p> <p>However, in its current form Policy CA3 still relies on the population of Appendix 3. The appendix is currently empty and therefore, this policy does not currently apply to any nationally significant infrastructure.</p> <p>We have suggested an alternative policy approach that recognises nationally significant infrastructure, but does not rely on Appendix 3.</p>	<p>Either populate Appendix 3; or</p> <p>Amend Policy CA3 as follows to remove the reliance on infrastructure being listed in Appendix 3</p> <p>By every regional council ensuring that freshwater objectives for the compulsory values are set at or above the national bottom lines for all freshwater management units, unless the existing freshwater quality of the freshwater management unit is already below the national bottom line for an attribute or attributes and the regional council considers it appropriate to set the freshwater objective below the national bottom line for that attribute or attributes because:</p> <ul style="list-style-type: none"> a) the existing freshwater quality is caused by naturally occurring processes; or b) any of the existing infrastructure listed in Appendix 3 contributes to the existing freshwater quality and setting a freshwater objective at or above a national bottom line would have an adverse effect on the benefits provided by existing nationally significant infrastructure located within the freshwater management unit.

NPS-FM Provision	Support / Oppose	Relief Sought
	<p>It is important to note that Appendix 3, or the alternative policy option, do not require councils to set objectives below national bottom lines. A council and the community would have the <i>option</i> of doing so. The discussion as to whether objectives should be set below or at national bottom lines due to the influence of nationally significant infrastructure would be part of robust regional planning processes involving council, tangata whenua and communities.</p>	<p>Should this alternative policy option be adopted, it is also appropriate to include a definition of “existing nationally significant infrastructure”:</p> <p><u>“Existing nationally significant infrastructure” is infrastructure which was operational on 1 August 2014 and provides benefits that make a significant contribution to national values, and is limited to –</u></p> <p>(i) <u>infrastructure associated with renewable electricity generation.</u></p> <p>(ii) <u>.....</u></p>
Policy CB1	<p>Support</p> <p>Genesis Energy supports the inclusion of MCI as a compulsory monitoring requirement for councils, rather than MCI being an attribute in the NOF.</p> <p>Genesis Energy has submitted previously that our data shows that MCI can vary significantly from year to year within a single waterbody. This is because MCI is influenced by a range of factors: dissolved oxygen, gradient of the river, flow, time since last flood, ambient temperature, substrate, sediment size & composition, pH, periphyton build ups, and shading, to name a few. This reliance on a range of variables means the MCI for a particular river will be constantly changing. In our view, it can only be indicative of the many different river influences at a particular site, at a single point in time. It is also important to note that MCI is not an appropriate monitoring tool in all water bodies, particularly soft bottomed streams and rivers and those that are not wadable.</p> <p>In addition, in water bodies colonised by didymo MCI scores are affected, so even a score of 80 (the trigger point suggested by the NOF reference group) may not ever be achievable</p> <p>The range of factors that affect MCI make it more suitable as an indicator of ecosystem health rather than an attribute.</p>	<p>Retain MCI as a compulsory parameter to be monitored by Councils.</p>

