Section 32 report:
Aquatic ecosystems

for the Proposed Natural Resources Plan for the Wellington Region

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Issues and Evaluation Report

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Section 32 report: Aquatic ecosystems

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1. Overview and purpose

This report is an analysis of the appropriateness of the proposed objectives, policies and methods in the proposed Natural Resources Plan for the Wellington Region (referred to as the PNRP and the proposed Plan) for the management of aquatic ecosystems guided by the requirements of section 32 of the Resource Management Act 1991 (RMA).

This report on aquatic ecosystems specifically addresses proposed provisions on ecosystem health, significant indigenous biodiversity, outstanding water bodies, estuaries, riparian management, fish passage and trout habitat.

The report is dependent on the analyses provided in the following reports:

Section 32 report: Ki uta ki tai

Section 32 report: Māori values

Section 32 report: Water quality

Section 32 report: Water quantity

Section 32 report: Wetlands

Section 32 report: Beds of lakes and rivers

Section 32 report: Livestock access, break-feeding and cultivation.

1.1 Scope of this report

The title of this report is 'aquatic ecosystems'. A subtitle could be: 'habitat quality with a focus on riparian margins, estuaries, fish passage and trout habitat, as well as significant indigenous biodiversity and outstanding water bodies'.

The collection of subtopics reflects that a number of objectives and policies in the proposed Plan are directly concerned with safeguarding the life-supporting capacity of water and aquatic ecosystems. The objectives and policies that directly address the water quality and quantity aspects of aquatic ecosystem health are covered in Section 32 report: Water quality and Section 32 report: Water quantity.

The proposed Plan also contains shared values in recognition of the partnership between WRC and the mana whenua of the region – hence the coupling of "ecosystem health and mahinga kai". Rationale for the shared values, and full discussion of mahinga kai can be found in the Section 32 report: Māori values. The identification and protection of ecosystems and habitats with significant mana whenua values are also covered in that report.

Although the appropriateness of proposed Objective O25 (Aquatic ecosystem health and mahinga kai) is analysed in this report, the assessment is limited to how provisions specific to the management of estuaries, riparian margins, fish

passage, trout habitat, outstanding water bodies and indigenous biodiversity will help achieve this objective.

The analysis of provisions specific to the management of natural wetlands, including natural wetlands with significant biodiversity values and outstanding natural wetlands are addressed in the Section 32 report: Wetlands.

1.1.1 Aquatic ecosystems

The term, 'ecosystem' is not defined in the proposed Plan or the RMA as it is given to be a well understood and accepted term. The Oxford English Dictionary[1] defines ecosystem as "a biological system of all the organisms found in a particular physical environment, interacting with it and with each other". An ecosystem consists of living and non-living parts such as sunlight, air, water, minerals and nutrients. Ecosystems can be small and short-lived, for example, water-filled tree holes or rotting logs on a forest floor, or large and long-lived such as forests or lakes (Anon. 2000).

The term 'aquatic ecosystems' encompasses freshwater ecosystems, and marine ecosystems including estuaries. Although aquatic ecosystems are primarily located within a body of water, as the definition of 'ecosystem' above implies, they are also intimately connected to the land around, the rocks and minerals that form their substrate, and the amount of rainfall, sunlight and wind they are exposed to. In addition, some components of aquatic ecosystems are not generally thought of as such – aquatic birds do not live in or under the water, but aspects of their life cycle are dependent on aquatic ecosystems for feeding, nesting, roosting or mating.

Because of this interactive function which defines an ecosystem, the concept of an aquatic ecosystem is so broad that this report is necessarily constrained to discussing habitat quality. The Objective O25 in the proposed Plan (ecosystem health and mahinga kai) is clear in that aquatic ecosystem health depends on water quality, flows, water levels and habitat condition. Water quality and water quantity are covered in other reports. Mahinga kai is addressed in the Section 32 report: Māori values.

1.1.2 Indigenous biodiversity

Indigenous species are defined in the New Zealand Biodiversity Strategy (2000) as, a plant or animal species which occurs naturally in New Zealand. A synonym is native. Indigenous species include migratory species that travel to or from New Zealand or to or from other parts of the world, to either breed or feed.

Some indigenous species occur naturally in other countries, for example short-finned eels occur naturally in Australia and the South Pacific. The high percentage of indigenous species found nowhere else in the world (endemic species, such as the longfin eel), make New Zealand's indigenous biodiversity special and highly vulnerable.

1 http://www.oed.com/

Biological diversity is often referred to as "biodiversity". Indigenous biodiversity therefore, is biodiversity comprised of indigenous species.

Biological diversity is defined in the New Zealand Biodiversity Strategy (2000) as, the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems. Components include:

Genetic diversity: The variability in the genetic make-up among individuals within a single species. In more technical terms, it is the genetic differences among populations of a single species and those among individuals within a population.

Species diversity: The variety of species — whether wild or domesticated — within a particular geographical area. A species is a group of organisms which have evolved distinct inheritable features and occupy a unique geographic area. Species are usually unable to interbreed naturally with other species due to such factors as genetic divergence, different behaviour and biological needs, and separate geographic location.

Ecological (ecosystem) diversity: The variety of ecosystem types (for example, forests, deserts, grasslands, streams, lakes, wetlands and oceans) and their biological communities that interact with one another and their non-living environments.

Section 2 of the RMA provides a simplified definition, which is "the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems". Section 6(c) makes the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna a matter of national importance.

This report covers the provisions in the proposed Plan that give effect to section 6(c) through the identification and protection of ecosystems and habitats with significant indigenous biodiversity values, as directed by Policies 23 and 24 of the Regional Policy Statement for the Wellington region (RPS 2013).

1.2 Report methodology

In order to fulfil the requirement of section 32(2) of the RMA, the report identifies and assesses the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions.

In accordance with section 32(2), the analysis identifies the opportunities for economic growth that are anticipated to be provided or reduced and the employment that is anticipated to be provided or reduced.

In addition, the analysis, where practicable, quantifies the benefits and costs and assesses the risk of acting or not acting if there is uncertain or insufficient information.

The structure of the report is shown below:

- *Issues statements*: an outline of the main issues identified by the community (section 2 of this report)
- *Regulatory and policy context*: identification of relevant national and regional legislation and policy direction (section 3 of this report)
- *Evaluation of the appropriateness of the proposed objectives*: an evaluation of the extent to which the proposed objectives are the most appropriate way to achieve the purpose of the RMA, as required by section 32(1)(a) (section 4 of this report)
- *Assessment of the policies and other methods*: an assessment of the efficiency and effectiveness of the provisions as to whether they are the most appropriate way to achieve the objectives, in accordance with section 32(1)(b) and section 32(2) (section 5 of this report)

2. Resource management issues

WRC began a region-wide engagement with the community in 2010 to identify the views of the community regarding natural resource management and to help define the issues that the proposed Plan would address (Parminter 2011). This engagement was with iwi partner organisations, the general public, agencies and organisations with interests in resource management, resource users, school children, developers and policy-makers.

From the region-wide engagement, several issues specific to ecosystem health and indigenous biodiversity were identified (GWRC 2014a). The issues included observations on the degraded state of the environment and observations on activities and pressures that can result in degradation. Of note the activities identified included diffuse and point discharges and alterations to form and function.

When originally drafted, aquatic ecosystems issues were divided into coastal and freshwater, water quality and water quantity, as suited the structure of the plan review at the time. The division between freshwater and marine ecosystems and significant biodiversity became more artificial as objectives and policies began to form, and as the ki uta ki tai (mountains to sea) structure of the proposed Plan began to take shape. This is particularly true for habitat quality, as the activities and effects that degrade habitat quality are the same regardless of whether the ecosystem is freshwater or marine.

2.1 Issue 1.11

Indigenous ecosystems and ecosystems of importance to indigenous species are significantly reduced in extent and continue to be degraded. Ecosystem health and function across the region is compromised.

Explanation

The region's indigenous ecosystems have been significantly reduced in extent by urban and rural development, specifically: wetlands; lowland forests;

ephemeral and intermittent lowland streams; coastal dunes and escarpments; estuaries; and eastern 'dry land' forests (RPS 2013 p.52). The remaining indigenous ecosystems continue to be degraded or lost through further expansion and use, and through the incremental and cumulative impacts of human activities. Rare or threatened species that rely on these ecosystems, or substitute non-indigenous habitats, face increasing pressure from the loss and degradation of habitat. The ability of ecosystems to fulfil their natural functions (such as nutrient cycling, water purification, habitats for plants and animal reproduction, recruitment, dispersal and migration) is compromised when their size and health are reduced.

Activities that impact on indigenous ecosystems, and ecosystems with significant biodiversity values include (Calder 2012):

- Modification, destruction, and fragmentation of ecosystems by pest plants and animals, grazing animals, habitat loss, urban and rural development, and land use intensification

- Contamination of freshwater and coastal ecosystems by sediments, pollutants, and nutrients from land use, stormwater and sewage discharges; and

- Draining wetlands, channelling or piping natural waterways, and the abstraction of water for human uses

2.2 Issue 1.2

The lower reaches of rivers, lakes, estuaries and harbours are places where there is an accumulation of adverse effects of human activities on land, in water bodies and on the coast.

Explanation

Low energy coastal and freshwater environments include the lower reaches of rivers, lakes, estuaries and harbours. These areas are adversely affected by such activities as sedimentation rates, land development works, and pollution from nutrients and heavy metals that stem from upstream catchments. Over time, the accumulation of different adverse effects can lead to the degradation of the mauri and the ecosystems of such fresh water and coastal environments.

Many of the region's low energy environments are under threat from use and development because they are surrounded by well-populated areas or upstream catchments. Places like the Ōtaki and Waikanae river mouths, Wellington Harbour (Port Nicholson), Te Awarua-o-Porirua Harbour and Lake Onoke are highly valued. It is vitally important that the amenity and natural values of these resources are retained for the health and wellbeing of communities.

Some other low energy environments in the region have been degraded to the extent that improvement is needed as a priority. Te Awarua-o-Porirua Harbour is one such example. At the present time pollutants from roads, stormwater and sewage systems foul the Onepoto Arm. Sediment runoff is increasing with earthworks and associated urban development. Modifications to the harbour edge and streams have resulted in the loss of intertidal spawning, nursery and

feeding grounds for marine life. Many shellfish beds are contaminated and unsuitable for eating. Recreational activities such as swimming, waka ama, sailing, rowing, kayaking, windsurfing, rowing and speed-boating are also affected by the excessive build-up of sediment in the harbour and poor water quality (Calder 2012). Future development such as Transmission Gully motorway, forest harvesting, wind farm development, and Porirua City's own growth within Te Awarua-o-Porirua Harbour catchment could further affect the health of the harbour. All of Wellington City's greenfield development up to 2030 will occur in the Te Awarua-o-Porirua Harbour catchment.

The natural values of Lake Wairarapa have also declined significantly from their original state following the development of surrounding land for agricultural production and the diversion of the Ruamāhanga River around Lake Wairarapa in the 1960s as part of the Lower Wairarapa Valley Development Scheme. The water quality of Lake Wairarapa is poor and is described as supertrophic (Perrie and Milne 2012) – meaning that it has very high levels of nutrients, and at times algal blooms. Nutrients and sediment accumulate in the lake from erosion, land use, and discharges in the catchment including wastewater from Featherston township and dairy shed effluent discharges. The allocation of surface and ground water that flows to Lake Wairarapa has increased in recent years and it is now fully allocated. The balance of fish species has shifted with indigenous species now threatened by an increasing exotic fish population.

2.3 Issue 4.1

The ecosystem health and function of water bodies is being degraded by contaminated discharges from urban and rural land use, and the abstraction of water.

Explanation

Routine monitoring shows that the health of rivers, streams, lakes, wetlands, groundwater, and estuaries in the Wellington region is degraded by rural and urban land use, particularly in intensively farmed or populated catchments (Perrie and Cockeram 2010, Tidswell *et al.* 2010, Milne *et al.* 2010, Perrie 2005).

Rivers and streams are impacted by non-point sources of nutrients, sediment, organic matter, and toxicants from activities on the land, which cause deterioration in water quality. Increased nutrients cause unwanted algal growth which changes the habitat of freshwater fish and invertebrates, and increases the habitat's susceptibility to invasion by pest plants and fish. Increased sediments reduce water clarity, light penetration for plant growth, and can change the nature of stream beds where native fish and invertebrates live, spawn, and feed. Toxicants can be fatal in high concentrations, and in lower concentrations can affect the health and reproductive ability of aquatic life. Increased organic inputs can result in low dissolved oxygen and high ammonia concentrations which are toxic to aquatic life. The abstraction of water can reduce the dilution of these contaminants, and reduce the health and function and extent of wetlands. Controlled river flows and levels can impact on the

amount of habitat available and the seasonal peaks and troughs that ecosystems are adapted to.

Greater Wellington has identified the maintenance of ecosystem health and function as priority for the region (GWRC 2012). Not only have many ecosystems been reduced in scale or lost completely, the condition of many of our remaining ecosystems is poor. The introduction of pest plants and animals puts further stress on our ecosystems. Many freshwater ecosystems, including the iconic Wairarapa Moana, have been seriously ecologically degraded. Once the water quality of groundwater and lakes are compromised, they are very difficult to rehabilitate or restore.

2.4 Issue 4.2

The ecosystem health and function of surface water bodies is being impaired by activities that degrade habitat quality, with some wetland and lowland stream ecosystems coming under particular pressure.

Explanation

Rivers, streams, lakes and wetlands and their margins are impacted by activities within the bed and on riparian margins (Milne *et al.* 2010, Perrie 2008, KML 2005, Warr 2007). These activities can reduce the extent of a habitat or cause deterioration in habitat quality by reducing the diversity of flow velocities, water depths and substrate sizes available for aquatic biota, removing interstitial spaces and refuge, increasing water temperature, or blocking of migratory pathways. The connectivity between ecosystem components can also be affected – for example: the connection between instream habitats and riparian margins can be impacted by stopbanking or bank lining; the connection between surface water and groundwater/hyporheic zone can be reduced by the lining of stream beds; and the connection between water and air can be reduced by piping of streams.

Some activities that can lead to habitat loss or degradation over time and impair freshwater ecosystem function and life-supporting capacity are:

- Filling in gullies and ephemeral streams and straightening or piping streams (stream reclamation)
- Lining stream banks and beds with rock or concrete
- Removing riparian and in stream vegetation
- Works in and adjacent to rivers, such as aggregate extraction and earthworks that generate sediment, particularly during low flows
- The introduction and spread of pests, including didymo and pest fish, and weeds in wetlands which displace wetland plants and alter hydrology
- Livestock access to river and stream beds, lake beds and wetlands, and their margins

- Taking or diverting water from rivers and groundwater connected to rivers, wetlands, and springs

- Reclamation or drainage of lakes and wetlands

- The placement of structures in streams that limit the passage of fish and other migratory aquatic species

2.5 Issue 4.3

Land uses and discharges of contaminants reduce the quality of water bodies.

Explanation

The water quality of rivers, lakes, wetlands and aquifers deteriorates as water flows from the mountains to the sea. Generally, the quality of water bodies in upper catchments is high and declines as water flows downstream into modified parts of catchments where discharges and land use contribute to pollution.

Places where water bodies are in their natural state have been reduced from their former extent. As a consequence of their high natural and ecosystem values, water quality in water bodies with outstanding values should be maintained.

A sufficient amount of high quality drinking water is needed for the health of communities. Over 85% of the region's population has access to existing community sources of drinking water. These existing supplies of relatively high quality fresh water are fundamental to the health and well-being of communities.

Other purposes that water bodies are valued for include; aquatic ecosystems; mahinga kai and customary purposes; places, sites and areas with spiritual, cultural or historic heritage including, tauranga waka, taonga raranga, wāhi tapu, wāhi tipuna and urupä; domestic; drinking and washing water; animal drinking water; firefighting; electricity generation; commercial and industrial processes; irrigation; amenity and recreational activities; food production and harvesting; transport and access; cleaning; and dilution and disposal of waste.

Some rivers and lakes are no longer suitable for swimming or other forms of contact recreation and can no longer be used for customary uses such as mahinga kai. The ecosystems of some water bodies in the region have also changed to the extent that they now lie outside their range of natural variability. Livestock also need access to fresh water taken from water bodies of a suitable quality that is no longer met in some water bodies. The quality of these water bodies is not being managed sustainably and the amount of contaminants getting into them needs to be reduced.

2.6 Issue 4.4

People and communities taking, using, damming and diverting water for their social and economic benefit are compromising instream values.

Explanation

People and communities take, use, dam and divert water for the following purposes: domestic, drinking and washing water, animal drinking water, firefighting, electricity generation, commercial and industrial processes, irrigation, food production and harvesting, transport and access, and cleaning.

People and communities also want to protect the instream values of rivers, lakes and wetlands. Such instream values include the following: ecosystems and biodiversity; mahinga kai and areas of natural resources used for customary purposes; places, sites and areas with spiritual, cultural or historic heritage including tauranga waka, taonga raranga, wāhi tapu, wāhi tipuna and urupä; and amenity and recreation.

Taking, using, damming and diverting water adversely affects the instream values of surface water bodies. Prolonged low flows in rivers can have an impact on aquatic life and potentially exacerbate the effect of pollutants and contamination. Low flows in summer mean water temperatures and algal growths increase, especially if there is no riparian vegetation. Because people's need to take, use, dam and divert water is greatest at times of low rainfall, these activities generally lower river flows when aquatic life is already stressed, so the management of low flows is a key part of any allocation system.

Taking and using groundwater can deplete the availability of groundwater in the immediate vicinity of the abstraction point leading to interference or drawdown effects on nearby bores. Taking and using groundwater can reduce groundwater levels in an entire aquifer system leading to a reduction in the amount of water available in the future. Lowered groundwater levels can also affect the flow of springs, rivers and streams, and water levels in wetlands. If continued abstractions keep the groundwater level low, these dependent ecosystems can be permanently affected.

Places where water bodies are in their natural state have been reduced from their former extent. As a consequence of their high natural and ecosystem values, the flows and water levels in water bodies with outstanding values should be maintained.

Over 85% of the region's population has access to existing community sources of drinking water. These community water supplies are important to the health needs of people and should be maintained.

2.7 Issue 6.1

Discharges of stormwater, sewage, sediment and other contaminants to the coast are adversely affecting the health and function of coastal ecosystems.

Explanation

Urban and rural discharges to aquatic receiving environments are adversely affecting coastal ecosystems and biodiversity. Catchment activities, such as urban development, forestry and farming, impact fresh water quality which ultimately impacts coastal ecosystems. Monitoring shows that coastal water quality is good in most places except for localised hot spots near discharges of sewage, stormwater, and inputs from streams and rivers (Glasby *et al.* 1990,

Pilotto *et al.* 1998, Stephenson *et al.* 2008, Milne and Sorenson 2009, Sorenson and Milne 2009).

Sedimentation is a more pervasive water quality issue, particularly for estuarine and harbour communities because they act as a sink for fine sediments and mud (Stevens and Roberton 2011). Muddy sediments have a higher tendency to concentrate pollutants and become oxygen depleted (Robertson and Stevens 2010), and so impact the distribution of invertebrate communities (Botherway and Gardener 2002), such as cockles, and key habitat-forming species, such as seagrasses (Turner and Schwarz 2006). Water quality degradation in coastal environments is chronic and pervasive.

2.8 Issue 6.2

Human activities modify and interfere with natural physical and ecological coastal processes in ways that affect ecosystem health and function.