NPS-FM Provision	Support / Oppose	Relief Sought
<p>Appendix 1 – National Values and uses for freshwater</p>	<p>Oppose proposed changes to Appendix 1</p> <p>The reordering of values in Appendix 1 potentially creates a hierarchy between compulsory (intrinsic) values (ecological and human health) and use values (Additional Values), which is inappropriate and may have unintended consequences on infrastructure (such as hydro-electric-generation assets). These values were not intended to be hierarchical. The NPS-FM should be explicit in that there is no hierarchy between the compulsory and additional values – all values should apply equally where relevant in a FMU.</p> <p>The revised wording in Appendix 1: Human health for recreation, the first paragraph refers to a healthy water body available for a range of activities, and then comments “in a range of different flows”. Genesis Energy seeks the removal of “in a range of different flows”.</p> <p>We are concerned that this value implies that as a national bottom line all water bodies must be suitable for swimming, without taking account of whether the water body ever can be or would be because of factors other than pathogens. Therefore Genesis Energy is also seeking that an additional explanatory paragraph be added to the value to recognise the other factors that may affect the ability of a water body to provide recreational opportunities (such as natural / physical hazards).</p> <p>We recommend that the sentence “They may be freshwater management units with exceptional, natural, and iconic aesthetic features” be moved to the top of the value statement.</p> <p>Genesis Energy also seeks deletion of the heading “Extractive uses” from Appendix 1, and alphabetic reordering of the Additional National Values to remove any suggestion that there is a hierarchy within these values. Alternatively, the “Extractive uses” heading could be replaced with the heading ‘Au Putea (economic or commercial development)’ as per the current wording in the NPS – FM as some of these uses are not “extractive”.</p>	<p>Insert after “Appendix 1: National values and uses for fresh water” the words:</p> <p><u>It is anticipated that the values for a given water body or FMU will comprise a mix of the Compulsory National Values and Additional National Values.</u></p> <p>Amend the proposed human health for recreation value as follows:</p> <p><u>In a healthy water body, people are able to connect with the water through a range of activities such as swimming, waka, boating, fishing, mahinga kai and water-skiing, in a range of different flows.</u></p> <p><u>Matters to take into account for a healthy water body for human use include pathogens, clarity, deposited sediment, plant growth (from macrophytes to periphyton to phytoplankton), cyanobacteria, and other toxicants.</u></p> <p><u>This value does not address whether a water body is suitable for the range of activities identified when taking account of natural and / or physical hazards or natural water quality characteristics that may restrict the range of activities that can be undertaken irrespective of any of the matters to take into account identified above.</u></p> <p>Amend natural form and character value as follows:</p> <p><u>Natural form and character</u></p> <p><u>Where people value particular natural qualities of the freshwater management unit. They may be freshwater management units with exceptional, natural, and iconic aesthetic features.</u></p> <p><u>Matters contributing to the natural form and character of a freshwater management unit are its visual and physical characteristics that are valued by the community, including:</u></p> <ul style="list-style-type: none"> <u>i. its biophysical, ecological, geological, geomorphological and morphological aspects;</u> <u>ii. the natural movement of water and sediment including hydrological and fluvial processes;</u> <u>iii. the location of the water body relative to its natural course;</u>

NPS-FM Provision	Support / Oppose	Relief Sought
		<p>iv. the relative dominance of indigenous flora and fauna;</p> <p>v. the presence of culturally significant species;</p> <p>vi. the colour of the water; and</p> <p>vii. the clarity of the water.</p> <p>They may be freshwater management units with exceptional, natural, and iconic aesthetic features.</p> <p>Delete the heading "Extractive uses" and reorder the Additional National Values alphabetically. Alternatively, use "Au Putea (economic or commercial development)" heading in place of "Extractive uses"</p>

Appendix 2: About Genesis Energy

Genesis Energy is New Zealand's largest electricity and gas retailer, supplying energy to more than 650,000 customer connections nationwide. We also generate and trade electricity and natural gas through a diverse range of assets across the country.

Genesis Energy's diverse portfolio of generation assets comprises:

- Thermal generation: The Huntly Power Station, the largest electricity generation facility in New Zealand by capacity (953 MW), which relies on Waikato River flows for cooling purposes; and
- Renewable generation: Three hydro schemes including Tongariro (361.8 MW), Waikaremoana (138.0 MW) and Tekapo (179.0 MW). These schemes comprise eight power stations (six in the North Island and two in the South Island), and use an extensive range of lakes, rivers and streams for generation purposes. We also own a 7.3 MW wind farm at Hau Nui in the North Island.
- Genesis Energy has a 46% interest in the Kupe Joint Venture, which owns the Kupe oil and gas field.
- Genesis Energy holds resource consents to establish a wind farm at Castle Hill in the northern Wairarapa.