Explanation

Human activities have modified and continue to interfere with natural physical and ecological coastal processes in ways that affect ecosystem health and function. For example:

- Seawalls alter sand and sediment movement along beaches and estuaries and can cause erosion problems in some areas and deposition problems in others (Gibb and Cox 2009)

- Sand dunes and dune vegetation, and shore-dwelling marine species such as seabirds and seals can be significantly affected by inappropriate development, vehicles, and trampling by people and animals

- Some land uses and earthworks can cause increased rates of sedimentation – smothering aquatic life in low energy receiving environments such as harbour margins and estuaries (Stevens and Robertson 2011)

- Reclamation removes foreshore and seabed from the coastal marine area with consequential permanent loss of habitat and biological productivity and ecosystem function (Robertson and Stevens 2011)

- Structures occupying the foreshore and seabed may result in the permanent loss of habitat and biological productivity, or changes to the nature of benthic communities and the natural functioning of physical and biological processes (Robertson and Stevens 2011)

- The discharge of toxic substances or other material such as dredge spoil in the coastal marine area can bury, smother, or contaminate flora and fauna, and have adverse effects on public health if contaminated shellfish are consumed

- Exotic or introduced species can displace native flora and fauna and alter ecosystem function and physical processes (Robertson and Stevens 2007)

3. Regulatory and policy context

3.1 International context

As a signatory to the United Nations Convention on Biological Diversity 1993 (UNCBD) New Zealand recognises the global scale of threats to biodiversity. The UNCBD 10-year strategic plan includes the key actions to:

- Initiate action to address the underlying causes of biodiversity loss
- Take action now to decrease the direct pressures on biodiversity
- Continue direct action to safeguard and, where necessary, restore biodiversity and ecosystem service

The New Zealand Biodiversity Strategy 2000 (NZBS) reflects New Zealand's commitment to the UNCBD. It sets out national goals and principles for managing New Zealand's biodiversity. There are four goals that have been "established for conserving and sustainably managing New Zealand's biodiversity" as stated in the strategy. Goal Three of the NZBS is the most relevant to the work of WRC and its stated aim is to:

- Halt the decline in New Zealand's indigenous biodiversity
- Maintain and restore a full range of remaining natural habitats and ecosystems to a healthy functioning state, enhance critically scarce habitats, and sustain the more modified ecosystems in production and urban environments; and do what else is necessary to
- Maintain and restore viable populations of all indigenous species and subspecies across their natural range and maintain their genetic diversity

Legislation and policy direction for the management of aquatic ecosystem and indigenous biodiversity is contained at the national and regional levels.

3.2 National requirements and guidance

3.2.1 Resource Management Act

The purpose of the Resource Management Act 1991 (RMA or the Act) is to promote the sustainable management of natural and physical resources. As stated in section 5 of the RMA, sustainable management includes safeguarding the life-supporting capacity of air, water, soil and ecosystems and avoiding, remedying, or mitigating any adverse effects of activities on the environment (noting that environment is defined in the RMA as including ecosystems and their constituent parts).

Section 6 requires all persons exercising functions and powers under the RMA, including regional councils, to recognise and provide for the following matters of national importance relevant to aquatic ecosystems and biodiversity:

> *(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes*

and rivers and their margins, and protect them from inappropriate subdivision, use, and development …

(c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna …

(e) declares that another nationally important matter is the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.

Section 7 confirms that when protecting natural and physical resources, regional councils shall have particular regard to (aa) the ethic of stewardship, and should; (c) maintain and enhance amenity values. Section 7(d) states that management shall have particular regard to the intrinsic values of ecosystems.

The RMA defines intrinsic values in relation to ecosystems, as those aspects of ecosystems and their constituent parts which have value in their own right, including (a) their biological and genetic diversity; and (b) the essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience.

Section (7)(h) states that management shall have particular regard to the protection of the habitat of trout and salmon.

Section 30(1)(c) and (ga) state that regional councils shall control the use of land to maintain and enhance ecosystems in water bodies and coastal water. Regional councils shall also establish, implement, and review the objectives, policies, and methods for maintaining indigenous biological diversity.

3.2.2 New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement 2010 (NZCPS) promotes sustainable management of the natural and physical resources of the coastal environment, including coastal land, foreshore and seabed, and coastal waters from the high tide mark to the 12 nautical mile limit. Section 67(3)(b) of the RMA requires that the regional plan give effect to the NZCPS.

Policies of particular relevance to this report are Policy 3 (precautionary approach), Policy 4 (integrated management), Policy 10 (reclamation and declamation), Policy 11 (biodiversity), Policy 14 (restoration of natural character, Policy 21 (enhancement of water quality) and Policy 23 (discharge of contaminants).

Objective 1 and Policy 11 of the NZCPS are directly relevant to the management of aquatic ecosystems. Objective 1 is:

To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, by:

- *maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic, complex and interdependent nature;*
- *protecting representative or significant natural ecosystems and sites of biological importance and maintaining the diversity of New Zealand's indigenous coastal flora and fauna; and*
- *maintaining coastal water quality, and enhancing it where it has deteriorated from what would otherwise be its natural condition, with significant adverse effects on ecology and habitat, because of discharges associated with human activity.*

Policy 11 directs the regional plan to protect indigenous biodiversity in the coastal environment. It contains a comprehensive list of taxa, ecosystems, habitats and areas from which the adverse effects of activities must be avoided.

Policy 11 directs regional councils to protect indigenous biodiversity in the coastal environment by:

- Avoiding the adverse effects of activities on threatened species, habitats and ecosystems, and areas set aside for protection of indigenous biodiversity under other legislation (such as marine reserves); and

- Avoiding significant adverse effects, and avoiding, remedying or mitigating other adverse effects of activities on habitats such as those dominated by indigenous vegetation; important to the vulnerable life stages of indigenous species; only found in the coastal environment; important for migration; and that are ecological corridors between these areas

There is strong direction in this policy to protect indigenous biological diversity in the coastal environment by avoiding adverse effects of activities on habitats that are threatened or naturally rare. Policy 11(b) contains further direction to avoid significant effects and otherwise avoid, remedy or mitigate effects on a number of other habitats types.

NZCPS Policies 13 and 14 direct the preservation and promote restoration of natural character. Policy 14 directs the use of policies, rules and other methods in regional policy statements and regional plans to promote restoration and rehabilitation. Policy 14 also directs that conditions be imposed on resource consents to rehabilitate and restore natural character, including by:

- Restoring indigenous habitats and ecosystems using local genetic stock where practicable;

- Recognising the need for pest plant and animal management in restoration and regeneration projects;

- Creating or enhancing habitat for indigenous species; and

- Restoring and protecting riparian and intertidal margins

3.2.3 National Policy Statement for Freshwater Management

The National Policy Statement for Freshwater Management 2014 (NPS-FM) supports improved freshwater management in New Zealand by directing regional councils to establish objectives and set limits for fresh water in their regional plans. Recent amendments to the NPS-FM give regional councils specific direction on how this should be done. Section 67(3)(a) of the Act requires that the regional plan give effect to any national policy statement.

Objective A1 of the NPS-FM is to safeguard the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water and the health of people and communities, at least as affected by secondary contact with fresh water. To achieve this objective, the NPS-FM sets national bottom lines for two compulsory values – ecosystem health and human health for recreation – and minimum acceptable states for other national values.

Objective A2 seeks to maintain or improve the overall quality of fresh water while protecting the significant values of outstanding freshwater bodies. Objective B4 which is related to water quality is also, in part, to protect the significant values of outstanding freshwater bodies.

The implementation of the NPS-FM and the establishment of objectives and setting of limits for fresh water is discussed the section 32 reports on water quality and ki uta ki tai.

The implementation of the NPS-FM objectives to protect the significant values of outstanding freshwater bodies (rivers and lakes) is discussed in this report and the Section 32 report: Wetlands.

3.2.4 Proposed National Policy Statement on Biodiversity 2011

The proposed National Policy Statement on Biodiversity 2011 (pNPSB) was prepared under the RMA to set the national policy direction for managing natural and physical resources to maintain indigenous biological diversity.

The pNPSB is intended to provide clearer direction to local authorities on their responsibilities for managing indigenous biodiversity. The pNPSB would require district and some regional plans to identify areas of significant biodiversity based on criteria for identifying areas of indigenous vegetation and habitats of indigenous animals that are rare and/or threatened at a national level.

Local authorities would be required to manage the effects of activities through district and regional plans and resource consent decisions (or be satisfied that effects are managed by other methods) to ensure that there is no net loss of significant indigenous biodiversity.

As the pNPSB is on hold and does not have legal effect, the proposed Plan does not have any statutory requirement to recognise the pNPSB.

3.2.5 Marine Mammals Protection Act 1978

The Department of Conservation administers the Marine Mammals Protection Act 1978, which provides for the conservation, protection and management of marine mammals. A permit is required under this Act for anyone to 'take' a marine mammal. The definition of 'take' includes actions that harm, harass, injure and attract.

The proposed Plan does not have any statutory requirement to recognise the Marine Mammals Protection Act.

However section 16 of the RMA is a duty to avoid unreasonable noise and this is relevant to provisions in the proposed Plan in regards to the management of underwater noise effects on marine mammals. In addition Policy 37(b) of the RPS requires the proposed Plan have particular regard to areas used by marine mammals as breeding, feeding or haul out sites.

3.2.6 Biosecurity Act 1993

The Biosecurity Act 1993 provides a legal basis for excluding, eradicating and effectively managing pests and unwanted organisms.

Section 12B and 13 contain the duties and function of regional councils under the Biosecurity Act, including the provision of a strategic and statutory framework for effective and proficient management of selected pest animal and pest plant species in the Wellington Region.

Section 7A of the Biosecurity Act provides an exemption, under certain circumstances, from the requirements of Part 3 of the RMA, such as sections 9, 12, 13, 14 and 15 restrictions on use and activities. There are no recorded section 7A exemptions in the Wellington Region (Kelsall 2015).

Many of WRC's pest control activities under the Biosecurity Act rely on the use of agrichemicals and vertebrate toxic agents. These activities are carried out under the requirements of the operative regional plans, which require resource consent for the use of these chemicals in some situations.

3.2.7 Freshwater Fisheries Regulations 1983

The Freshwater Fisheries Regulations 1983 contains restrictions on activities related to fish passage and activities in the beds of lakes and rivers.

Section 70 of the Freshwater Fisheries Regulations prohibits any person from taking indigenous fish and leaving them upon the bank or shore.

Part 6 of the Freshwater Fisheries Regulations give the Director-General of the Department of Conservation (DOC) a decision-making role in relation to fish passage when facilities such as new or modified culverts, fords, dams, weirs and diversions on natural waterways are proposed.

According to the DOC website, where DOC is satisfied that a regional council has imposed appropriate conditions for culverts and fords relating to fish passage, it has interpreted an Environment Court ruling (Transit NZ v

Auckland Regional Council, A100/00 (5 NZED 814) as meaning additional permission under the Freshwater Fisheries Regulations is at its discretion.

Part 6 and section 70 of the Freshwater Fisheries Regulations are requirements in addition to those contained in the proposed Plan under section 13 of the RMA for activities on the beds of lakes and rivers.

Section 66(2)(c)(iii) of the RMA requires regional plans to have regard to regulations relating to fisheries resources.

3.2.8 Water Conservation Order for Lake Wairarapa

The purpose of a water conservation order (WCO) is to recognise and sustain outstanding amenity or intrinsic values of a water body in either its natural or modified state.

Legislation that enabled the creation of WCOs was enacted in 1981 under the Wild and Scenic Rivers Amendment to the Water and Soil Conservation Act 1967. This Act is now a part of the RMA, and today WCOs are regulated under Part 9 of the RMA.

Lake Wairarapa has been protected, in part, by a WCO since 1989. The WCO specifically protects the wildlife habitat on the eastern shoreline of the lake from reclamation and altered lake water levels. The WCO is specific to the open water and does not cover the wetlands associated with the shoreline. Clause 4 of the Lake Wairarapa WCO makes it clear that it is prohibited to "divert any water within Lake Wairarapa".

Clause 5 deals with all other water rights and states:

> *No water right shall be granted and no general authorisation shall be made in respect of any part of Lake Wairarapa if the effect would be to significantly diminish the outstanding wildlife habitat features of any part of the lake.*

Legal opinion to the WRC is that the outright ban in Clause 4 applies only to reclamation activities within Lake Wairarapa, such as poldering (as noted in Greenberg 2014). Clause 5 does not prohibit water use, rather it requires that water takes and discharges be assessed on a case-by-case basis in order to assess their impact on wildlife values. Section 67(4)(a) of the RMA requires a regional plan to not be inconsistent with a WCO.

3.2.9 Guidance on Good Practice Biodiversity Offsetting in New Zealand

The non-statutory Guidance on Good Practice Biodiversity Offsetting in New Zealand (Anon 2014) contains an overview of biodiversity offsetting, including its definition, principles, key concepts, application in New Zealand and the steps necessary to demonstrate good practice when choosing to develop and implement a biodiversity offset and achieve no net loss.

Provisions in the proposed Plan for biodiversity offsetting are designed in accordance with this guidance, working closely with the DOC.

3.3 Regional requirements and guidance

3.3.1 Regional Policy Statement

The RMA section 67(3) requires the proposed Plan to give effect to the relevant regional policy statement. The second generation Regional Policy Statement for the Wellington Region (RPS) became operative on 24 April 2013.

The RPS identified a number of issues that are pertinent to this report on aquatic ecosystems and indigenous biodiversity, including:

- Discharges of stormwater, sewage, sediment and other contaminants to the coast are adversely affecting the health of coastal ecosystems
- The ecosystem function of some rivers, lakes and wetlands has been impaired, with some wetland and lowland stream ecosystems coming under particular pressure
- The region's indigenous ecosystems are reduced in extent – specifically wetlands and estuaries
- The remaining indigenous ecosystems continue to be degraded or lost

In coastal environments, Objective 6 of the RPS states that the quality of coastal waters is maintained or enhanced to a level that is suitable for the health and vitality of coastal and marine ecosystems. To achieve Objective 6, Policy 5 requires the regional plan to maintain and enhance coastal water quality for aquatic ecosystem health, and Policy 6 requires it to recognise the regional significance of Te Awarua-o-Porirua Harbour.

In fresh water bodies, Objective 12 of the RPS states that the quantity and quality of fresh water:

(a) meet the range of uses and values for which water is required;

(b) safeguard the life supporting capacity of water bodies; and

(c) meet the reasonably foreseeable needs of future generations.

Further, Objective 13 states that the region's rivers, lakes and wetlands support 'healthy, functioning ecosystems'. RPS Policies 12, 13 and 18 all provide direction to regional plans in order to give effect to Objective 13.

Policy 12 states that regional plans shall include policies, rules and/or methods that:

(a) require that water quality, flows and water levels, and the aquatic habitat of surface water bodies are to be managed for the purpose of safeguarding aquatic ecosystem health; and

(b) manage water bodies for other purposes identified in regional plans.

Policy 13 of the RPS directs that regional plans shall include provisions to establish water allocation limits to take into account aquatic ecosystem health in rivers, lakes and wetlands and to prevent salt water intrusion.

Policy 18 states that regional plans shall include policies, rules and/or methods including to:

(a) promote the retention of in-stream habitat diversity by retaining natural features – such as pools, runs, riffles, and the river's natural form;

(b) promote the retention of natural flow regimes – such as flushing flows;

(c) promote the protection and reinstatement of riparian habitat;

(d) promote the installation of off-line water storage;

(e) discourage the reclamation, piping, straightening or concrete lining of rivers;

(f) discourage stock access to rivers, lakes and wetlands;

(g) discourage the diversion of water into or from wetlands – unless diversion is necessary to restore hydrological variation to the wetland;

(h) discourage the removal or destruction of indigenous plants in wetlands and lakes; and

(i) maintain fish passage.

Habitat diversity is described in clauses (a), (b) and (c) is essential for aquatic ecosystems to survive and be self-sustaining. When areas of habitat in one part of a river, lake or wetland are degraded or destroyed by activities such as those described in clauses (e-h), critical parts of the ecosystems may be permanently affected with consequent effects elsewhere in the ecosystems.

Policy 19 also achieves Objective 13, and requires regional plans to include policies, rules and/or methods that:

(a) maintain or enhance the amenity and recreational values of rivers and lakes, including those with significant values listed in Table 15 of Appendix 1 (of the RPS); and

(b) protect the significant indigenous ecosystems and habitats with significant indigenous biodiversity values of rivers and lakes, including those listed in Table 16 of Appendix 1 (of the RPS).

Objective 16 states: Indigenous ecosystems and habitats with significant biodiversity vales are maintained and restored to a healthy functioning state.

To achieve Objective 16, Policy 23 requires the proposed Plan to identify indigenous ecosystems and habitats with significant indigenous biodiversity values, and sets out a list of criteria to guide that identification: representativeness; rarity; diversity; ecological context; and tangata whenua values[2]. These criteria cover the identification of those ecosystems and habitats stipulated in Policy 11 of the NZCPS.

Of note, the control of the use of land for the maintenance of terrestrial ecosystems is largely allocated to district and city plans through Policy 61 in the RPS. This same policy allocates primary responsibility of the control of the use of land to maintain and enhance aquatic ecosystems to WRC.

Objective 27 of the RPS also directs that mahinga kai and natural resources used for customary purposes are maintained and enhanced, and that these resources are healthy and accessible to mana whenua. For all water, the RPS directs that particular regard must be given to recognising and providing for the exercise of kaitiakitanga, mauri, mahinga kai and Māori customary use and sites with value to mana whenua in a plan review through Policy 49.

RPS Policy 61 allocates responsibilities for land use controls for indigenous biodiversity between the regional and district councils. WRC and the regional plan are responsible for controlling the use of land to maintain and enhance ecosystems in water bodies and coastal water. This includes land within the coastal marine area, wetlands and the beds of lakes and rivers. It makes city and district councils and district plans responsible for controlling the use of land for the maintenance of indigenous biological diversity – excluding within the coastal marine area and beds of lakes and rivers.

3.3.2 Regional Pest Management Strategy

WRC's biosecurity work is guided by the Greater Wellington – Regional Pest Management Strategy 2002–2022 Five Year Review 2007 (GWRC 2009), which seeks to:

- Minimise the actual and potential adverse and unintended effects of pests on the environment, economy, biodiversity and the community; and
- Maximise the effectiveness of individual pest management through a regionally co-ordinated response

In accordance with sections 12B and 13 of the Biosecurity Act, this strategy document will be replaced with a Regional Pest Management Plan (RPMP) and a Regional Pathway Management Plan.

At the time of writing, regional councils are waiting for the Ministry for Primary Industries to release a National Policy Direction (NPD) to guide how the new RPMP's will be developed. There have been a number of delays in the release of the NPD which was forecast for mid-2015.

[2] Ecosystems and habitats which are identified as significant using the *tangata whenua values* criterion of RPS Policy 23 are included in the proposed plan as sites with significant mana whenua values (Schedule C), and are discussed in Section 32 report: Māori values.

Under section 66(2) of the RMA regional plans shall have regard to any management plans and strategies prepared under other acts.

3.3.3 Conservation Management Strategy

Conservation Management Strategies (CMS) are developed by DOC under the Conservation Act 1987. CMSs identify how DOC will manage land, plants, birds, wild animals, marine mammals, and historic and cultural sites it is responsible for in a region to achieve national conservation outcomes.

The operative Wellington CMS 1996-2005 was developed in 1996 (DOC 1996), and although only intended to apply till 2005 remains the operative CMS. In particular relevance to this report, the Wellington CMS identified estuaries as a priority for conservation management.

The operative Wellington CMS is being reviewed and the new CMS will include a much larger region, which spans from Wellington City up the east coast to Cape Turnagain, taking in the Tararua and Wairarapa districts, and across the Ruahine Forest Park. On the west coast, the area includes Taihape, out to the mouth of the Turakina River and back down the Rangitikei and Horowhenua-Kāpiti coast to Wellington City.

Under section 66(2) of the RMA regional plans shall have regard to any management plans and strategies prepared under other Acts.

3.3.4 Regional Biodiversity Strategy

The WRC's Biodiversity Strategy 2011-2021 (GWRC 2012) recognises the guidance of the NZBS and the requirements of the RMA. The strategy aims to protect areas with high biodiversity values across the region as well as to restore ecosystems in degraded areas, where possible. The strategy addresses both terrestrial and aquatic ecosystems.

Of relevance to the proposed Plan, the strategy seeks to identify the highest biodiversity value stream systems for proactive management, to re-establish riparian areas along the 10 highest priority stream systems, and to remove barriers to indigenous fish passage with priority given to high value stream systems.

The strategy supports a suite of programmes for promotion, advocacy and incentives for good practice including, fencing livestock out of streams, riparian management, fish passage and stream restoration.

The strategy also supports site management, promotion and advocacy in areas of high biodiversity within the coastal environment.

3.3.5 Summary: regulatory and policy guidance

This report covers the aquatic ecosystem aspects of the proposed Plan that give effect to the above national and regional-level guidance, in particular, that:

- The aquatic habitat of surface water bodies be managed to safeguard aquatic ecosystem health;

- Sites with high biodiversity values are identified and protected, and their restoration is encouraged; and

- Regional plans contain policies, rules and/or methods that promote the retention of in-stream habitat diversity, the maintenance of fish passage, the control pests, and the protection and reinstatement of riparian habitat

3.4 Operative regional plans

There are five operative plans for the Wellington Region: Regional Freshwater Plan; Regional Soil Plan; Regional Plan for Discharges to Land; Regional Air Quality Management Plan; and Regional Coastal Plan. The two operative plans relevant to this report are the Regional Freshwater Plan and the Regional Coastal Plan.

3.4.1 Regional Freshwater Plan

The operative Regional Freshwater Plan for the Wellington Region (RFP) identifies several issues with respect to natural and amenity values. The main issue in relation to indigenous biodiversity is acknowledging that freshwater habitats and ecosystems are vulnerable to the effects of subdivision, use and development. People and communities, including tangata whenua, place high values on the intrinsic values of healthy freshwater habitats and ecosystems. Many other users of water also rely on healthy habitats and ecosystems for recreation and economic activities.

The RFP has objectives relating to aquatic ecosystems and indigenous biodiversity: Objective 4.1.4 aims to protect the natural character of wetlands, lakes and rivers from inappropriate subdivision, use and development; and Objective 4.1.5 aims to safeguard the life-supporting capacity of water and aquatic ecosystems from the adverse effects of subdivision, use and development.

A number of policies direct the protection of water bodies, wetlands and rivers and lakes from inappropriate use and development. The key components are the protection of ecosystems, habitats and species, water quality and natural flow characteristics. For example there are suites of policies specific to:

- Natural values of aquatic ecosystems – 4.2.9, 4.2.11, 4.2.12, 4.2.13 and 5.2.6

- Important trout habitat – 4.2.14 and 5.2.3

- Lake Wairarapa in accordance with its WCO – 5.2.2

- Riparian margins – 4.2.9, 4.2.10, 4.2.11, 4.2.12 and 4.2.13

- The use of beds of lakes and rivers that address natural values – 7.2.2 and 7.2.3; and

- Rivers with nesting birds and threatened plant species – 7.2.11

The RFP identifies wetlands, lakes and rivers to be managed for aquatic ecosystem purposes in Appendix 2 Part B, and provides water quality standards suitable for these waters in Appendix 8. Water quality is managed for aquatic ecosystem purposes through Policy 5.2.6, in connection with Appendix 7.1 which identifies water bodies requiring improvement in order to reach aquatic ecosystem purposes in accordance with Policy 5.2.9.

Rules in the operative RFP refer to several appendices which are relevant to aquatic ecosystem health, indigenous species, trout habitat and outstanding waters (Lake Wairarapa). For example, it is a non-complying activity under Rule 6 to discharge to listed surface water bodies to be managed in a natural state (Appendix A, Part A). It is also non-complying to dam or divert water (Rules 17 and 18) from surface waters listed in Appendix A, Part A and also those listed to be managed for aquatic ecosystem purposes.

Rules managing activities in the beds of lakes and rivers also refer to the appendices and the activity status for these activities range from controlled to prohibited.

In addition, the RFP contains a mix of non-regulatory other methods that address natural values and riparian management.

3.4.2 Regional Coastal Plan

The operative Regional Coastal Plan for the Wellington Region (RCP) identifies the reduction of the life-supporting capacity and the modification and loss of habitats and ecosystems as an issue for the Wellington Region.

Objective 4.1.1 states that the intrinsic values of the coastal marine area and its components should be preserved and protected from inappropriate use and development, Objective 4.1.4 states that the life-supporting capacity of the coastal marine are is retained and Objective 4.1.6 states that the natural character of the coastal environment should be preserved from inappropriate subdivision, use and development.

Policy 4.2.1 recognises that the intrinsic values of the coastal environment are worthy of protection, and Policy 4.2.2 encourages new developments in areas where natural character has already been compromised. Policy 4.2.35 allows the placing of conditions on resource consents to avoid, remedy or mitigate any adverse effects of activities on (among other things) fauna, flora or habitat; natural character; and amenity values.

Policy 4.2.10 protects the values of the areas listed in Appendix 2, through a suite of rules related to activities within Areas of Significant Conservation Value: discharges to air are non-complying; take, use, damming or diversion of water is non-complying; surface water and foreshore activities not covered by any other rule are non-complying.

There are no guidelines in the RCP for managing water for ecosystem health purposes, though the RCP does contain a policy direction to have particular regard to the effects of contaminants on elements of ecosystem health including fish spawning and important species in Policy 10.2.9. The RCP does

not contain regulatory provisions for non-point discharges, though it does include a policy that seeks to reduce effects of diffuse pollution on coastal water quality (Policy 10.2.12).

The RCP contains a number of other methods related to the management of pest plants, and investigating the impact of surface water and foreshore activities on wildlife.

The outcomes sought in the operative regional plans do not reflect the key policy directions from the RPS, nor do they respond to the requirements of the NPS-FM. For instance, the operative plans do not provide direction on managing for human health for recreation at a secondary contact level, as is required by the National Objective Framework (NOF) of the NPS-FM.

3.4.3 Operative plan effectiveness and efficiency

More specific national direction has been developed since the first generation plans were drafted. The function of regional councils is "to manage the establishment, implementation, and review of objectives, policies and methods for maintaining indigenous biological diversity" (section 30(1)(ga)), which was included in the RMA by amendment in 2003. The policies in the operative regional plans do not specifically recognise and provide for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna, as required by section (6)(c) of the RMA. The NZCPS and NPS-FM also include directions (as discussed above in sections 3.2.2 and 3.2.3) that the operative plans do not give effect to.

The Plan effectiveness report for the Regional Coastal Plan (GWRC 2008) summarised that:

- Water quality is generally good except for localised hotspots, near discharges of sewage, stormwater and the mouths of streams and rivers

- Water quality, shellfish flesh testing and sediment results suggest that the discharges to water provisions are not stringent enough, particularly for stormwater. When sediment settles out of suspension it shifts from being a water quality issue, to being a habitat quality issue – estuaries and coastal wetlands are filled with sediment, and habitats such as seagrass are smothered

- Contaminant flows via rivers and streams needs to be addressed by coordinating the RCP with the other regional plans (particularly the RFP)

- There is a great amount of public concern about coastal development and subdivision, most of which is not within the jurisdiction of the RCP, but some of which would occur in estuaries and river-mouths

- Generally, the policies do give effect to the objectives, but often not very well. Many of the rules fall short of giving effect to the policies. Most methods either are not properly targeted to implement policies or have not been done

The Regional Freshwater Plan Evaluation (GWRC 2006) was published seven years after the RFP was made operative. It found that the issues generally remained the same but some additional issues were identified, including the loss of stream habitat through piping of urban and peri-urban streams had become more important that needs to be addressed:

> *"There has been some loss of aquatic habitat as a result of subdivision and development, including irreversible loss due to the piping and reclamation of water bodies. However, there have also been some gains, particularly as a result of work carried out by community groups. An example is the care group programme that Greater Wellington supports. There are 26 Care Groups at the present time that are involved in projects that are restoring freshwater ecosystems, such as wetlands or through riparian plantings."*

4. Evaluation of the appropriateness of the proposed objectives

Section 32(1)(a) of the RMA requires that an evaluation report must examine the extent to which the proposed objectives are the most appropriate way to achieve the purpose of the Act

4.1 Appropriateness of having no objectives or provisions in the plan

If the proposed Plan were to exclude any provisions for the management of aquatic ecosystems it would be a dereliction of duty under the RMA, NZCPS, NPS-FM and the RPS.

The potential outcomes of having no provisions for aquatic ecosystems in the proposed Plan would include:

- Failure to sustain the potential of natural resources to meet the reasonably foreseeable needs of future generations
- Failure to safeguard the life-supporting capacity of water and ecosystems;
- Loss and degradation of areas of natural character
- Loss and degradation of areas of significant indigenous vegetation and significant habitat for indigenous flora and fauna
- Damage to the relationship of Māori and their culture and traditions with their ancestral land, waters, sites, waahi tapu and other taonga; and
- Loss and degradation of places with high amenity and recreational values

4.2 Appropriateness of no change from operative plans – status quo

The discussion of the effectiveness of the operative regional plans issues, objectives policies and rules in section 3 of this report highlights the need to strengthen management of aquatic ecosystems in the region. The operative freshwater and coastal plans are not up to date with current direction – they fail to give effect to the NZCPS, NPS-FM and RPS, and are therefore not fully relevant, useful or appropriate.

4.3 Preferred objectives for aquatic ecosystems

Taking into account the current state of aquatic ecosystems in the region, the national and regional directives, and the inappropriateness of doing nothing, or retaining the objective in the operative plans – the proposed objectives below are considered appropriate. This report focuses on seven proposed objectives:

- Objective O18 Estuaries
- Objective O25 Aquatic ecosystem health and mahinga kai
- Objective O27 Riparian margins
- Objective O29 Fish passage
- Objective O30 Trout habitat
- Objective O31 Outstanding water bodies
- Objective O35 Ecosystems and habitats with significant indigenous biodiversity values

To evaluate the appropriateness of the objectives in the proposed Plan, four standard criteria are used in this report:

- *Relevance* – is the objective related to addressing a resource management issues? Will it achieve one or more aspects of the purpose and principles of the Resource Management Act?
- *Usefulness* – will the objective guide decision-making? Does it meet sound principles for writing objectives?
- *Reasonableness* – what is the extent of the regulatory impact imposed on individuals, businesses or the wider community?
- *Achievability* – can the objective be achieved with tools and resources available, or likely to be available, to the local authority?

Tables 4.1 to 4.7 provide evaluations of the appropriateness of the proposed and operative objectives against all four criteria discussed above.

4.3.1 Objective O18

The ecological, recreational, mana whenua and amenity values of estuaries, including their sensitivity as low-energy receiving environments are recognised, and their health and function is restored over time.

Objective O18 recognises the importance of estuaries for freshwater and marine ecosystems, and that they are highly valued by mana whenua and communities for their natural character and amenity values, and for recreation – swimming, food gathering, sailing, waka ama, walking and picnicking.

Estuaries are highly diverse and productive ecosystems, and many within the region have been identified as having significant indigenous biodiversity values as either bird habitat, or as seasonal or migratory habitats for indigenous fish (see the discussion of Objective O35 below). Estuaries that do not have significant indigenous biodiversity values are still ecologically important, and improving their health will lead them to supporting functioning communities in the future.

Estuaries are critical habitats for indigenous biodiversity. They provide nursery habitat during vulnerable life stages of both freshwater and marine fish species of commercial, cultural and recreational importance. Most of New Zealand's indigenous freshwater species are diadromous – spending part of their lifecycle in the marine environment, and therefore they must pass through estuaries during at least one part of their life cycle. They also provide foraging, wintering and breeding habitat for many species of aquatic birds, including regional, national and international migrants.

Estuaries also contain important ecosystem and habitats such as saltmarsh and seagrass communities that are only found in the coastal environment, and are particularly vulnerable to modification.

Estuaries are under considerable pressure from human activities. Poor quality water enters estuaries from their catchment through rivers, stormwater and wastewater. Use and development of the land directly surrounding estuaries impact on their health and function through loss of vegetation, increased stormwater runoff, piping of streams, hard-edging, and reclamation. The cumulative effects of these pressures cause the ecological health of estuaries to decline.

The objective is relevant to the issue identified during the development of the proposed Plan that the lower reaches of rivers, lakes, estuaries and harbours are places where there is an accumulation of adverse effects.

The objective is also relevant to section 6(a) of the RMA which requires the recognition and provision for the preservation of the coastal marine area. This objective goes beyond the requirement of section 6(a) to provide for the preservation, by seeking to restore the health and function of these areas. It is relevant to section 7(d) – having regard to the intrinsic value of ecosystems, and particularly relevant to the implementation of Policy 11 of the NZCPS.

The objective is relevant to the implementation of the RPS: Policy 5 requires water quality to be managed for purpose of maintaining or enhancing aquatic ecosystem health; and Policy 37 directs that particular regard is given to safeguarding the life-supporting capacity of coastal and marine ecosystems.

The objective is relevant to the operative Wellington Conservation Management Strategy which identified estuaries as a priority for conservation management. The objective is relevant to the issue identified during the development of the proposed Plan that indigenous ecosystems and ecosystems of importance to indigenous species are significantly reduced in extent and continue to be degraded.

The objective is a useful as it fits within a suite of other objectives in the proposed Plan that guide decision-making for rules and methods.

The objective is reasonable as provisions in the proposed Plan will be used to restore estuaries through the reduction of contaminants discharged to estuaries from rivers, streams, stormwater networks and wastewater systems. Many of the objectives and policies in the proposed Plan will contribute to this reduction of contaminants and improvement of water quality over time, which is a reasonable approach for complex systems.

Active restoration projects will also assist, and are already underway in some estuaries in the region. For example, the re-establishment of seagrass beds and saltmarsh vegetation can improve water quality, habitat provision, and ecosystem health and function. This is achieved as the plants absorb nutrients and trap sediment, stabilise shorelines, and create three-dimensional habitat structure for other flora and fauna to colonise.

The objective is achievable as restoring the health and function of estuaries will be achieved through a combination of regulatory and non-regulatory methods in the proposed Plan. The main emphasis is on regulatory methods to improve water quality, but also the non-regulatory Methods M9 and M17.

Table 1 presents the appropriateness of this objective in terms of relevance, usefulness, reasonableness and achievability. This assessment shows that the objective is appropriate to achieve the purpose of the RMA and give effect to the NZCPS.

Table 1: Appropriateness of Objective O18

The ecological, recreational, mana whenua and amenity values of estuaries, including their sensitivity as low energy receiving environments are recognised, and their health and function is restored over time.	
Relevance	
Directly related to resource management issue?	Yes, Issue 1.2
Will achieve one or more aspects of the purpose and principles of the RMA?	Part 2, sections 5(2)(b), 6(a), and 7(d)
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	Yes, directly relevant to sections 6(e), 6(g), 7(a) and 8
Relevant to statutory functions or to give effect to another plan or policy (i.e. NPS, RPS)?	RMA section 30(c) functions and RPS Policy 61 allocation of responsibilities make WRC the authority responsible for developing objectives, policies and methods, including rules under the regional plan to control the use of land to maintain and enhance ecosystems in water bodies and coastal water. Policy 11 of the NZCPS
Usefulness	
Will effectively guide decision-making?	This objective will guide the processing of resource consents that impact on the health and restoration of estuaries in the region

Meets sound principles for writing objectives?	This objective is a clear and complete sentence related to an issue. This objective is not time-bound as it aims to deliver benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	State of the environment monitoring will measure the health of estuaries over the life of the plan and beyond. Additional studies or monitoring may be required.
Is it expected that the objective will be achieved within the life of the PNRP or is it an aspirational objective that will be achieved sometime in the future?	The objective seeks continuous improvement from a degraded state, rather than a finite outcome. State of the environment monitoring will reveal trends in the health of estuaries over the life of the plan and beyond.
Does WRC have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	RMA sections 9, 12 and 14 This objective will be achieved through the policies, rules, and other methods in the proposed Plan.
What other parties can WRC realistically expect to influence to contribute to this outcome?	All resource users. Territorial authorities will be involved in contributing to this objective, primarily through managing stormwater and wastewater.
What risks have been identified in respect of outcomes?	The risks to the indigenous biodiversity in estuaries will be reduced through the achievement of this objective. There is a potential for whaitua committees implementing the NPS-FM to set outcomes and limits for freshwater management without regard to suitable limits for the health of estuarine ecosystems at the bottom of the catchment.
Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally economically or socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it. There is a strong desire from the community and tangata whenua that this objective be achieved.
Who is likely to be most affected by achieving the objective and what are the implications for them?	All resource users. The cost of improving water quality entering estuaries from rivers, reducing sedimentation, and improving stormwater and wastewater systems will be high, and will fall to both rural and urban communities.
Existing objectives	
Are the existing objectives still relevant or useful?	There are no objectives specifically relating to estuarine health in the RCP. The protection of unmodified estuaries is mentioned in Policy 4.2.10, which delivers on Objective 4.1.6. This is akin to Objective O35 (protect and enhance significant sites) rather than maintaining and restoring ecosystem and estuarine health.

4.3.2 Objective O25

To safeguard aquatic ecosystem health and mahinga kai in fresh water bodies and coastal marine area:

(a) water quality, flows, water levels and aquatic and coastal habitats are managed to maintain aquatic ecosystem health and mahinga kai, and

(b) restoration of aquatic ecosystem health and mahinga kai is encouraged, and

(c) where an objective in Tables 3.4, 3.5, 3.6, 3.7 or 3.8 is not met, a fresh water body or coastal marine area is improved over time to meet that objective.

Note

Where the relevant whaitua sections of the Plan contain an objective on the same subject matter as Objective O25 (water quality, biological and habitat outcomes), the more specific whaitua objective will take precedence.

The ecosystem health and function of fresh water, including groundwater, and coastal water is being impaired by activities that degrade habitat quality, with some wetland and lowland stream ecosystems coming under particular pressure. The lower reaches of rivers, as well as lakes, estuaries and harbours are places where there is an accumulation of the adverse effects of human activities.

Objective O25 describes the ways in which the proposed Plan seeks to safeguard ecosystem health and mahinga kai, reinforcing the intent of Objective O5 (shared values and health needs of people).

Part (c) of Objective 25 and the associated tables provide an expression of health at a regional scale that the proposed Plan seeks to achieve in the region's fresh and coastal waters. The objective guides discharge consent decision-making at the regional scale and provides guidance to the whaitua processes and the process of setting limits for rural and urban land use and discharge activities at the catchment scale.

The attributes in the tables are consistent with the NOF attributes released for ecosystem health in lakes and rivers. However, it is the role of the whaitua committees to set freshwater objectives in accordance with the NPS-FM. The policy and community directives which give rise to this objective – the RMA, the RPS, the NPS-FM, the NZCPS, the regional community engagement process, and the principles of Te Upoko Taiao – remain the same for the whaitua committees though can be supplemented by additional science and community engagement on detailed values balancing. To this end this objective may be made specific to each whaitua through the whaitua process, as described in the note that follows the objective.

This objective is relevant to the requirements in the NPS-FM to safeguard the life-supporting capacity of all freshwater, including ecosystem processes and indigenous species and their ecosystems. The direction of Objective O25(c) is that where an objective state in the tables is not already being met in a

waterway or area of coastal water, that waterway or area of coastal water is improved through time in order to meet the objective state.

Objective O25(c) identifies narrative and numeric objectives in Tables 3.4-3.8 for five different types of waters: rivers[3], lakes, wetlands, groundwater and coastal water. These tables, together with Objective O23 (maintaining water quality), aim to safeguard aquatic ecosystem health and mahinga kai. The narrative and numeric objectives included in Tables 3.4-3.8 will be useful to guide decision-making for resource consents. The narrative and numeric objectives are also a useful guide for the setting of water quality and quantity limits as required by the NPS-FM.

To determine attributes of aquatic ecosystem health, these tables draw on the operational definition of 'ecological integrity' as set out by Schallenberg et al. (2011). Here ecological integrity is described as "the degree to which the physical, chemical and biological components (including composition, structure and process) of an ecosystem and their relationships are present, functioning and maintained close to a reference condition reflecting negligible of minimal anthropogenic impacts" (Schallenberg et al. 2011, p10).

The components and objectives within the tables were developed to be reasonable and achievable. For rivers and streams, six river classes were identified (in Table 3.4). This division reflects the way river systems differ by nature of their catchment, geology and flows (e.g. upland vs lowland, fast flowing vs sluggish) and this means that there can be large natural variations in aquatic plant and animal communities between rivers across a region. For instance, rivers higher in a catchment tend to have higher frequencies of flushing flows and therefore shorter periods of time for periphyton accrual than those in flat, lowland areas (Greenfield 2013). Consequently, the periphyton objective in Table 3.4 is lower for rivers at the top of the catchment than that for rivers lower in the catchment. The six river classes are defined in the interpretation section of the proposed Plan, and are indicated in Maps 21 to 25 in the proposed Plan.

The attributes in Tables 3.4-3.8 were developed with the expertise of WRC scientists and two external Māori scientists. The work of this group lead to the inclusion of an early version of the aquatic ecosystem health and mahinga kai attributes (known as Schedule H) in the Working Document for Discussion version of the regional plan (WDFD), released in August 2013. A detailed background report on the attributes included in the WDFD Schedule H is provided in Greenfield *et al.* (2013). An analysis of how mahinga kai and what was then known as 'tangata whenua use' values is provided for is set out in Royal and Barriball (2015).[4]

The objectives for aquatic ecosystem health and mahinga kai in Tables 3.4-3.8 have been further shaped by stakeholder feedback on the WDFD (summarised in Vujcich and Fairbrother 2014). These objectives were also further reviewed for consistency with the revised NPS-FM and release of the proposed NOF in

[3] The term 'river' is a defined term in the RMA and is used to mean rivers and streams of all sizes.
[4] This paper provides suggestions valuable to the development of a Matauranga Māori monitoring strategy, as is directed by proposed Plan Method M2.

late 2013. A series of technical memos or reports record recommended changes to the objectives, including seeking consistency with the NOF (in Crisp 2014; Greenfield 2014a, 2014b and 2014c; Oliver, Milne and Greenfield 2014; Perrie and Milne 2014; and Tidswell 2014). Final inclusion in the proposed Plan was undertaken by examining all recommendations to ensure that they were meaningful, integrated indicators of aquatic ecosystem health and mahinga kai. To be included in the proposed Plan, attributes needed to be robust and defensible (including whether they should be included as a numeric or a narrative objective) and feasible in terms of monitoring.

In general, the attributes recommended for inclusion in the proposed Plan following this review are biological attributes as the most meaningful integrated indicators of aquatic ecosystem health and mahinga kai. Other attributes for sediment quality and water quality are also included where they have been considered a key determinant of safeguarding aquatic ecosystem health and mahinga kai.

Guidance on the interpretation of the objectives Tables 3.4 to 3.8 can be found in the *Technical Guidance Document* (Greenfield et al. 2015a). A report benchmarking has been undertaken to establish the current state of the rivers, streams, lakes, groundwater and estuaries against the objectives in Tables 3.4 to 3.8 (Greenfield et al. 2015b). This benchmarking formed the basis for recommendations on other methods in the proposed Plan to improve water quality where aquatic ecosystem health has been compromise discussed in the Section 32 report – Water quality.

Table 2 presents the appropriateness of Objective O25 in terms of relevance, usefulness, reasonableness and achievability. This assessment shows that the objective is appropriate to achieve the purpose of the RMA.

Table 2: Appropriateness of Objective O25

To safeguard aquatic ecosystem health and mahinga kai in fresh water bodies and coastal marine area: (a) water quality, flows, water levels and aquatic and coastal habitats are managed to maintain aquatic ecosystem health and mahinga kai, and (b) restoration of aquatic ecosystem health and mahinga kai is encouraged, and (c) where an objective in Tables 3.4, 3.5, 3.6, 3.7 or 3.8 is not met, a fresh water body or coastal marine area is improved over time to meet that objective.	
Relevance	
Directly related to resource management issue?	Yes, this objective relates to Issues 1.11, 3.1, 4.1, 4.2, 4.3, 4.4, 6.1 and 6.2
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes, Part 2, all of section 5, particularly s5(2)(b), s6(e) and s7(d), 7(f), 7(g)
Relevant to Māori environmental issues?	Yes, sections 6(e), 6(g), 7(aa), 8

Relevant to statutory functions or to give effect to another plan or policy (i.e. NPS, RPS)?	RMA section 30(1)(c) functions and RPS Policy 61 allocation of responsibilities make WRC the authority responsible for developing objectives, policies and methods, including rules under the regional plan to control the use of land to maintain and enhance ecosystems in water bodies and coastal water. NPS-FM Objectives, particularly A1, A2, B1 and B4, and Policies A1-A3 and B4 NZCPS Objective 1 and Policies 11, 21, 22 and 23 RPS Objectives 6, 12, 27 and Policies 5, 12, 18, 19, 61
Usefulness	
Will effectively guide decision-making?	This objective will guide the processing of resource consents for activities that contaminate waters in the region, reduce the amount of water in rivers, lakes and wetlands or impact aquatic habitat. This objective will support the process for setting water quality and quantity limits in the regional plan as directed by the NPS-FM and the RPS for fresh and coast water.
Meets sound principles for writing objectives?	The objective is a clear and complete statement that responds to water quality, water quantity, ecosystem and mana whenua issues. The objective is specific and provides detail as to what is to be achieved. Though the objective is not time bound as it aims to deliver benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed and work together to achieve the sustainable management of natural resources in the Wellington Region. In particular, objectives O5 and O23 are very relevant to this objective.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	This objective seeks continuous improvement, so establishes a direction of travel rather than an end-point. Measures of aquatic ecosystem health are used in state of the environment monitoring. The outcomes described in Tables 3.4-3.8 will be monitored and reported on regularly, and should provide a through time description of how and when this objective is being met throughout the region. A report (WRC, 2015) benchmarks how fresh and coastal water bodies currently fare in respect to the outcomes as described in the proposed Plan. This benchmarking exercise can be repeated in future. More generally, the objectives will be measured through monitoring the state of the environment.
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	This is an aspirational objective that seeks continuous improvements in ecosystem health during the life of the NRP and beyond. The whaitua committee process will determine timeframes for achieving the whaitua-specific versions of this objective, therefore this objective will be achieved within the lifetime of the Plan by setting water quality limits, minimum flows, water levels and core allocations.
Does WRC have the functions, powers, and policy tools to ensure that they can be achieved?	WRC has powers under has appropriate functions and powers to control water quality, water quantity, aquatic ecosystems and the habitat sections 9 to 15 and section 30 functions to achieve these objectives.

What other parties can WRC realistically expect to influence to contribute to this outcome?	This objective is very broad and integrative in how it would be achieved consequently it affects all resource users, but most particularly: • All resource-users • Territorial authorities • Government departments (e.g. DOC) • Landowners
What risks have been identified in respect of outcomes?	The risks to aquatic ecosystem health and mahinga kai will be reduced through the achievement of this objective. However, robust integration of water quality, flows and water levels and aquatic habitat for ecosystem health and mahinga kai is difficult to quantify
Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally or economically or socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it. There is a strong desire from the community and particularly tangata whenua that this objective be achieved. The objective seeks reasonable environmental and cultural outcomes and seeks to achieve these over appropriate timeframes.
Who is likely to be most affected by achieving the objective and what are the implications for them?	All resource users will be affected by the achievement of this objective through permitted activity conditions and policies in the PNRP placing requirements on their activities to avoid, remedy or mitigate effects on ecosystem health and mahinga kai. It is reasonable to expect that both urban and rural TAs will be affected by the provisions requiring improvement. Farmers and rural land users in rural areas will be affected by regulatory and non-regulatory moves to improve practices to good management standards and by requirements around. The policies and methods of the proposed Plan, including rules, will help determine how activities should be carried out.
Existing objectives	
Are the existing objectives still relevant or useful?	Various objectives in the RFP take a comparative approach to the proposed objective. In the Regional Freshwater Plan, Objective 4.1.5 safeguards the life supporting capacity of water and aquatic ecosystems and Objective 4.1.6 seeks to protect aquatic vegetation and habitat of fresh water bodies. Objective 5.1.1 is to meet uses and values of water while safeguarding the life-supporting capacity of water and aquatic ecosystems. Objective 6.1.1 seeks to ensure that the flows in rivers and water levels in lakes and wetlands are sufficient to maintain the natural and amenity values of water bodies. In the Regional Coastal Plan, Objective 4.1.4 is to retain the life supporting capacity of land, water and air in the coastal marine area and Objective 4.1.14 recognises and provides for the values of tangata whenua. Objective 10.1.3 states that the quality of water in the coastal marine area is, as far as practicable, consistent with the values of the tangata whenua. These objectives remain relevant but are encompassed within objectives proposed in the PNRP. The proposed objective better integrates water quality, water quantity and aquatic habitat. The proposed objective also better addresses the requirements of the NPS-FM, in particular the requirement for limits to be addressed in policies and methods of the proposed Plan.

4.3.3 Objective O27

Vegetated riparian margins are established and maintained.

Proposed Objective O27 is to establish and maintain vegetated riparian margins.

Riparian plants are a vital component of aquatic ecosystems. Vegetation provides shade, shelter, habitat complexity, and a source of food for aquatic animals. Riparian vegetation also improves water quality by reducing the over-land flow of sediment and phosphorus, and shade can reduce water temperature and nuisance algal blooms. Stream banks with planted riparian margins are less vulnerable to erosion and damage from flooding and livestock (see Section 32 report: Livestock access, break-feeding and cultivation).

The objective is relevant to the issue identified during the development of the proposed Plan that indigenous ecosystems and ecosystems of importance to indigenous species are significantly reduced in extent and continue to be degraded. The objective is relevant to section 6(a) of the RMA which makes the preservation the natural character of lakes and rivers and their margins a matter of national importance, and section 7(d) – having regard to the intrinsic value of ecosystems. The objective is also relevant to the implementation of the NPS-FM (Objective A1(a)), and the RPS Policy 18.

The establishment and maintenance of riparian margins will be achieved through a combination of regulatory and non-regulatory methods in the proposed Plan. The main emphasis is on non-regulatory methods including Methods M12 and M17.

Table 3 presents the appropriateness of Objective O27 in terms of relevance, usefulness, reasonableness and achievability. This assessment shows that the objective is appropriate to achieve the purpose of the RMA.

Table 3: Appropriateness of Objective O27

Vegetated riparian margins are established and maintained.	
Relevance	
Directly related to resource management issue?	Yes, issue 4.2
Will achieve one or more aspects of the purpose and principles of the RMA?	Part 2, sections 5(2)(b), 6(a), and 7(d)
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	Yes, directly relevant to s6(e), 6(g), 7(a) and 8
Relevant to statutory functions or to give effect to another plan or policy (i.e. NPS, RPS)?	RMA section 30(c) functions and RPS Policy 61 allocation of responsibilities make WRC the authority responsible for developing objectives, policies and methods, including rules under the regional plan to control the use of land to maintain and enhance ecosystems in water bodies and coastal water. NPS-FM Objectives A1(a) and C1, RPS (2013) Policy 18

Usefulness	
Will effectively guide decision-making?	Decision makers will be aware that activities damaging riparian margins are contrary to this objective. It may also be used to guide the development of offsetting proposals.
Meets sound principles for writing objectives?	This objective is a clear and complete sentence related to an issue. This objective is not time-bound as it aims to deliver benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	The objective will be achieved when the destruction of riparian margins is reduced (including through stock access), and they are planted with appropriate species. The Section 32 report: Livestock access, break-feeding and cultivation indicates the current length of fenced and vegetated riparian margins in the region which can be monitored over the life of the proposed Plan.
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	Vegetated riparian margins will be established and maintained within the life of the Plan.
Does WRC have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	RMA sections 9 and 13 This objective will be achieved through the policies, rules, and other methods in the PNRP.
What other parties can WRC realistically expect to influence to contribute to this outcome?	Landowners with rivers, streams, lakes, wetlands, and existing riparian margins on their property. Companies and organisations with an interest in reducing agricultural impacts on water bodies.
What risks have been identified in respect of outcomes?	The risks to water quality and aquatic biodiversity will be reduced through the achievement of this objective.
Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally or economically or socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it. The costs are associated with purchasing appropriate plants, and time taken to prepare the riparian margin and plant. There may be some costs associated with the control of weeds during the time it takes for the riparian plants to establish and dominate the site. Some of these costs will be covered by GWRC.
Who is likely to be most affected by achieving the objective and what are the implications for them?	Landowners with rivers, streams, lakes and wetlands on their property may need to retire the riparian margin from grazing or other productive uses.
Existing objectives	
Are the existing objectives still relevant or useful?	The operative RFP Objectives 4.1.4 and 4.1.5 are not specific enough to ensure that this environmental outcome occurs.

4.3.4 Objective O29

Use and development provides for the passage of fish and koura, and the passage of indigenous fish and koura is restored.

This objective is to ensure that use and development does not create physical, chemical or biological barriers to the migration and dispersal of fish and koura. The objective also addresses restoring the passage of indigenous species where it is currently impeded. The removal of existing barriers is to be carefully managed in order to avoid unintended consequences such as the introduction of predators to previously inaccessible indigenous fish populations.

Objective O18 which relates to the importance of estuarine ecosystems is also relevant to fish passage as so many of the region's indigenous freshwater species are diadromous – spending part of their lifecycle in the marine environment, and passing through estuaries into rivers and streams during their migrations. Estuaries must therefore provide suitable habitat and conditions for these species (see the discussion of Objective O18 in section 4.3.1).

Objective 29 is relevant to section 7(d) of the RMA – having particular regard to the intrinsic value of ecosystems, and section 7(h) having particular regard to the protection of the habitat of trout and salmon. It is also relevant to section 66(2)(c)(iii) which requires regional plans to have regard to regulations relating to fisheries resources (see section 3.2.7 of this report on the New Zealand Freshwater Fisheries Regulations).

The objective is useful in making it plain to resource users, consent applicants and consent advisers that maintaining fish passage is an obligation.

This objective will be achieved through a combination of regulatory and non-regulatory methods in the proposed Plan. The maintenance of fish passage will be achieved through regulatory methods, including permitted activity conditions and conditions on resource consents. The main emphasis for the restoration of fish passage is on non-regulatory Method M21.

Table 4 discusses the appropriateness of Objective O29 in terms of relevance, usefulness, reasonableness and achievability. This assessment shows that the objective is appropriate to achieve the purpose of the RMA.

Table 4: Appropriateness of Objective O29

Use and development provides for the passage of fish and koura, and the passage of indigenous fish and koura is restored.	
Relevance	
Directly related to resource management issue?	Yes, Issue 4.2
Will achieve one or more aspects of the purpose and principles of the RMA?	Part 2, section 5(2)(b), 6(c), 7(d) and 7(h)
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	Yes, directly relevant to s6(e), 6(g), 7(a) and 8

Relevant to statutory functions or to give effect to another plan or policy (i.e. NPS, RPS)?	RMA section 30(c) functions and RPS Policy 61 allocation of responsibilities make WRC the authority responsible for developing objectives, policies and methods, including rules under the regional plan to control the use of land to maintain and enhance ecosystems in water bodies and coastal water. RMA sections 7(h), RPS (2013) Policies 18 and 19, New Zealand Freshwater Fisheries Regulations (1983) Part 6.
Usefulness	
Will effectively guide decision-making?	This objective will guide the processing of resource consents for activities that may temporarily or permanently be a barrier to the passage of fish. It informs policies in the proposed Plan, and permitted activity conditions for activities in the beds of lakes and rivers.
Meets sound principles for writing objectives?	This objective is a clear and complete sentence related to an issue. This objective is not time-bound as it aims to deliver benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Resource consent will not be granted for new structures that do not provide for fish passage. New structures that are found to fail to provide fish passage will be in breach of their consent and require remedial action. Monitoring of consents will show that this objective is being met or not. GWRC has databases of structures known to be barriers to fish passage, and fish distribution. The removal of existing barriers to facilitate the passage of indigenous fish will be planned in consultation with this information.
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	This objective should have immediate effect. It places an expectation on new activities and development. It sets out a strategic direction for the appropriate removal of existing barriers over time.
Does WRC have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	RMA sections 12, 13, 14 This objective will be achieved through the policies, rules, and other methods in the proposed Plan.
What other parties can WRC realistically expect to influence to contribute to this outcome?	This objective is aligned with the operational mandate of the Department of Conservation regarding the freshwater fish regulations. Fish & Game New Zealand will also have a part to play regarding the distribution of trout and salmon.
What risks have been identified in respect of outcomes?	The risks to indigenous aquatic species will be reduced through the achievement of this objective. There is a risk that barriers to fish passage will be removed without adequate consideration of unwanted species moving into areas from which they have been excluded. Feedback on the objective often misses the final clause – that indigenous fish passage should be restored where appropriate. In some cases it will not be appropriate, and WRC has the means to identify this.

Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally or economically or socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it. There is a strong desire from the community and particularly tangata whenua that this objective be achieved. Providing for fish passage for new structures in streams, such as dams, is accepted as international best practice. Retro-fitting fish passage into existing structures can be very expensive, so ensuring they are provided for in new structures is the preferred approach.
Who is likely to be most affected by achieving the objective and what are the implications for them?	Applicants will shoulder the costs involved in providing for fish passage in the planning and construction of new structures in the beds of lakes and rivers. Existing consent holders will face costs involved in restoring fish passage where this is appropriate.
Existing objectives	
Are the existing objectives still relevant or useful?	No, the operative objectives are not relevant or useful to addressing this resource management issue.

4.3.5 Objective O30

The habitat of trout identified in Schedule I (trout habitat) is maintained and improved.

Objective O30 is to maintain and improve the habitat of trout in Schedule I.

Section 7(h) of the RMA requires particular regard to be given to the protection of trout habitat. The objective is appropriate because it reflects the requirement of the RMA to have particular regard to the habitat of trout in the Wellington Region. Because the NPS-FM requires that the life-supporting capacity of fresh water is safeguarded and that water quality is maintained or improved, the components that define trout habitat, in general, will also be required to be maintained or improved.

Table 5 presents the appropriateness of Objective O30 in terms of relevance, usefulness, reasonableness and achievability. This assessment shows that the objective is appropriate to achieve the purpose of the RMA.

Table 5: Appropriateness of Objective O30

The habitat of trout identified in Schedule I (trout habitat) is maintained and improved.	
Relevance	
Directly related to resource management issue?	Yes, this objective addresses Issues 4.3, 4.6 and 4.8.
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes, RMA section 7(h).
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	No.

Relevant to statutory functions or to give effect to another plan or policy (e.g. sections 30, and any relevant NPS, NES, NZCPS, RPS)?	RMA section 30.
Usefulness	
Will effectively guide decision-making?	The objective will guide the processing of resource consents for activities being undertaken in areas identified as important trout habitat.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	This objective is a clear and complete statement relevant to the requirement under RMA section 7(h) to have particular regard to the habitat of trout
Consistent with other objectives?	Yes, the objective is consistent with other objectives and will work together with provisions for indigenous biodiversity to maintain and improve environmental quality.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Yes, the achievement of the objective will be observed by any decline in the quality of the environment of identified rivers through state of the environment reporting.
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	This objective will be achieved in the life of the plan.
Does WRC have the powers, and policy tools to ensure that they can be achieved? Can you describe them?	Yes, WRC has appropriate functions and powers to control water quality, water quantity, aquatic ecosystems and habitat under section 9 to 15 and section 30 of the RMA to ensure the objective can be achieved.
What other parties can WRC realistically expect to influence to contribute to this outcome?	Other parties involved in achieving this objective are: The Wellington Fish & Game Council All resource-users Government departments (e.g. DOC) Landowners.
What risks have been identified in respect of outcomes?	Minor adverse effects as a result of small activities carry the risk accumulating into a total adverse effect that results in significant deterioration of environmental quality.
Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally or economically or socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it.
Who is likely to be most affected by achieving the objective and what are the implications for them?	People undertaking all activities in fresh water including the beds of lakes and rivers will be affected by the objective. Trout fishers will benefit from the objective.

Existing objectives	
Are the existing objectives still relevant or useful?	No, there are no operative objectives in the RFP.

4.3.6 Objective O31

Outstanding water bodies and their significant values are protected.

Objective O31 is to protect outstanding water bodies and their significant values.

Objectives A2 and B4 of the NPS-FM require the protection of the significant values of outstanding freshwater bodies. This links to sections 6(a), (b) and (c) of the RMA, being the preservation of natural character, the protection of outstanding natural features, and the protection of areas of significant vegetation and significant habitats of indigenous fauna.

This Section 32 report covers the provisions in the proposed Plan for the protection of outstanding rivers and lakes. Outstanding wetlands and their significant values are discussed in the Section 32 report: Wetlands.

Table 6 discusses the appropriateness of this objective in terms of relevance, usefulness, reasonableness and achievability. This assessment shows that the objective is appropriate to achieve the purpose of the RMA and give effect to the NPS-FM.

Table 6: Appropriateness of Objective O31

Outstanding water bodies and their significant values are protected.	
Relevance	
Directly related to resource management issue?	Yes, Issues 4.3 and 4.4 (Parminter 2011)
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes, Part 2, sections 5, 6(a), 6(b), 6(c).
Relevant to Māori environmental issues? (sections 6(e), 6(g), 7(aa), 8)	Yes.
Relevant to statutory functions or to give effect to another plan or policy (e.g. section 30, and any relevant NPS, NES, NZCPS, RPS)?	NPS-FM requires the significant values of outstanding water bodies to be protected (Objectives A2 and B4).
Usefulness	
Will effectively guide decision-making?	The objective will guide decision making by distinguishing between how outstanding water bodies are to be regarded vs other water bodies
Meets sound principles for writing objectives?	This objective is a clear and complete sentence related to an issue.

Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.
Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Yes, There are very few activities that occur in outstanding water bodies. It will be clear when new activities occur because resource consent will be required and the management of any specific resource consent will be measurable.
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	This objective will be achieved in the life of the plan. In essence the objective sets out a state that is to be maintained.
Does WRC have the powers, and policy tools to ensure that they can be achieved? Can you describe them?	Yes, WRC has the ability to control water quality, water quantity and the beds of outstanding water bodies.
What other parties can WRC realistically expect to influence to contribute to this outcome?	The owners of land in and around outstanding water bodies, territorial authorities, roading authorities, Department of Conservation.
What risks have been identified in respect of outcomes?	The risk of land uses that have adverse effects on outstanding water bodies.
Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally or economically or socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it.
Who is likely to be most affected by achieving the objective and what are the implications for them?	People who use water resources for their intrinsic, aesthetic and recreational values.
Existing objectives	
Are the existing objectives still relevant or useful?	There are no operative objectives specifically addressing this natural resource management issue as the NPS-FM was produced in 2014.

4.3.7 Objective O35

Ecosystems and habitats with significant indigenous biodiversity values are protected and restored.

The region's indigenous ecosystems have been significantly reduced in extent, and the remaining indigenous ecosystems continue to be degraded or lost through use and development, and through the incremental and cumulative impacts of human activities. Indigenous species that rely on these ecosystems face increasing pressure from the loss and degradation of habitat.

The RPS directs the proposed Plan to identify and protect ecosystems and habitats with significant indigenous biodiversity values (Policies 23 and 24).

Provisions in the proposed Plan for the protection of significant indigenous biodiversity are relevant to:

- Section 6(c) and 7(g) of the RMA
- Policy 11 of the NZCPS in relation to indigenous biodiversity in the coastal marine area
- Objectives A2 and B4 of the NPS-FM in relation to wetlands (discussed in the Section 32 report: Wetlands).

To achieve this objective, the proposed Plan contains schedules of ecosystems and habitats that meet the criteria in RPS Policy 23, and protects them through policies, rules, and other methods.

Table 7 discusses the appropriateness of Objective O35 in terms of relevance, usefulness, reasonableness and achievability. This assessment shows that the objective is appropriate to achieve the purpose of the RMA and the specific direction given in the RPS.

Table 7: Appropriateness of Objective O35

Ecosystems and habitats with significant indigenous biodiversity values are protected and restored.	
Relevance	
Directly related to resource management issue?	Yes, Issue 1.11.
Will achieve one or more aspects of the purpose and principles of the RMA?	Part 2, sections 6(c), 7(d), 7(f), 7(g).
Relevant to Māori environmental issues? (sections 6(e),6(g),7(aa),8)	Yes, directly relevant to sections 6(e), 6(g), 7(a) and 8.
Relevant to statutory functions or to give effect to another plan or policy (i.e. NPS, RPS)?	RMA section 30(1)(c) functions and RPS Policy 61 allocation of responsibilities make WRC the authority responsible for developing objectives, policies and methods, including rules under the regional plan to control the use of land to maintain and enhance ecosystems in water bodies and coastal water, explicitly including wetlands. NZCPS Policy 11, NPS-FM Objectives A2 and B4, RPS Policies 23 and 24.
Usefulness	
Will effectively guide decision-making?	This objective will effectively guide the processing of resource consents for activities being undertaken in ecosystems and habitats identified in the proposed Plan as having significant indigenous biodiversity values.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	This objective is a clear and complete sentence related to an issue. This objective is not time-bound as it aims to deliver restoration benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.

Achievability	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Yes, the achievement of this objective will become clear in the future through reporting on the number of sites or hectares protected for indigenous biodiversity values. Continued loss of protected ecosystems or habitats will testify that the objective is not being achieved. State of the environment reporting, monitoring of key native ecosystems (KNEs), and site-specific reporting through resource consents for Restoration Management Plans on the health of protected ecosystems will measure their restoration.
Is it expected that the objective will be achieved within the life of the Plan or is it an aspirational objective that will be achieved sometime in the future?	During the life of the plan significant ecosystems and habitats will be protected from more than minor adverse effects of activities managed by the proposed Plan. The health of significant wetlands will be improved by the rules reducing their loss and degradation, natural recovery, and active restoration through the non-regulatory methods in the proposed Plan.
Does WRC have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	RMA s9, 12, 13, 14, 15, s30 This objective will be achieved through the policies, rules, and non-regulatory methods in the plan.
What other parties can WRC realistically expect to influence to contribute to this outcome?	Landowners with significant wetlands on their property, companies involved in urban and agricultural expansion, territorial authorities, Department of Conservation, Fish & Game New Zealand, Forest and Bird, Ducks Unlimited, community restoration groups.
What risks have been identified in respect of outcomes?	The risks to indigenous biodiversity will be reduced through the achievement of this objective. Not all pressures on significant wetlands are controlled by the regional plan or the RMA. Climate change also poses a risk to indigenous biodiversity, and the extent and condition of wetlands.
Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally or economically or socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it. The costs of achieving the objective are primarily in the fore-gone opportunity to carry out destructive activities in significant wetlands. There will also be some costs associated with the exclusion of livestock (not including sheep), and loss of income from livestock grazing in wetlands. There are also large economic benefits to landowners with wetlands on their property. When they retain them, they will improve their ecosystem function for water storage, flood protection and nutrient attenuation. If wetlands do not exist to provide these functions they must be constructed, at great expense.
Who is likely to be most affected by achieving the objective and what are the implications for them?	People or agencies undertaking activities will need to consider avoiding significant wetlands, or include the costs of obtaining resource consent and/or measures to avoid, remedy, mitigate or offset the effects of their activities on significant wetlands. Landowners with significant wetland habitat on their property will be most affected by this objective. It will require resource consent for undertaking most activities in the significant wetland on their property and/or measures to avoid, remedy, mitigate or offset the effects of those activities on significant wetland habitat.

Existing objectives	
Are the existing objectives still relevant or useful?	This objective is consistent with two objectives from operative plans: RFP Objective 4.1.6; and Coastal Plan Objective 4.1.6. This is because the direction from the RMA that the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna as a matter of national importance has not changed.

4.3.8 Appropriateness of proposed objectives

The proposed objectives seek to address the shortcomings of the operative provisions, and create a clear and efficient policy framework with which decision-makers and plan users can assess proposals with activities that may affect indigenous biodiversity.

The assessment of the proposed objectives above shows that the proposed objectives are relevant as they:

1. are directly relevant to the issues identified during the development of the proposed Plan.

2. give effect to the RMA, NZCPS, NPS-FM and RPS, and

3. use language and terminology that is consistent with the RMA, NZCPS, NPS-FM and RPS, and

The proposed objectives are useful in achieving the purpose of the RMA as they:

1. are consistent with national and regional direction provided in the NZCPS, NPS-FM and RPS, and

2. guide decision-makers and will work with other objectives in the proposed Plan to achieve the sustainable management of natural resources in the Wellington Region.

The assessments in Tables 4.1 to 4.7 show that the proposed objectives address the shortcomings of the operative provisions, and provides direction for clear and efficient policy tools with which decision-makers and plan-users can assess activities related to specific components of aquatic ecosystem discussed in this report.

5. Assessment of the efficiency and effectiveness of the proposed policies, rules and methods

Section 32(1)(b) requires that the proposed provisions (policies, rules and other methods) to achieve the objectives be examined by:

- Identifying other reasonably practicable options for achieving the objectives

- Assessing the efficiency and effectiveness of the provisions in achieving the objectives; and

- Summarising the reasons for deciding on the provisions

The discussion of the policies and methods to achieve the objectives is organised according to the specific components of aquatic ecosystems discussed in this report. Aquatic ecosystem health is discussed with the provisions specific to riparian margins, fish passage, trout habitat, and estuaries. Indigenous biodiversity is divided into a discussion of provisions specific to the management of significant indigenous biodiversity values, and outstanding water bodies.

Despite this structure for the discussion, it is important to note that the provisions for ecosystem health, estuaries, riparian margins, fish passage and trout habitat will contribute to the management of ecosystems and habitats with significant indigenous biodiversity values, and outstanding water bodies. For example, the provision and restoration of fish passage throughout the region will contribute to protecting the populations of indigenous migratory fish species identified in Schedule F1 (rivers and lakes with significant ecosystems).

As another example, riparian management will improve water quality, reduce contaminant inputs from runoff, provide food and shade in significant ecosystems as well as everywhere else in the region. Further, places that are identified in Schedule F (ecosystems and habitats with significant indigenous biodiversity values), will be prioritised for the development of riparian management plans, and assistance with the costs associated with riparian fencing, planting and pest control (Method M12).

The tables in the Appendix provide an outline of the efficiency and effectiveness of the provisions discussed below.

5.1 Aquatic ecosystem health

5.1.1 Aquatic ecosystem health and mahinga kai

Safeguarding aquatic ecosystem health and mahinga kai is a central element of the proposed Plan, with many other objectives and a huge number of policies, rules and methods contributing to its achievement. These provisions are not all discussed in this section or this report, but rather are covered in other section 32 reports including those addressing Māori values, water quality, discharges to water, wetlands, beds of lakes and rivers, and livestock exclusion.

As can be seen in Table 8 below, safeguarding aquatic ecosystem health and mahinga kai are components of many policies in the proposed Plan. Table 5.1 shows Objective O25 and how it will be achieved through relevant policies, rules and other methods.

Table 8: Primary policies relevant to achieving Objective O25

Objective	O25 Safeguarding aquatic ecosystem health and mahinga kai
Policies	P4 Minimising adverse effects P8 Beneficial activities P22 Ecosystem values of estuaries P23 Restoring Te Awarua-o-Porirua Harbour, Wellington Harbour (Port Nicholson), and Lake Wairarapa P31 Aquatic ecosystem health and mahinga kai P32 Adverse effects on aquatic ecosystem health and mahinga kai P33 Protecting indigenous fish habitat P34 Fish passage P35 Restoring fish passage P36 Effects on indigenous bird habitat P37 Values of wetlands P38 Restoration of wetlands P39 Adverse effects on outstanding water bodies P40 Ecosystems and habitats with significant indigenous biodiversity values P41 Managing adverse effects on ecosystems and habitats with significant indigenous biodiversity values P42 Protecting and restoring ecosystems and habitats with significant indigenous biodiversity values P43 Restoration and management plans P62 Promoting discharges to land P65 Minimising effects of nutrient discharges P66 National Policy Statement for Freshwater Management policy for discharges to water P67 Minimising effects of discharges P70 Managing point source discharges for aquatic ecosystem health and mahinga kai P71 Quality of discharges P72 Zone of reasonable mixing P75 Second-stage local authority network consents P78 Managing stormwater from large sites P80 Replacing wastewater discharge consents P82 Mana whenua values and wastewater discharges P101 Management of riparian margins P105 Protecting trout habitat P110: National Policy Statement for Freshwater Management requirements for water takes, damming and diversion P122 Flow variability
Rules	Due to the integrated nature of the proposed Plan, virtually all rules managing discharges to water, discharges to land, wetlands and the beds of lakes and rivers, water allocation and damming and diversion of water, and the management of coastal activities will contribute to achieving this objective.
Methods	There are no methods to specifically address this objective, but as with the rules, many proposed methods will ultimately contribute to its achievement

An overarching policy for aquatic ecosystem health and mahinga kai in the proposed Plan is Policy P31. This policy specifies how aquatic ecosystem health and mahinga kai shall be maintained or restored by managing the effects

of use and development on physical, chemical and biological processes. The policy seeks to achieve this through minimising adverse effects on aquatic habitat, including avoiding the creating of barriers to the migration or movement of indigenous aquatic species, restoring habitats where appropriate and avoiding the introduction, and restricting the spread, of aquatic pest plants and animals.

It is easy to overlook birds as a component of aquatic ecosystems even though many bird species in New Zealand are obligate aquatic species, and others are key components of aquatic ecosystems including apex predators. Policy P36 ensures that the habitats of indigenous birds in wetlands, the beds of lakes and rivers and the CMA are given the same consideration as instream flora and fauna through Policy P31. Policy P36 will be used in the processing of discretionary and non-complying resource consents, and will ensure that the adverse effects of use and development on indigenous bird habitat are considered, and minimised.

Policy P4 provides guidance to Policies P31 and P36 which require that adverse effects be minimised. That is, adverse effects are to be reduced to the smallest amount practicable and include consideration of alternative locations, timing of the activity, the use of good management practice and ensuring the scale of the activity is as small as practicable. It is intended that Policy P4 be used to guide a resource consent assessment of environmental effects for Policies P31 and P36.

Policy P32 sets out the mitigation hierarchy for managing significant adverse effects on aquatic ecosystem health and mahinga kai. This policy makes it clear that applications for resource consents must consider and detail how significant adverse effects will be managed. In its final decisions on appeals to the One Plan[5], the Environment Court deemed it appropriate for a regional plan to state a preference for the way effects on biodiversity should be dealt with, including by instituting a hierarchy.

Significant adverse effects that cannot be completely avoided shall be remedied. Significant adverse effects that cannot be completely remedied shall be mitigated. For residual adverse effects remaining after avoiding, remedying, and mitigating significant adverse effects, it is appropriate to consider the use of biodiversity offsetting. The step-wise structure of this policy is to ensure that significant adverse effects are avoided, remedied and mitigated before offsetting is considered and proposed. In the same decision[5], the Environment Court agreed with the Minister of Conservation that, in developing a planning framework, there is the opportunity to clarify that offsetting is a possible response following mitigation.

Proposals to offset adverse environmental effects on biodiversity values or ecosystem function are becoming more common in consent applications. Biodiversity offsetting is an evolving and contested body of policy and practice, and is still the subject of debate within New Zealand and internationally.

[5] Decision No.[2012] NZEnvC 182: Part 3

The Business and Biodiversity Offsets Programme (BBOP, 2013) defines a biodiversity offset as:

> *'Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground'.*

In New Zealand, DOC led the development of Guidance on Good Practice Biodiversity Offsetting in New Zealand (Anon 2014). This non-statutory guidance document contains an overview of biodiversity offsetting, its application in New Zealand, and the steps necessary to demonstrate good practice when developing and implementing a biodiversity offset. In preparing the guidance it was recognised that the use of biodiversity offsetting as a policy and consenting tool is new and evolving, particularly under the RMA, and that it is not possible to predict the challenges and lessons that each new offsetting proposal will bring.

Policy P32 makes it clear that proposals for mitigation and biodiversity offsetting will be assessed against the principles listed in Schedule G (biodiversity mitigation and offsetting). Schedule G was developed in accordance with the national guidance (above), with the assistance of DOC, and is in line with the proposed NPS for Indigenous Biodiversity. This schedule details the principles that will be used when assessing the adequacy of proposals for mitigation and biodiversity offsetting as part of resource consents issued under this proposed Plan.

There is no other international or national guidance on the use of offsetting for values other than biodiversity, which is why Schedule G is specifically about the mitigation and offsetting of biodiversity values.

The explanation of RPS Policy 43 on protecting aquatic ecological function mentions offsetting effects, so Policy P32 is efficient in making it clear how offsetting will be considered under the proposed Plan. Policy P32 and Schedule G are efficient as they make clear to applicants how proposals for mitigation and offsetting will be assessed.

(a) Costs

There will be additional costs for all regional councils to implement the NPS-FM, including monitoring water quality and ecosystem health parameters.

The costs of establishing whaitua committees and providing them with the information they require is substantial, and there will also be costs associated with plan changes to incorporate material specific to each whaitua at the end of the process. There will be costs to the community through rating for network utilities and resource users to upgrade infrastructure in order to meet new water quality limits introduced in future plan-changes.

(b) Benefits

The benefits of the proposed approach are that it will contribute to WRC achieving the water quality and quantity objectives and policies in the NPS-FM and the NZCPS, and will have gone some way to addressing the issues raised by the public about water quality in the region.

The community will benefit from improved water quality and ecosystem health throughout the region, improved opportunities for contact recreation, improved amenity values, and improvements in the natural character of surface water bodies.

(c) Risk of acting vs not acting

The risk of not acting is that WRC will not succeed in implementing the NPS-FM and NZCPS objectives and policies for improving water quality and ecosystem health and function. There is a risk in the proposed approach of whaitua committees being unable to make recommendations to WRC, or WRC being unable to incorporate whaitua-specific provisions through plan changes.

Table A1 in the Appendix contains an evaluation of the effectiveness and efficiency of the proposed provisions against the status quo, and concludes that the proposed package is the most appropriate to achieve the objective.

5.1.2 Riparian margins

Riparian vegetation contributes to ecosystem health and aquatic habitat quality in a number of ways. Shading reduces water temperature and unwanted algal growth. Vegetation increases in-stream habitat complexity on river banks, and provides a source of food – both plant material and insects that fall into the water.

The operative plans have been found lacking and the current policy approach is unlikely to achieve the proposed Plan objective.

Table 9 shows Objectives O5, O18, O25 and O27 and how they will be implemented through relevant policies, rules and other methods related to riparian management.

Table 9: Primary policies, rules and other methods relevant to achieving Objectives O5, O18, O25 and O27

Objectives	O5 Fresh water bodies and the coastal marine area, as a minimum, are managed to safeguard aquatic ecosystem health and mahinga kai O18 Low energy receiving environments O25 To safeguard aquatic ecosystem health and mahinga kai in fresh water bodies and coastal marine area O27 Vegetated riparian margins are established and maintained.

Policies	P4 Minimising adverse effects P8 Beneficial activities P31 Aquatic ecosystem health and mahinga kai P23 Restoring Te Awarua-o-Porirua Harbour, Wellington Harbour (Port Nicholson), and Lake Wairarapa P99 Livestock access to surface water bodies P100 Riparian margins for cultivation and break-feeding P101 Management of riparian margins
Rules	R94 Cultivation or tilling of land R95 Break-feeding R96 Cultivation and break-feeding R97 Access to the beds of surface water bodies by livestock R98 Livestock access to the beds of surface water bodies
Methods	M12 Sustainable land management practices

The proposed Plan directs an increase in WRC's involvement in the management of riparian margins in comparison to the existing operative plans. However, there are two sets of regulatory provisions that contribute to the establishment of riparian margins. These regulatory provisions also contribute to other wider objectives of the proposed Plan in respect of water quality, aquatic ecosystem health and mahinga kai and the objectives and policies of the NPS-FM.

The proposed Plan promotes riparian retirement and planting through Policy P8 and Policy P101 and the provision of riparian management plans (Method M12).

The regulatory provisions seek to exclude stock from rivers, lakes, wetlands and estuaries (Policy P99, and Rules R97 and R98) and remove the bank from productive land uses such as cultivation and break-feeding (Policy P100, and Rules R94, R95, R96). These provisions do not require the riparian margin to be planted – they work to create a separation between activities and the water. These provisions will incur a cost to the WRC and landowners but they are considered to have significant benefits for water quality and aquatic ecosystem health. The costs and benefits of these provisions are outlined in detail in Section 32 report: Livestock access, cultivation and break-feeding.

The policy framework encourages riparian management from a number of perspectives. Riparian management can contribute to the achievement of a number of proposed Plan objectives.

Policy P8 specifically states that the planting, fencing and retirement of riparian margins is beneficial and generally appropriate. Policy P31 recognises the link between riparian management and aquatic ecosystem health by specifically stating that to maintain and restore aquatic ecosystem health and mahinga kai any adverse effects on riparian habitats should be minimised and they should be restored where practicable. Policy P23 identifies riparian margin management as one of the ways Te Awarua-o-Porirua Harbour, Wellington Harbour (Port Nicholson) and Lake Wairarapa will be restored.

These policies are general policies and are unlikely to incur significant costs to landowners, the community or WRC.

Policy P4 provides guidance to Policies P31 and P100 which require that adverse effects be minimised. That is, adverse effects are to be reduced to the smallest amount practicable and include consideration of alternative locations, timing of the activity, the use of good management practice and ensuring the scale of the activity is as small as practicable. It is intended that Policy P4 be used to guide a resource consent assessment of environmental effects for Policies P31 and P100.

There is also one policy, Policy P101 that directs the non-regulatory approach. "In order to maintain or restore **aquatic ecosystem health** and natural character, and reduce the amount of sediments and nutrients entering **surface water bodies**, good management of riparian margins shall be encouraged including: the exclusion of **livestock**; and the planting of appropriate riparian vegetation; and the management of pest plants and animals."

There is one non-regulatory method that encourages active management of riparian margins. Method M12 states that WRC will develop riparian management plans with landowners and assist with the implementation of these plans, provide plants through the Akura Conservation Centre plant nursery and provide incentives, such as assistance with costs and labour associated with riparian fencing, planting and pest control. The cost associated with this non-regulatory approach will be borne by WRC and the participating landowners.

(a) Costs

In summary, the approach of the proposed Plan incurs higher costs than the operative plan in terms of livestock exclusion and riparian planting. WRC will provide support and incentives to landowners to assist with meeting these additional costs.

(b) Benefits

Riparian fencing and planting has been shown to be very effective at reducing the overland flow of nutrients to water, and improving water quality and aquatic ecosystems. Providing riparian management plans directly to landowners at the property scale is an effective and efficient way to improve riparian management across the region. The benefits of good riparian management are considerably higher than the costs, and the approach will be efficient in improving water quality and aquatic ecosystem health.

(c) Risk of acting vs not acting

The risks of not taking a stronger approach to improving riparian management in the region heavily outweigh the risks of acting. Not adopting a stronger approach will fail to acknowledge the community and iwi support for cleaner rivers, and will not assist WRC in implementing the NPS-FM.

Table A2 in the Appendix contains an evaluation of the effectiveness and efficiency of the proposed provisions against the status quo, and concludes that the proposed package is the most appropriate to achieve the objective.

5.1.3 Fish passage

The management of passage for fish and other aquatic organisms affects ecosystem health in two main ways. First, some species must migrate between different habitats to complete their life cycle. If this migration is blocked or impaired, populations fail to persist through successive generations and eventually are no longer a component of the ecosystem. Second, blocked or impaired passage can reduce habitat availability. This can reduce population numbers, condition, resilience, and in the worst case can result in loss of that population to the ecosystem.

Passage can be impaired through poorly designed or installed structures. These structures can impede passage in a number of ways. Passage may be limited by large drops, high water velocities, perched (undercut) structures, low water depths and the presence of physical barriers, such as dams and tide gates. Migration can also be impaired by water quality barriers, such as low dissolved oxygen concentrations, high turbidity and excessive temperatures.

A 2013 report on the status and management of the longfin eel (PCE 2013), noted that a survey of culverts, fords, diversion structure, weirs and dams in Waikato found that about half of them restrict fish passage in some way due to poor design or installation.

There are 26 freshwater fish species in the rivers, lakes and wetlands in the Wellington Region. According to Allibone *et al.* (2010), over half of the indigenous species have been categorised as 'at risk' and populations of these species are considered to be declining across New Zealand.

Fifteen of the region's 20 indigenous fish species need to migrate between freshwater and the sea during their life (Perrie *et al.* 2012). Their survival depends on it. Fish like whitebait and elvers (young eels) swim up rivers from the sea. They must pass through culverts and over weirs on their journeys. Other freshwater fish, such as the introduced trout, must also be able to move upstream to spawn.

Populations of aquatic organisms other than fish, such as koura (freshwater crayfish) and kakahi (freshwater mussels) can also be adversely affected if their ability to access upstream habitat is restricted.

In some locations, barriers can enhance populations, such as where barriers prevent trout from accessing headwaters that support non-migrating populations of short-jaw kokopu.

As mentioned in section 3.2.7 of this report, fish passage is also regulated under the Freshwater Fisheries Regulations.

The following table shows Objective O29 (relating to fish passage) and how it will be achieved through relevant policies, rules and other methods.

Table 10: Primary policies, rules and other methods relevant to achieving Objective O29

Objective	O29 Use and development provides for the passage of fish and koura, and the passage of indigenous fish and koura is restored.
Policies	P31 Aquatic ecosystem health and mahinga kai P33 Protecting indigenous fish habitat P34 Fish passage P35 Restoring fish passage
Rules	Wetlands general conditions Activities in the beds of lakes and rivers general conditions Coastal marine area general conditions
Method	M21 Fish Passage

The proposed Plan sets out a policy framework to achieve Objective O29 which relies on two policies that recognise the importance of fish passage to aquatic ecosystem health and mahinga kai (Policy P31 and Policy P33). Two additional policies provide explicit policy direction. Policy P34 requires that the creation of new barriers is avoided and Policy P35 works to restore the passage of indigenous aquatic species in the region. These policies drive the regulatory and non-regulatory provisions.

The proposed general permitted activity conditions for rules to manage activities in the beds of lakes and rivers, wetlands and the coastal marine area are important components of implementing the policies for fish passage. The general conditions require that for permitted activities, fish passage is maintained at all times. In addition, the general conditions for activities in the beds of lakes and rivers address the potential for activities to create migration barriers as a result of excessive sediment concentrations. If these conditions are not met, consent is required.

Policy P35 directs the restoration of the passage of indigenous aquatic species. The removal of existing barriers is to be carefully managed in order to avoid unintended consequences such as the introduction of predators to previously inaccessible prey populations. The non-regulatory method (Method M21: Fish passage) is used to provide support and guidance on appropriate methods and locations for providing and restoring fish passage. WRC already has some guidance information on this matter (GWRC 2003) and council officers promote good practice for maintaining and restoring fish passage. A strategic approach will be taken to restore fish passage in priority areas (GWRC 2012).

(a) Costs

The costs (time and financial) to resource users will be similar to those associated with the status quo, but the provisions are more effective at communicating the need to resource users, and in delivering on the objective to restore fish passage where appropriate.

There is a cost to WRC, and therefore to the community through rates, to deliver the non-regulatory method.

(b) Benefits

The policy framework provides greater clarity to plan users than the operative framework. The maintenance and restoration of fish passage in the region is a priority for the proposed Plan and an important value of the community. This policy approach is also an important part of protecting the indigenous biodiversity values of the rivers and lakes listed in Schedule F1.

(c) Risk of acting vs not acting

Many of our indigenous fish species are threatened or at risk. Most of these species need to migrate between freshwater and the sea to complete their life cycle. Therefore the risk of not including provisions in the proposed Plan to provide and restore fish passage creates an unacceptable risk to threatened or at risk fish species, and indigenous biodiversity in the Wellington Region.

If no specific provisions were included, the proposed Plan would not give effect to sections 6(c), 7(d) and 7(h) of the RMA and Policies 18 and 19 of the RPS.

Table A3 in the Appendix contains an evaluation of the effectiveness and efficiency of the proposed provisions against the status quo, and concludes that the proposed package is the most appropriate to achieve the objective.

5.1.4 Trout habitat

When exercising functions and powers to prepare regional plans, WRC is required under section 7(h) of the RMA to have particular regard to the protection of the habitat of trout.

Although trout are not indigenous to New Zealand, the protection of trout habitat can also protect components of ecosystem health that are important to indigenous species. The protection of trout habitat can also, in some but not all locations, result in the protection of ecosystem services, amenity, contact recreation, Māori customary use and mahinga kai. For example, trout require water that is relatively clean and well-oxygenated, that supports abundant macroinvertebrates (aquatic insects) and contains substrates that are free of deposited sediments (Ausseil 2013). These are some of the basic components that are also used to define ecosystem health (see Objective O25).

Table 11 gives the relevant policies and methods that will achieve Objective O30 (trout habitat).

Table 11: Primary policies, rules and other methods relevant to achieving objective O30

Objective	O30 Habitat of trout
Policies	P105 Protecting trout habitat P4 Minimising adverse effects
Rules	General conditions for the beds of rivers and lakes R97 Access to the beds of surface water bodies by livestock R98 Livestock access to the beds of surface water bodies

Proposed Policy P105 integrates matters of particular relevance to protecting important trout habitat identified in Schedule I. The matters to be given particular regard include water quality, flows, habitat configuration, fish passage and trout spawning habitat. Other policies in the proposed Plan that contribute to implementing the objective of maintaining and improving trout habitat include policies specific to water allocation, water quality and aquatic ecosystem health, in particular, indigenous fish habitat.

Policy P4 provides guidance to Policy P105 which requires that adverse effects on trout spawning waters, and changes in flow regimes be minimised. That is, adverse effects are to be reduced to the smallest amount practicable and include consideration of alternative locations, timing of the activity, the use of good management practice and ensuring the scale of the activity is as small as practicable. It is intended that Policy P4 be used to guide a resource consent assessment of environmental effects for Policy P105.

Rivers with important trout habitat are listed in Schedule I of the proposed Plan and are separated into rivers important for fishery recreation value and rivers important for trout spawning. Recreational value is based on Wellington Fish & Game Council surveys of places where people fish (reports include Unwin 2003, 2009, 2013; Tahere 2015). Trout spawning reaches are particularly important habitat because they are sources of recruitment for the trout fishery (Ausseil 2013).

Rules that specifically address trout habitat are the rules for livestock access (R97 and R98) and the rules for activities in the beds of lakes and rivers that refer to general conditions (section 5.5.4 of the proposed Plan).

The permitted activity rule for livestock access requires that cattle, farmed deer and pigs are excluded from important trout spawning reaches identified in Schedule I. Trout use their bodies to dig nests in the gravel beds of streams and rivers, where they lay their eggs. Successful incubation depends on clean, oxygenated water flowing through the nest. Livestock access can kill developing embryos by trampling the nests, increasing inputs of sediment that smother the eggs, and decreased dissolved oxygen concentrations in the water column as a result of increased nutrient inputs from direct defecation. Permitted activity rules for livestock are discussed further in Section 32 report: Livestock access, break-feeding and cultivation.

The permitted rules for activities in the beds of lakes and rivers refer to a suite of general conditions related to protecting water quality that is important for the protection of trout habitat. The general conditions also specifically require that works not occur during the trout spawning period of 31 May through 31 August in important trout spawning reaches identified in Schedule I. In addition, general conditions are used to manage the potential for activities to create migration barriers, including migration barriers as a result of excessive sediment.

Trout habitat is also protected in the proposed Plan through the use of allocations for water takes and the management of minimum flows (see Section 32 report: Water quantity).

(a) Costs

The proposed rules will result in additional costs to some livestock owners who will need to exclude their animals from important trout spawning habitat. The rule, acknowledges this additional cost through the provision of a seven year transition for the rule to come into effect. The general conditions for activities in the beds of lake and rivers can also result in additional costs for other resource users.

(b) Benefits

The increased protection of trout habitat will benefit the recreational value of the region's waters for trout fishers. In addition, because so many of the components of trout habitat are critical components of ecosystem health, the provisions will also benefit ecosystem health, including in some locations, indigenous biodiversity.

(c) Risk of acting vs not acting

Section 7(h) of the RMA requires the proposed Plan to have particular regard to the habitat of trout. There is a risk that the proposed Plan would not give effect to the RMA if it did not have any provisions specific to trout habitat.

Table A4 in the Appendix contains an evaluation of the effectiveness and efficiency of the proposed provisions against the status quo, and concludes that the proposed package is the most appropriate to achieve the objective.

5.1.5 Estuaries

Estuaries are partially enclosed bodies of water where sea water meets and mixes with freshwater. Estuaries include some mouths of coastal rivers, as well as coastal lagoons and wet habitat of open, or temporarily closed, coastal bays. Estuaries come in all shapes and sizes. The key characteristic is that all estuaries share a mixing of fresh and saline waters in the coastal environment.

The Department of Conservation has drafted an inventory of estuaries in the Wellington Region (Todd *et al.*, in prep). This report notes that estuaries can provide the following values:

- Important role as nursery grounds for a range of fish species
- Intertidal sandflats and mudflats provide important feeding areas for fish and birds
- Seagrass is very productive and has an important role in food webs plus it is critical habitat
- Various marine animals use the marginal vegetation, such as salt marsh, for parts of their lifecycles, such as fish spawning
- Vegetation provides organic matter that inputs into food-webs
- Vegetation is used by a range of birds, insects and lizard species

Estuaries are one of the most productive ecosystems on earth. They can be extremely rich in organic matter and nutrients which provide food to sustain a network of bacteria, invertebrates, fish, birds, marine mammals and people (Todd *et al.*, in prep).

Te Awarua-o-Porirua Harbour (including Pauatahanui Inlet) is an important estuary both ecologically and to mana whenua. The ecological health and functioning of Waikanae estuary has been degraded, however, recent restoration programmes have improved its ecological integrity. Some estuaries and estuarine-specific habitats are listed in Schedules F4 and F5 of the proposed Plan (see section 5.2 of this report).

Estuaries that do not have significant values are still ecologically important, and highly valued by the communities that live nearby. Improving their ecological health may lead them to having significant values and important biodiversity in the future.

The following table shows Objective O18 (relating to estuaries) and how it will be achieved through relevant policies, rules and other methods.

Table 12: Primary policies, rules and other methods relevant to achieving Objective O18

Objective	O18 Low energy receiving environments
Policies	P9 Public access to and along the coastal marine area and the beds of lakes and rivers P22 Ecosystem values of estuaries P23 Restoring Te Awarua-o-Porirua Harbour, Wellington Harbour (Port Nicholson) and Lake Wairarapa P31 Aquatic ecosystem health and mahinga kai
Method	M8 Te Awarua-o-Porirua Harbour restoration M9 Wairarapa Moana M22 integrated management of the coast

The objective is supported by Policy P31 (ecosystem health), Policy P22 (values of estuaries) and Policy P9 (public access). See the Section 32 report: Recreation, public access and open space for discussion of Policy P9.

The primary policy for this objective is Policy P22 which directs that significant adverse effects on the ecosystem values of estuaries is avoided to protect their value as a habitat for plants, birds and fish, and as nursery for fish stocks. The use of this policy will be triggered by applications for discretionary and non-complying activities within an estuary, or nearby with the potential for adverse effects on an estuary.

The primary means of improving the health and function of estuaries is by reducing the amount of sediment and other contaminants discharged to estuaries from rivers, and in some cases urban stormwater and wastewater discharged directly to estuaries. All of the policies and rules in the proposed Plan that contribute to improving the quality of fresh and coastal waters will contribute to achieving this objective.

The policy also will be aided by the implementation of Method M22 which will improve communication and information sharing between agencies with regulatory and governance responsibilities in the CMA. WRC will seek to increase protection of coastal areas by working across jurisdictional boundaries

to develop a shared approach for the management of the coastal marine area – including estuaries.

The objective and policy approach sets out a deliberate path in the proposed Plan for the special treatment of estuaries in the region, so that their future is secured as important areas for ecological functioning, and for people and communities.

Policy P23 is a policy specifically directing the restoration of the health and significant values of Te Awarua-o-Porirua Harbour, Wellington Harbour (Port Nicholson) and Lake Wairarapa. These are the three largest water bodies in the region and are the receiving environments for contaminants, particularly sediment, from sizable and/or highly populated catchments. As well as being under ecological pressure by being receiving environments, they are under social pressure to be maintained or restored to good health. These water bodies are valued in many different ways by the people and communities that live around them and use them for economic and social well-being.

Ecological restoration of estuaries or other water bodies is always a long-term project – even more so when there are cities on their margins as is the case for Wellington Harbour (Port Nicholson) and Te Awarua-o-Porirua Harbour, or when they are at the bottom of a large agricultural catchment as for Lake Wairarapa. Industries and cities cannot stop having effects overnight, but can be reduced over time as the provisions in this plan take hold. Resource consents and their conditions will result in the upgrade of infrastructure, improvements in the treatment of stormwater and wastewater, and contaminants will be discharged to land or otherwise prevented from entering water.

Policy P23 specifically directs the management of sediment and pollutant inputs, erosion-prone land and riparian margins in the catchments of these receiving environments to aid their restoration over time. Methods M8 and M9 will implement planting and pest management programmes.

(a) Costs

The costs fall to resource-users that are required to apply for resource consent to perform activities with the potential for more than adverse effects on estuaries. This cost is justified as estuaries, like wetlands and other important ecological areas, have been affected by use and development and their condition can be improved to a higher functioning level. The proposed Plan objective and policy format provides for the benefits of estuaries whilst not requiring undue costs for activities that cause adverse effects.

(b) Benefits

The benefits of the proposed Plan approach are improved relationships between key government agencies, tangata whenua and key stakeholders in the protection and restoration of estuaries in the region.

(c) Risk of acting vs not acting

The proposed Plan has sufficient information to take a strong and clear approach to protecting and preserving estuaries. The proposed Plan must give

effect to the NZCPS and, given the information that is available, it is concluded that the objective and policy package is the most efficient and effective for improving the ecological health of estuaries in the region.

Table A5 in the Appendix contains an evaluation of the effectiveness and efficiency of the proposed provisions against the status quo, and concludes that the proposed package is the most appropriate to achieve the objective.

5.2 Indigenous biodiversity

As discussed in section 1 of this report, indigenous species are the 'native' components of aquatic ecosystems. Indigenous biodiversity includes species that also occur naturally in other countries, and that migrate between countries and hemispheres, such as many of New Zealand's migrant aquatic birds.

Section 6(c) of the RMA makes "the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna" a matter of national importance. Policy 11 of the NZCPS directs regional plans to protect indigenous biodiversity in the coastal environment, and provides guidance as to what requires protection. The RPS directs the regional plan to identify and protect ecosystems and habitats with significant indigenous biodiversity values, with RPS Policy 23 containing criteria to identify these places by codifying RMA section 6(c) and covering NZCPS Policy 11.

RPS Policy 23: *"…Regional plans shall identify and evaluate indigenous ecosystems and habitats with significant indigenous biodiversity; these ecosystems and habitats will be considered significant if they meet one or more of the following criteria:*

> *(a) Representativeness: the ecosystems or habitats that are typical and characteristic examples of the full range of the original or current natural diversity of ecosystem and habitat types in a district or region, and:*
>
> > *(i) Are no longer commonplace (less than about 30% remaining); or*
> >
> > *(ii) Are poorly represented in existing protected areas (less than about 20% legally protected)*
>
> *(b) Rarity: the ecosystem or habitat has biological or physical features that are scarce or threatened in a local, regional or national context. This can include individual species, rare and distinctive biological communities and physical features that are unusual or rare.*
>
> *(c) Diversity: the ecosystem or habitat has a natural diversity of ecological units, ecosystems, species and physical features within an area.*
>
> *(d) Ecological context of an area: the ecosystem or habitat:*

(i) Enhances connectivity or otherwise buffers representative, rare or diverse indigenous ecosystems and habitats; or

(ii) Provides seasonal or core habitat for protected or threatened indigenous species

(e) Tangata whenua values: the ecosystem or habitat contains characteristics of special spiritual, historical or cultural significance to tangata whenua, identified in accordance with tikanga Māori .”

As mentioned earlier in this report, the NPS-FM also requires the proposed Plan to protect the significant values of outstanding water bodies. Outstanding water bodies are those *water* “bodies identified in a regional policy statement or regional plan as having outstanding values, including ecological, landscape, recreational and spiritual values” (NPS-FM definition).

The Ministry for the Environment implementation plan[6] for the NPS-FM estimates that guidance on outstanding water bodies will be started in 2016 and available in 2017. As there is no existing national guidance for identifying “*the significant values of outstanding water bodies*”, WRC has used the RPS criteria for identifying *significant indigenous biodiversity values*, to identify outstanding water bodies.

In the proposed Plan, outstanding water bodies are identified only for having *significant indigenous biodiversity values* – though other values are mentioned in the NPS-FM, and will be investigated through a non-regulatory method in the proposed Plan.

Wetlands with significant indigenous biodiversity values and outstanding wetlands are discussed in the Section 32 report: Wetlands. Ecosystems and habitats identified as significant for having tangata whenua values (criterion (d)) are not discussed in this report – but rather, the Section 32 report: Māori values.

5.2.1 Ecosystems and habitats with significant biodiversity values

The indigenous biodiversity component of this report is concerned with the protection of ecosystems and habitats identified using the criteria in RPS Policy 23. This protection is achieved by scheduling these ecosystems and habitats, applying a strong policy approach including a mitigation hierarchy, and specific rules for activities occurring in scheduled areas that are likely to have adverse effects on the significant biodiversity values.

Ecosystems and habitats with significant indigenous biodiversity values are listed in Schedule F in the proposed Plan. These schedules are:

- Schedule F1: Rivers and lakes with significant indigenous ecosystems (macroinvertebrate health, threatened fish, migratory fish, and inanga)

[6] http://www.mfe.govt.nz/fresh-water/tools-and-guidelines/implementing-national-policy-statement-freshwater-management-8

- Schedule F1b: Known rivers and parts of the coastal marine area with inanga spawning habitat
- Schedule F1c: Lakes with significant aquatic plant communities
- Schedule F2: Habitats for indigenous birds: (a) rivers; (b) lakes; and (c) coastal marine area.
- Schedule F3: Identified significant natural wetlands
- Schedule F4: Ecosystems with significant indigenous biodiversity values in the coastal marine area
- Schedule F5: Habitats with significant indigenous biodiversity values in the coastal marine area

The same policies (P40 to P42) apply to all of these schedules, but there is a different framework of rules and other methods for each to achieve the objective to protect and restore these ecosystems and habitats. Schedule F3 is discussed in the Section 32 report: Wetlands.

Activities are managed by rules in all activity classes depending on the anticipated adverse effects of activities on the identified indigenous biodiversity values of each site. For example, the placement and use of a culvert, or the maintenance of existing structures in the bed of a river are not expected to damage habitats of indigenous bird species, and therefore they are permitted activities, though there are permitted activity conditions that apply to the maintenance of aquatic ecosystems and the protection of indigenous biodiversity. Reclamation will permanently remove indigenous bird habitat, so is a non-complying activity in scheduled bird sites.

The following table shows Objective O35 (significant indigenous biodiversity) and how it will be achieved through relevant policies, rules and other methods.

Table 13: Primary policies, rules and other methods relevant to achieving Objective O35

Objective	O35 Significant indigenous biodiversity
Policies	P40 Ecosystems and habitats with significant indigenous biodiversity values P41 Managing adverse effects on ecosystems and habitats with significant indigenous biodiversity values P42 Protecting and restoring ecosystems and habitats with significant indigenous biodiversity values P33 Protecting indigenous fish habitat
Rules	The policies listed above will be considered when applications are made for discretionary and non-complying activities within, or likely to have adverse effects on, the sites and habitats listed in or identified using Schedule F. Rules that specifically cover activities in sites listed in Schedule F are: R42 Minor discharges R48 Stormwater from an individual property R51 Stormwater from a local authority network two years after public notification

	R68 Other discharges outside scheduled areas R67 Other discharges inside scheduled areas R70 Cleanfill material R97 Access to the beds of surface water bodies by livestock R98 Livestock access to the beds of surface water bodies R101 Earthworks and vegetation clearance Beds of lakes and rivers Permitted Activity General Conditions R116 Establishing a small dam and existing dams R117 New structures R119 Clearing flood debris and beach recontouring R122 Removing vegetation R123 Planting R127 Reclamation of the beds of rivers or lakes inside significant sites Coastal marine area Permitted Activity General Conditions R162 New Structures, additions or alterations to structures inside sites of significance R160 Removal or demolition of a structure or part of a structure R157 New or replacement structures for special purposes R155 New temporary structures R164 Replacement of structures R162 New structures, additions or alterations to structures inside sites of significance R167 Seawalls inside sites of significance R192 Beach recontouring for coastal restoration purposes R193 River and stream mouth cutting R195 Disturbance or damage inside sites of significance R198 Motor vehicles inside sites of significance R200 Dredging for flood protection purposes or erosion mitigation R202 Maintenance dredging outside a Commercial Port Area or navigation protection areas R203 Dredging inside a Commercial Port Area or navigation protection areas R205 Destruction, damage or disturbance inside sites of significance R207 Deposition for beach renourishment R209 Deposition inside sites of significance R212 Dumping of waste or other matter inside sites of significance R215 Reclamation and drainage R216 Destruction R217 Planting R218 Planting R219 Planting
Methods	M20 Wetlands M22 Integrated management of the coast

Policy P40 refers plan-users to the lists of ecosystems and habitats in Schedule F of the proposed Plan that need to be protected. This policy and schedule are efficient as they make it clear to plan-users where the ecosystems and habitats with significant indigenous biodiversity are in the region.

Policy P42 describes how ecosystems and habitats with significant indigenous biodiversity values are to be protected and restored. This policy is in addition

to the direction given under Policy P31 for maintaining ecosystem health across the region. The clauses in Policy P42 have been developed from RPS Policy 47, which has worked very successfully since the implementation of the RPS, but cannot be used once ecosystems and habitats with significant indigenous biodiversity values are identified in the regional plan. Resource users will need to consider how their activities and any effects of activities impact on the physical, chemical and biological processes of ecosystems and habitats with significant indigenous biodiversity values.

It is not intended that activities do not occur in the ecosystems and habitats with significant indigenous biodiversity values identified in Schedule F. Policy P41 sets out the mitigation hierarchy for managing more than any minor adverse effects of activities on these ecosystems and habitats. This policy makes it clear that applications for resource consents must consider and detail how more than minor adverse effects will be managed.

Policy P41 directs that, in the first instance, proposals should seek to avoid ecosystem or habitats that have been identified in the proposed Plan as having significant indigenous biodiversity values. Avoiding the ecosystem or habitat is the most obvious way to avoid direct adverse effects on the biodiversity values being protected.

If the ecosystem or habitat cannot be completely avoided, then activities should seek to avoid more than minor adverse effects. More than minor adverse effects that cannot be completely avoided shall be remedied. More than minor adverse effects that cannot be completely remedied shall be mitigated. For residual adverse effects remaining after avoiding, remedying, and mitigating significant adverse effects, it is appropriate to consider the use of biodiversity offsetting. The step-wise structure of this policy is to ensure that more than minor adverse effects are avoided, remedied and mitigated before offsetting is considered and proposed. See section 5.1.1 of this report for a discussion of offsetting principles and Schedule G.

Policy P32 is clear that proposals for mitigation and biodiversity offsetting will be assessed against the principles listed in Schedule G (biodiversity mitigation and offsetting). The policy is also clear that activities are inappropriate if more than minor adverse effects cannot be adequately avoided, remedied, mitigated or offset.

RPS Policy 47 on managing effects on ecosystems and habitats with significant indigenous biodiversity values mentions offsetting effects, so Policy P41 is efficient in making it clear how offsetting will be considered under the proposed Plan. Policy P41 and Schedule G are efficient as they make clear to applicants how proposals for mitigation and offsetting will be assessed.

As noted above, Policies P40 to P43 apply to each of the different ecosystems and habitats identified in Schedule F. The sections below discuss how rules and other methods contribute to achieving protection and restoration of these ecosystems and habitats in different ways.

(a) Rivers and lakes with significant indigenous ecosystems

Table 16 of the RPS lists rivers and lakes with significant indigenous ecosystems. Table 16 was updated by Perrie *et al.* (2014) using the best current available information and current NZ threat classification rankings to produce Schedule F1 in the proposed Plan. The indigenous fish are also named in Schedule F1 rivers and lakes to allow it to be used with Schedule F1a (spawning and migration calendar).

Perrie *et al.* (2014) also documents the methodology for producing Schedules F1a (spawning and migration calendar), F1b (inanga spawning), and F1c (significant lakes).

The primary policy providing protection to the rivers and lakes in Schedule F1 is Policy P33. This policy describes the effects of activities that are most detrimental to indigenous fish populations: discharge of contaminants including sediment; disturbance of the bed or banks; and altering the amount or flow of water. More than minor adverse effects on these aspects of indigenous fish habitat requirements shall be avoided. This policy adds specificity to the more general direction to protect the ecosystems and habitats in Schedule F through policies P40 to P42.

Policy P33 is given effect in the general conditions for activities in the beds of lakes and rivers (see Section 32 report: Beds of lakes and rivers for a more general discussion of these conditions). These conditions control discharges, fish passage, disturbance of inanga spawning habitat, release of sediment, duration of diversions and disturbance of the bed, and apply to all permitted activities. The conditions cover the effects of activities that impact on water quality and habitat quality to the detriment of indigenous fish. Te Upoko Taiao directed that the means of protecting significant rivers – such as maintaining and restoring fish passage, reducing disturbance and sediment release etc. – be applied to all rivers in the region, which is why the general conditions are the best way to implement this direction.

Activities that are not permitted in the beds of lakes and rivers are discretionary – and so Policy P41 and P33 will be used in assessing applications for activities that do not meet the permitted activity general conditions, or are listed as discretionary.

In addition to the protection provided through the beds of lakes and rivers general conditions, the rivers and lakes listed in Schedule F1 will be protected through the water quality provisions in the proposed Plan. Objective O23 states that the quality of water in the region's rivers and lakes are to be maintained and improved. The water quality in the rivers identified in Schedule F1 should not be degraded, and if they are currently below the outcomes sought in Table 3.1 and 3.2, they should be improved. See the Section 32 report: Water quality for more detail.

(b) Habitats for indigenous birds

The RPS Policy 23 criteria were adapted specifically by an expert panel to identify habitats of significance for indigenous birds in rivers and lakes and the coastal marine area. The panel used the criteria, McArthur and Lawson (2014)

and their own specialist knowledge to produce Schedule F2 in the proposed Plan, as documented in McArthur *et al.* (2014). Habitats for indigenous birds in wetlands were not identified through this process, as birds are included as part of the assessment of wetland biodiversity values (see Section 32 report: Wetlands).

Policies P36 and P41 are the primary policies for managing the effects of use and development on habitats for indigenous birds. Activities that disturb the habitats listed in Schedule F2 and render them no longer suitable for birds are managed by the proposed Plan. The proposed Plan also identifies critical periods for specific sites and species to reduce disruption to the birds when they are using the habitat for a specific life-cycle component such as nesting.

In order to protect indigenous bird habitats three rules for permitted activities in the beds of lakes and rivers contain a condition relating to the habitats listed in Schedules F2a (rivers) and F2b (lakes). The construction of new structures, clearing flood debris and beach recontouring, and removing vegetation shall not occur in the scheduled habitats during the critical periods listed in the schedules. The effects of other permitted activities on bird habitats are considered to be *de minimus*. In the coastal marine area, controlled and restricted discretionary activity rules state that "effects on bird habitat identified in Schedule F2c" are to be considered.

Applications for activities requiring discretionary or non-complying consents must be processed with regard to Policies P36 and P41.

(c) Significant ecosystems and habitats in the coastal marine area

The criteria of Policy 23 in the RPS were used by the National Institute of Water and Atmospheric Research (NIWA) to identify ecosystems and habitats in the coastal marine area (MacDiarmid *et al.* 2012). In addition, the WRC Environmental Science team also used the RPS Policy 23 criteria, Todd *et al.* (in prep), and information gathered as part of the development of the RPS[7].

Schedule F4 of the proposed Plan lists ecosystems with significant indigenous biodiversity values in the CMA. These ecosystems are discrete, and have been mapped in the proposed Plan (Map 19). Many activities in the coastal marine area have a separate rule if they occur in a site in Schedule F4, generally being one category higher than in non-significant areas (i.e. activities that are discretionary, become non-complying in a scheduled area). Activities likely to be damaging to significant areas including the placement of new structures (R162), seawalls (R167), disturbance and damage (R195), vehicles on the foreshore (R198), dredging (R205) and reclamation (R219) are non-complying activities inside scheduled sites.

Schedule F5 lists habitat types with significant indigenous biodiversity values. These habitat types are either poorly mapped, or their location and extent can change over time in response to environmental and human-induced pressures. These habitat types, with the exception of seal haul-outs, are the basis of

[7] Appendix 1 of the draft RPS identified significant ecosystems and habitats in the coastal environment. This appendix was withdrawn as a result of community consultation.

diverse communities of plants and animals which rely on their three-dimensional habitat-forming nature. Because the location and distribution of these habitat types are not well documented they are not mapped in the proposed Plan. If they are found as part of a site survey for an anticipated ecological effects report, then Policy P40 requires the habitat to be protected and restored. Coastal management rules group activities occurring in Schedules F4 and F5.

(d) Costs

WRC has incurred costs during the development of the proposed Plan for the assessments undertaken to identify ecosystems and habitats with significant indigenous biodiversity values. These costs include those associated with communicating with landowners potentially affected by the protection of these ecosystems and habitats, including as a result of identifying and scheduling sites in the proposed Plan. There will be further costs associated with implementing non-regulatory programmes, and these costs may be passed onto the community through rates.

Resource users, including private landowners may face additional costs to comply with proposed conditions for permitted activities or for resource consents to carry out activities potentially effecting scheduled ecosystems and habitats. For example, under the permitted rules, most livestock will need to be excluded from inanga spawning habitat (Schedule F1b), habitat for indigenous birds (Schedule F2), significant natural wetlands (Schedule F3), and significant estuaries identified in Schedule F4. This will incur costs for landowners, but also for WRC and the community through the implementation of non-regulatory methods that provide advice, guidance and assistance.

(e) Benefits

The benefits of improved protection of indigenous biodiversity will result in increased delivery of ecosystem services, recreational opportunities and amenity values. The proposed provisions will also result in improvements to mahinga kai and the values that support cultural and societal values.

The increased use of scheduled sites in the proposed Plan will benefit resource users and the community through improved clarity and certainty of the activity status for anticipated or proposed actions.

The provisions and use of scheduled sites should also benefit how WRC prioritises its works and services, resulting in cost-savings for WRC and ultimately the ratepayers.

The non-regulatory methods to protect and restore indigenous biodiversity will also result in benefits to the community, resource users and WRC through improved relationship resulting from working in a more collaborative manner.

The suite of provisions is anticipated to be more effective and efficient than the existing provisions in the operative plans.

(f) Risk of acting vs not acting

There is sufficient information about the historical loss and on-going pressures on indigenous biodiversity pressures, that the risk of not acting is greater than the risk of acting.

Table A6 in the Appendix contains an evaluation of the effectiveness and efficiency of the proposed provisions against the status quo, and concludes that the proposed package is the most appropriate to achieve the objective.

5.2.2 Outstanding water bodies

Outstanding water bodies in the proposed Plan are protected through Objective O31. This objective is to protect significant values of outstanding water bodies. Outstanding wetlands are discussed in the section 32 report for wetlands and are not discussed further in this report. This report addresses outstanding rivers and lakes.

Table 14 shows Objective O31 (relating to outstanding water bodies) and how it will be achieved through relevant policies, rules and other methods.

Table 14: Primary policies, rules and other methods relevant to achieving Objective O31

Objective	O31 Outstanding water bodies
Policies	P39 Outstanding water bodies
Rules	**Discharge rules** R42 Minor discharges R44 Pool and spa pool water R48 Stormwater from an individual property R67 Discharges inside sites of significance Damming, diverting and reclamation in rivers and lakes rules R116 Establishing a small dam and existing dams R126 Placement of a dam in an outstanding water body R127 Reclamation of the beds of rivers or lakes R128 Reclamation of the bed of an outstanding lake and associated diversion R132 Damming or diverting water within or from rivers LW.R134 Damming or diverting water within or from Lake Kohangatera or Lake Kohangapiripiri
Method	M7 Outstanding water bodies

Policy P39 reflects the requirements of the NPS-FM for outstanding water bodies. It requires adverse effects on the significant values of outstanding water bodies to be avoided.

The proposed Plan draws on criteria in the RPS for the identification of significant indigenous biodiversity values, and work done in the region on rivers and lakes with significant indigenous ecosystems. The proposed Plan identifies water bodies that are outstanding for their biodiversity and ecosystem values. These water bodies are managed according to the requirement of the NPS-FM that their outstanding values are protected.

Including rivers and lakes in the proposed Plan as outstanding for indigenous ecosystems values is supported by Policy 19 of the RPS. The RPS policy includes criteria for rivers and lakes with regionally significant indigenous ecosystem values and identifies rivers that meet the criteria. Based on the RPS, the following criteria have been applied to identifying outstanding rivers in the region:

- High macroinvertebrate community health (MCI greater than 120) in areas with indigenous forest covering more than 80% of the upstream catchment area; and
- Indigenous fish diversity (habitat for six or more migratory indigenous fish species); and
- Threatened fish species (habitat for nationally threatened fish species); and
- Large (5^{th} order) rivers

The criteria of macroinvertebrate community health and indigenous forested areas used for rivers are not particularly relevant to lakes. Although not included in the RPS, a key criterion for determining the relative values of lakes relates to aquatic plant species and communities present. Such a criterion has been used (together with native fish species as per the RPS) for outstanding lakes in the proposed Plan.

The proposed Plan also recognises that rivers and lakes being protected for their outstanding ecosystem values are at an interim stage because they are based on the highest value rivers and lakes for regional significance using criteria from the RPS. Further work on appropriate criteria may be needed and is provided for in Method M7.

Method M7 of the proposed Plan also recognises the need to also protect outstanding recreational and landscape values. Because regional councils have been mandated through the NPS-FM to identify and manage outstanding water bodies only since June 2011, at the time of writing, there is insufficient information supporting outstanding rivers and lakes for recreation or landscape values. Criteria have yet to be developed for the identification of significant recreation, or landscape values of water bodies that warrant making them outstanding. Once identified, Method M7 provides for rivers identified to be included in the NRP through a plan change.

There are a number of discharge rules relating to outstanding rivers and lakes. Permitted activity Rules R42, R44 and R48 are discussed further in the Section 32 report: Discharges to water. Rule R42 (minor discharges) permits discharges to water (no resource consent required) subject to a condition that suspended solids concentration exceeding $50g/m^3$ must not enter various scheduled water bodies, including outstanding water bodies. Discharges to water are specifically excluded from outstanding water bodies in permitted Rules R44 (pool and spa water) and R48 (stormwater from an individual property), which means that resource consents are required for these discharges. Other rules that permit discharges to water apply to outstanding

rivers and lakes. Rule R67 makes non-permitted discharges to outstanding water bodies a non-complying activity.

The permitted activity rule for small dams in Rule R116 does not apply to outstanding water bodies where resource consents are required for such activities. Placement of a dam in an outstanding water body (Rule R126) and damming or diverting water in or from outstanding rivers (Rule R132) are non-complying activities because their potential adverse effects could compromise the outstanding values of such rivers. Damming or diverting water within or from Lake Kohangatera or Lake Kohangapiripiri (Rule R134) is also a non-complying activity because of the potential adverse effects on outstanding values of these lakes. Damming water in Lake Wairarapa is a discretionary activity because the National Water Conservation (Lake Wairarapa) Order 1989 specifically places no constraints on the barrage gates at the outlet of Lake Wairarapa. However, reclamation of the bed of Lake Wairarapa or diversion of water within the lake bed, as intended by the National Water Conservation (Lake Wairarapa) Order 1989, is prohibited (Rule R128). The same prohibited status for reclamation also applies to other outstanding lakes (Rule R128) because of effects on outstanding values of these water bodies.

(a) Costs

The costs of protecting the rivers and lakes identified as outstanding will be low because such high value water bodies already have a high degree of protection and few activities are anticipated that would affect their values.

(b) Benefits

Certainty will be provided about the level of protection in outstanding water bodies that are primarily used for their intrinsic, aesthetic, recreation, natural character, and landscape values.

(c) Risk of acting vs not acting

The risk of acting is that criteria used for outstanding biodiversity and ecosystem values are based on a collection of criteria for regionally significant values from the RPS. The risk of not acting is that no progress would be made on implementing the NPS-FM.

Table A7 in the Appendix contains an evaluation of the effectiveness and efficiency of the proposed provisions against the status quo, and concludes that the proposed package is the most appropriate to achieve the objective.

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Appendix – Appropriateness of proposed provisions (policies and rules and other methods)

Table A1: Safeguarding ecosystem health and mahinga kai

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Costs	Council	Does not meet statutory requirement to implement NPS-FM and NZCPS	Monitoring the attributes of Tables 3.4 – 3.8 will require an additional effort. These costs may require additional funding or a shift in existing expenditure. Substantial costs in establishing social and science systems to set limits in the whaitua process Financial cost in subsequent plan change processes to incorporate whaitua-specific material
	Resource user	Low as operative plans do not have tangible mechanism for managing aquatic ecosystem health and mahinga kai.	There will be additional costs for assessments for applications for resource consents and for compliance and monitoring. Substantial costs are associated with upgrading network infrastructures.
	Community	Relatively high – impaired ecosystem health and mahinga kai in some places could become worse in time. Framework has not consistently empowered mana whenua to engage in water quality management for Māori values such as mahinga kai Social and cultural costs resulting from degraded water quality Economic costs are loss of tourist dollars, uncertainty of resource availability resulting in lack of investment	If additional costs are required for state of the environment monitoring this may be recovered from general rates. Additional costs for network infrastructure would be borne by ratepayers.
Benefits	Council	Any benefits would be only short-term as WRC needs to implement the NPS-FM and NZCPS	This policy approach will contribute to achieving the water quality objectives and policies of the NPS-FM and NZCPS

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
	Resource user	Benefit from no change in regulatory regime therefore business as usual. The resource uses benefits economically as the status quo externalisation the costs to the environment.	
	Community	No additional rates would be needed	Improved ecosystem health and mahinga kai. Improved water quality for contact recreation. Improved sustainability for future generations
Efficiency (costs vs benefits) and effectiveness (will the provisions achieve the objective)		Inefficient at safeguarding aquatic ecosystem health and mahinga kai.	The policy framework is effective in that it will help achieve Objectives O25 and O23. The proposed approach is efficient as the rules provide certainty for resource users and WRC.
Risks		High risk as does not give effect to NPS-FM and NZCPS as required. No clear provisions for aquatic ecosystem health and mahinga kai could result in degradation.	The attributes for aquatic ecosystem health and mahinga kai identified in the Objective will require catchment-scale provisions to be incorporated as plan changes or variations under the whaitua committee process. This is a new process and there may be unintended consequences.
Appropriateness		This option is not appropriate as it is ineffective at meeting community expectations or higher level policy drivers. It cannot effectively create the changes needed	
Conclusions		Inefficient at delivering environmental, social or cultural benefits. Efficient at providing economic benefits to resource users as system allows externalisation of public good costs. Very ineffective at achieving the objective.	

Table A2: Management of riparian margins

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Costs	Council	Low costs associated with producing education materials and providing advice Loss of support from some sectors and communities for taking a non-regulatory approach, for the quality of riparian margins in the region, and consequent poor water quality and ecosystem health in some rivers and streams	Moderate costs to provide riparian management plans to landowners, and assistance with implementing those plans in some instances. Budget to be determined through LTP process. Providing riparian plants at cost to landowners will forgo profits from Akura Conservation Centre. There will be costs in the future from monitoring and enforcing the provisions in the plan regarding the implementation of riparian management plans.
	Resource user	Lack of effective riparian management is contributing to poor water quality. This will cost resource users in the future if the water they rely on for their business/amenity is degraded or no longer suitable	Landowners may erect a temporary or permanent fence in order to keep stock out of water bodies and remove the bank from productive land uses. There may also be a cost in providing reticulated stock drinking water where this does not currently exist Cultivation setbacks will require the retirement of river and stream banks from cultivation and break-feeding. The cost of implementing riparian margins for planting appropriate species, and subsequent weed control will fall to landowners.
	Community	Costs of the status quo include poorer water quality; impacts on amenity and health and cultural uses; potential economic costs down the track to clean up degraded water quality; lack of direction from WRC could result in inappropriate species being planted which has future consequences for the community	Costs to landowners (retiring land, plants) could have knock on costs for their community in terms of reduced spending, fewer local employment opportunities and higher food prices. These effects however, have a low probability of occurring.

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Benefits	Council	Low expenditure and effort. Benefits relationship with some sectors by being seen to take a hands-off approach	This policy approach will contribute to achieving the water quality objectives and policies of the NPS-FM. WRC will benefit from increased support from the community for delivering on their desired objective to keep cows out of rivers, and improve water quality.
	Resource user		Livestock owners will benefit from fewer animals being injured or lost in wetlands and rivers. Improved quality of stock drinking water will improve stock health. Riparian retirement and planting will assist landowners to reduce their contribution of sediment and nutrients to water bodies from overland flow. Resource users benefit from healthy water resources in the long term.
	Community	Promoting riparian management may have improved water quality in communities where there were early adopters.	Communities will benefit from improved water quality in rivers and streams by the exclusion of stock and planting of margins to reduce the overland flow of contaminants to water. Riparian planting will also provide community benefits (environmental, social and cultural) by improving aquatic ecosystems.

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Efficiency (costs vs benefits) and effectiveness (will the provisions achieve the objective)		The operative plan takes a low cost- low benefit approach by simply encouraging riparian management. While this may be efficient in terms of resources, it is not effective at improving water quality and aquatic ecosystem health.	While this approach incurs higher costs than the operative plan, these benefits are also considerably higher, and the approach will be efficient in improving water quality and aquatic ecosystem health. Riparian fencing and planting has been shown to be very effective at reducing the overland flow of nutrients to water, and improving water quality and aquatic ecosystems. It is now considered to be 'low-hanging fruit' by most agricultural / water quality scientists. Providing riparian management plans directly to landowners at the property scale is an effective and efficient way to improve riparian management across the region, and achieve the objectives of the proposed Plan.
Risks		The risks of this approach have played out over the life of the operative plan: low uptake of good riparian management, and continued community dissatisfaction with cows in rivers and the water quality in our region.	The risks of not taking a stronger approach to improving riparian management in the region heavily outweigh the risks of perusing this approach. Not acting in this way will fail to acknowledge the community and iwi support for cleaner rivers, and will not assist in implementing the NPS-FM The risks of taking this approach are solely related to the level of investment required by WRC and resource users.
Appropriateness		This option is not appropriate as it fails to acknowledge and provide for the achievement of a range of objectives relating to improving water quality and aquatic ecosystem health and the management of natural resources considered to be appropriate to meeting the purpose of the RMA.	The new provisions are appropriate given the high level of efficiency and effectiveness for achieving the proposed Plan's objectives and meeting the purpose of the RMA.
Conclusions		Option 1 is not considered to be the most effective or efficient means of achieving the proposed objectives or meeting the purpose of the RMA.	The proposed new provisions for the management of the region's riparian margins are considered the most efficient and effective for meeting the purpose of the RMA by managing the resource sustainably and in a manner that provides for the community's environmental, social and cultural well-being.

Table A3: Management of fish passage

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Costs	Council	Low costs associated with producing pamphlets and material for websites.	Moderate costs to establish and operate a fish passage restoration programme in the Biodiversity Department ($15,000/yr).
	Resource user	Costs associated with meeting the conditions of permitted activity rules, or applying for resource consent. Costs of ensuring fish passage is provided during activities in, or the placement of new structures in the beds of lakes and rivers.	Costs associated with applying for resource consent for activities that cannot provide for fish passage at all times (meet the permitted activity conditions for the beds of lakes and rivers, and wetlands). Costs associated with ensuring fish passage is maintained during activities in the beds of lakes and rivers and wetlands, and the placement of new structures. Potential costs of restoring fish passage where it is currently prevented by a structure - where this is appropriate to the fish populations in the river or stream.
	Community	Communities, including mana whenua, suffer the environmental, social and cultural costs of reduced fish diversity in their local wetlands, rivers and streams.	None.
Benefits	Council	The provision of fish passage in the plan ensures international best practice is the standard for the region, and that the Freshwater Fisheries Regulations are adhered to.	As for Option 1. WRC takes a leadership role, and relationships with tangata whenua and the community are strengthened.
	Resource user	The current regulatory landscape is understood by resource users.	Because fish passage has its own objective and policies in the proposed Plan there is greater emphasis on this matter, providing clarity to plan users.

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
	Community	Fish continue to migrate and disperse in the region's water bodies, supporting aquatic ecosystem health and sport-fishing	As for option 1 Barriers to the migration and dispersal of indigenous freshwater species are removed (where appropriate), restoring their range in the region. Trout and salmon do not increase their current distribution, reducing potential impacts on currently isolated indigenous fish populations.
Efficiency (costs vs benefits) and effectiveness (will the provisions achieve the objective)		The fact that clauses regarding the maintenance of fish passage are replicated in provisions in the operative plan means it is not the most efficient way to ensure this outcome is achieved. The fact that the maintenance or provision of fish passage is not a stand-alone objective or policy in the operative plan means that some policies or rules that should contain this clause may not, and therefore this approach is not the most effective way of ensuring fish passage. In this respect, the status quo is not the most efficient or effective way of achieving either the proposed objectives.	The provisions reflect international best practice. Considering the expected costs and expected benefits this option is seen as being an efficient way of achieving the objective. The proposed approach will be more effective as it provides greater clarity to plan-users that the maintenance and restoration of fish passage in the region is a priority for the proposed Plan and an important value for the community. The costs (time and financial) to resource-users will be similar to those associated with the status quo, but the provisions will be more effective communicating the need to resource users, and in delivering on the objective to restore fish passage where appropriate.
Risks		The risks of continuing the current approach are relatively low – as it is meeting the Freshwater Fisheries regulations and international best practice. There is a risk to WRC's reputation and relationship with communities and mana whenua from not increasing the prominence of fish passage in the proposed Plan as this has been highlighted as important	There are no risks identified for taking a stronger and clearer approach to providing for and restoring fish passage in the region. The risk of not acting by taking a stronger and clearer approach to providing for and restoring fish passage is that the management of the resource in the long term fails to achieve the proposed Plan's more strategic objectives in respect of mauri, the intrinsic values of aquatic ecosystems, aquatic ecosystem health and mahinga kai, and the management and protection of indigenous biodiversity.

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Appropriateness		This option is not the most appropriate as it fails to acknowledge the importance of fish passage for mana whenua.	The new provisions are appropriate given the high level of efficiency and effectiveness for achieving the proposed Plan's objectives and meeting the purpose of the Act.
Conclusions		Option 1 is not the most effective or efficient means of achieving the proposed objective.	The proposed new provisions for the management of fish passage in the region are considered the most efficient and effective for meeting the purpose of the Act by managing the resource sustainably and in a manner that provides for the community's economic, social and cultural well-being.

Table A4: Management of trout habitat

		Option 1 – Status Quo (no change from the Regional Freshwater Plan)	Option 2 – Include a policy protecting trout habitat that integrates matters relating to water quality, flow, habitat configuration, passage and spawning waters.
Costs	Council	No new costs.	No new costs.
	Resource user	No new costs.	There may be costs associated with excluding stock access (see Section 32 report: Livestock access, break-feeding and cultivation). Otherwise provisions are similar to trout habitat provisions in the RFP and will add nothing new.
	Community	No new costs.	No new costs.
Benefits	Council	No new benefits.	No new benefits.
	Resource user	No new benefits – certainty is provided about where important trout habitat is in the region and the matters to be considered in these areas when a resource consent application is made.	No new benefits – certainty is provided about where important trout habitat is in the region and the matters to be considered in these areas when a resource consent application is made Policy is expressed within a single integrated policy.

		Option 1 – Status Quo (no change from the Regional Freshwater Plan)	Option 2 – Include a policy protecting trout habitat that integrates matters relating to water quality, flow, habitat configuration, passage and spawning waters.
	Community	No new benefits.	No new benefits.
Efficiency (costs vs benefits) and effectiveness (will the provisions achieve the objective)			There are no new costs and benefits of the approach to managing trout habitat in the proposed Plan because it entails a very similar approach to the RFP. The approach differs by including a clearer integrated policy for managing trout habitat.
Risks		The risk of not acting is that the requirement of section 7(h) of the RMA would not be satisfied.	The risk of not acting is that the requirement of section 7(h) of the RMA would not be satisfied.
Appropriateness		This option is appropriate but would be marginally less appropriate than the alternative option.	The approach is the most appropriate because it has no new costs and the benefit of including a clearer and more integrated policy than the current RFP.
Conclusions			The benefits of Option 2 outweigh the costs and will lead to more effective management of trout habitat.

Table A5: Management of estuaries

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Costs	Council	None.	Potential cost of damage to relationships with territorial authorities or residents close to estuaries. M18 will require programme changes and potentially additional or diverted funding.

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
	Resource user	None.	Costs associated with applying for resource consent for activities within estuaries or the potential to have adverse effects on estuarine values, and/or the costs associated with avoiding, remedying, mitigating or offsetting those effects.
	Community costs	Continued loss of ecosystem services provided by estuaries, and loss of amenity and recreation values from the degradation of estuaries.	Expenditure incurred in M18 could result in the need to raise funding through rates.
Benefits	Council	Buy not highlighting the values of estuaries, the operative plan benefits WRC by allowing it to continue to not face up to the difficulty involved in properly managing the effects of activities within catchments on them.	WRC takes a leadership role in identifying and managing the values associated with estuaries. WRC relationships with tangata whenua and the community are improved by recognising and acting upon their values for estuaries.
	Resource user	Resource users are not held to account for the full effects of their activities on estuarine ecosystems, and do not face the true costs of managing their effects.	Because there is a separate objective and policy in the proposed Plan there is greater emphasis on this matter, providing clarity to plan users.
	Community benefits	Communities do not face the costs of upgrading stormwater and sewage infrastructure to improve water quality and reduce sedimentation in estuaries.	Communities regain the environmental, social, economic and cultural benefits derived from healthy functioning estuarine ecosystems. The section 32 reports on water quality and stormwater detail the benefits of cleaning up water quality.

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Efficiency (costs vs benefits) and Effectiveness (will the provisions achieve the objective).		The ecological costs of the operative plans outweigh the benefits to WRC, resource users and communities of not addressing the long-term health of estuaries. Although the plight of estuaries is mentioned in the issues of the operative coastal plan, there are no provisions in the operative plans that will lead to measurable improvements in the ecological health of estuaries. In this respect, the status quo is not the most efficient or effective way of achieving the proposed objective.	Considering the expected costs and expected benefits this option is seen as an efficient way of achieving the objective. The proposed approach will be more effective as it provides greater clarity to plan-users that the ecological health of estuaries in the region is a priority for the plan and an important value for the community.
Risks		The risk of continuing with the current approach is that it does not give effect to the NZCPS.	There are no risks identified for taking a stronger and clearer approach to improving the ecological health of estuaries. The risk of not taking this approach is failure to give effect to the NZCPS. The risk of not acting by managing the ecological heath of estuaries, is that in the long term, the proposed Plan will fail to deliver its more strategic objectives in respect of mauri, the intrinsic values of aquatic ecosystems, aquatic ecosystem health and mahinga kai, and the management and protection of indigenous biodiversity.
Appropriateness		This option is not appropriate as it fails to achieve Policy 11 of the NZCPS, and it fails to acknowledge the importance of estuarine health for mana whenua.	The new provisions are appropriate given the high level of efficiency and effectiveness for achieving the proposed Plan's objectives and meeting the purpose of the RMA.
Conclusions		Option 1 is not considered to be the most effective or efficient means of achieving the proposed objective.	The proposed new provisions for the management of estuarine values in the region are considered the most efficient and effective for meeting the purpose of the RMA by managing the resource sustainably and in a manner that provides for the community's economic, social and cultural well-being.

Table A6: Management of significant indigenous biodiversity

		Option 1 – Status quo (no change from operative plans	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Costs	Council	Costs associated with identifying and scheduling water bodies with a high degree of natural character, and with threatened fish and plants.	As for Option 1. However considerably more time and cost was involved in identifying and scheduling ecosystems and habitats with significant indigenous biodiversity values, including engaging with private landowners. Costs in establishing and running non-regulatory programmes to protect and restore the biodiversity values at significant sites.
	Resource user	Costs associated with applying for resource consent for activities in scheduled areas, though these were largely in the upper reaches of rivers or catchments and not on private land.	Forgone opportunity to carry out activities in scheduled areas – or costs associated with applying for resource consent for activities in many more scheduled sites and habitats. Costs of avoiding, remedying, mitigating or offsetting more than minor adverse effects from activities on scheduled sites. Landowners may incur costs in excluding livestock from scheduled sites. There may also be a cost in providing reticulated stock drinking water where this does not currently exist.
	Community costs	Cost of continued degradation and loss of indigenous biodiversity in the region's water bodies and coastal marine ecosystems.	None.

		Option 1 – Status quo (no change from operative plans	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
Benefits	Council	Not attempting to schedule sites with indigenous biodiversity values on private land for the operative plan gave the WRC time to work with willing landowners in a non-regulatory way.	This approach strongly and clearly indicates WRC's requirement (from the RPS), and desire to identify and protect ecosystems and habitats with significant indigenous biodiversity values. Making the time and resources available to identify and schedule sites in the plan provides benefit to council officers (but also to resource users and the community) of being very clear where these significant ecosystems and habitats are. The non-regulatory methods supporting the policies and rules have benefit for WRC in that the objectives of the proposed Plan are more likely to be achieved through a collaborative working relationship with landowners, stakeholders and other agencies. Standalone objectives, strong policies, clear rules, many scheduled areas, and non-regulatory investment together make up a belt-and-braces approach to protect the ecosystems and habitats with significant indigenous biodiversity values remaining in the region.
	Resource user	Resource users are familiar with the operative plans and the approach to protecting a limited number of sites.	This approach clearly identifies for resource users where areas of significant indigenous biodiversity value are in the region by identifying them in Schedule F1. Resource users will benefit from the continued or improved supply of ecosystems services from ecosystems and habitats protected and restored through the provisions in the proposed Plan. Some activities are permitted in scheduled areas as their effects on the values being protected have been assessed as being more no more than minor. A number of activities in these areas have non-complying activity status, indicating to resource users that those activities and their potential adverse effects are not anticipated in scheduled areas.

		Option 1 – Status quo (no change from operative plans	Option 2 – Amend provisions to be more directive and reflect strategic outcomes sought by proposed Plan (preferred option)
	Community benefits	Communities initially benefitted from the non-regulatory approach in current plans through lower levels of tension and anxiety that would have occurred if sites on private land had been scheduled for protection. Communities also benefited from the education and information programmes introduced as non-regulatory methods.	Communities will benefit from the protection and restoration of ecosystems and habitats with significant indigenous biodiversity values through the ecosystem services they provide, through recreational opportunities and amenity benefit. All parts of the community will benefit from retaining the intrinsic values of these communities, and mana whenua will benefit from the restoration of indigenous ecosystems that support their cultural identity and practices.
Efficiency (costs vs benefits) and effectiveness (will the provisions achieve the objective).		This option is not an effective or efficient way of achieving the proposed objective and does not give effect to the RPS.	Given the expected costs and benefits, this approach is considered an efficient way of achieving the objective. The package of provisions will achieve the objective, and therefore the option is efficient
Risks		Loss of significant indigenous biodiversity values in the region Potential appeals to the proposed Plan from parties wanting the WRC to implement the RPS.	There is sufficient information to provide for greater clarity over the risks to indigenous biodiversity from inappropriate use and development The risk of not acting, given the certainty of information, is greater.
Appropriateness		The status quo is not appropriate as it fails to implement RPS Policies 23 and 24 to identify and protect ecosystems and habitats with significant indigenous biodiversity values.	The proposed provisions are appropriate given the high level of efficiency and effectiveness for meeting the purpose of the RMA, implementing the RPS, and achieving the proposed objective to protect and restore ecosystems and habitats with significant indigenous biodiversity values.
Conclusions		Option 1 is not considered the most effective or efficient means of achieving the proposed objective, or the purpose of the RMA.	The proposed provisions for the management of the region's ecosystems and habitats with significant indigenous biodiversity values, which are the responsibility of WRC and the regional plan, are considered the most effective and efficient for meeting the purpose of the RMA by protecting these areas in a manner that provides for the community's economic, social and cultural well-being.

Table A7: Management of outstanding water bodies

		Option 1 – Status quo (no change from the operative plans)	Option 2 – Include outstanding water bodies that meet criteria in the RPS for significant indigenous biodiversity. Defer identifying outstanding water bodies for recreational and landscape values until a suitable process and methodology is applied.
Costs	Council	Would not meet requirements of NPS-FM. All outstanding water bodies would have to be identified through an appropriate process.	Identifying outstanding water bodies for recreational and landscape values will incur further costs for WRC.
	Resource user	Would not meet requirements of NPS-FM. Costs are unlikely and would be low because high value water bodies already have a high degree of protection and few activities are undertaken in them.	Costs are unlikely and would be low because high-value water bodies already have a high degree of protection and few activities are ever undertaken in them.
	Community	Would not meet requirements of NPS-FM.	Costs are unlikely and would be low because high-value water bodies already have a high degree of protection and few activities are anticipated that would affect them
Benefits	Council	No benefits.	Certainty about the level of protection in outstanding water bodies that are primarily used for their intrinsic, aesthetic, recreation, natural character, and landscape values. Is part of the programme of work to implement the NPS-FM.
	Resource user	Resource consents in outstanding water bodies would be processed as discretionary rather than non-complying.	Certainty about the level of protection in outstanding water bodies (and their location) that are primarily used for their intrinsic, aesthetic, recreation, natural character and landscape values.
	Community	Uncertainty about the level of protection in water bodies that are primarily used for their intrinsic, aesthetic, recreation, natural character and landscape values.	Certainty about the level of protection in outstanding water bodies (and their location) that are primarily used for their intrinsic, aesthetic, recreation, natural character and landscape values.

		Option 1 – Status quo (no change from the operative plans)	Option 2 – Include outstanding water bodies that meet criteria in the RPS for significant indigenous biodiversity. Defer identifying outstanding water bodies for recreational and landscape values until a suitable process and methodology is applied.
Efficiency (costs vs benefits) and Effectiveness (will the provisions achieve the objective		The approach is the least efficient and effective because it does not give effect to the NPS-FM and takes no steps to giving effect to the NPS-FM.	The approach will have the least cost for the greatest benefit because it uses existing information while recognising that further work is needed to establish outstanding water bodies for all relevant values in the region. It gives effect to the NPS-FM and provides clarity and certainty about water bodies that are outstanding.
Risks		Not giving effect to the NPS-FM in the proposed Plan would be challenged.	Criteria used for outstanding values in the proposed Plan could be challenged.
Appropriateness		This option is not appropriate.	The approach is appropriate because it gives effect to the NPS-FM such that the greatest benefit is achieved with the available information while recognising that further information is needed before all relevant values for outstanding water bodies can be included in the proposed Plan.
Conclusions		The approach of the proposed Plan is the best approach at the present time.	

The Greater Wellington Regional Council's purpose is to enrich life in the Wellington Region by building resilient, connected and prosperous communities, protecting and enhancing our natural assets, and inspiring pride in what makes us unique

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