

4.0 Flora and Fauna and their Habitats

4.1 Introduction

Section 6(c) of the Resource Management Act 1991 requires that this Plan recognises and provides for ...“*the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.*” This acknowledges the contribution of native plants and animals to natural character and their importance in the functioning of natural ecosystems.

Furthermore, particular regard should be given to the intrinsic value of ecosystems and protection of the habitat of trout and salmon (Sections 7(d) and 7(h) respectively).

The New Zealand Coastal Policy Statement contains a number of policies that make it a national priority to preserve the natural character of the coastal environment. This includes protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna in the coastal environment (Policy 1.1.2). The policy identifies the priorities to be afforded to different types of areas and habitats. For example, the potential or actual adverse effects of activities on habitats/areas of species, which in a national context are vulnerable, are to be avoided. For other specified areas, the remedying of any actual or potential effects of activities on them is provided for.

For the purposes of this part of the Plan ecosystems have been divided into land based (or terrestrial) and fresh water based ecosystems. However, because the coastal environment includes land above mean high water springs, the New Zealand Coastal Policy Statement also has relevance in the consideration of land-based ecosystems. Coastal Marine ecosystems and those in the coastal environment are discussed in Chapter 9.

4.2 Terrestrial Ecosystems

4.2.1 Issue

Degradation of indigenous flora and fauna and their habitats.

The land ecosystems in the Wairau/Awatere can be conveniently separated into upland and lowland ecosystems for the purposes of consideration. Land or terrestrial ecosystems include, soil, plant and animal organisms that live within these ecosystems. Each ecosystem provides a unique habitat for different plants and animals.

Upland ecosystems

For the purposes of this Plan, upland ecosystems are defined as those that are located at altitudes generally above 1000 m. Some of the most significant indigenous upland ecosystems in New Zealand are found in the hill country and on the crests of ranges. In Marlborough, upland ecosystems have significant natural values given the high natural diversity of plants and animals which exist within them.

Lowland ecosystems

For the purposes of the plan lowland ecosystems are generally located at altitudes below 1000 m. Lowland ecosystems generally support a high diversity of plant and animal life but are also most affected by human activities and pests. Draining of wetlands to produce farmland has accounted for a significant loss from total area of the indigenous lowland ecosystems in Marlborough. Of the remaining unmodified lowland habitats found in Marlborough, a significant proportion remain unprotected, including wetlands, shrublands, dunelands, and other herb communities.

The Wairau/Awatere Plan area is one of five important areas in New Zealand, where a large number of locally endemic plants and animals (lizards and invertebrates) have evolved and do not occur naturally anywhere else in the world. These are typically dry country communities. Numbers have declined since human occupation. Some plant species now only continue to survive through their relative inaccessibility high on bluffs and other rockland areas.

The plan area is also notable for the ecologically important regenerating shrublands and areas of indigenous vegetation, particularly those on ultramafic, calcareous and alluvial soils. Given the extent of modification of natural communities within the plan area, indigenous forest is now considered rare. Early occupation coupled with the relative accessibility of much of the Wairau/Awatere area led to widespread removal and modification of the original vegetation cover. Because modification for pastoral development was relatively easier than other parts of the country, proportionally greater areas above 1000 metres have been retained in private use. The removal of vegetation, the easily eroded rock types and slower recovery rates in the drier climate and major competition from exotic species has produced widespread loss of habitat. As a result, the distribution of remaining endemic species has become fragmented.

Key Values and Threats To Upland Ecosystems	
Major Values	Major Threats
<p>Mt Richmond</p> <p>large contiguous forest tract, habitat for wide ranging bird species</p> <p>numerous endemic plants</p> <p><i>Powelliphanta hochstetteri consobrina</i> land snails</p> <p>ultramafic plant communities and threatened endemic species</p> <p>remote experience recreation opportunities</p>	<p>goats, possums</p> <p>goats</p> <p>pigs</p> <p>goats, wilding pines, invasive plant pests</p> <p>track development, concessions</p>
<p>Inland Marlborough</p> <p>large extensive beech forests in the west</p> <p>tussock habitat essential for vulnerable birds such as kea and falcon</p> <p>extensive tall tussock associations</p> <p>scree communities with endemic species</p>	<p>fire, goats</p> <p>development, pines invasive plant species eg Hieracium</p> <p>development, pines invasive plant species</p> <p>chamois, sheep, goats, invasive plant species invasive plant species, eg Hieracium</p>
<p>Western Molesworth</p> <p>unique communities of plants and animals at Sedgemere tarns</p> <p>northern limits for a range of species</p>	<p>stock, aquatic plant pests, Canada geese, oversowing</p> <p>stock, goats, rabbits</p>

Key Values and Threats To Upland Ecosystems	
Major Values	Major Threats
threatened scree skink alpine tussock land habitat for vulnerable wide ranging species such as falcon remnant stands of beech scree and rocky alpine fell field plant communities with Inland Marlborough endemics remote recreation opportunities historical structures	habitat destruction, rabbits, pigs fire stock, goats, fire, plant pests goats, stock better access, facilities lack of maintenance
Inland Kaikoura Ranges very high plant diversity regionally threatened plants at Isolated Hill habitat for the rare scree skink at Isolated Hill bluff weta of unknown status unique limestone communities with endemics and vulnerable species extensive scree and alpine fell field plant communities endemic bluff plant communities sub-alpine shrublands with a suite of threatened endemic plants remote recreation in a tussock land setting	browsers goats, possums, stock, pigs, plant pests goats, possums, stock, plant pests rats, stoats goats, sheep goats, chamois, sheep plant pests, goats, stock goats, stock, pines access, fire

Key Values and Threats To Lowland Ecosystems	
Major Values	Major Threats
dry shrubland communities	development, plant pests, rabbits
unique community supporting <i>Carex inopinata</i> at Kowhai Point Scenic Reserve	visitor use
locally endemic red rock daisy at Little Haldon Hills	stock, clearance
unique plant community on lowland limestone at Isolated Hill	stock, goats, possums
alluvial podocarp forest remnants at Onamalutu	none
forest remnants on Wairau River	clearance, stock
regionally endemic communities on riversides and bluffs	spraying, stock, goats
threatened endemic <i>Australopyrum</i> wheatgrass on the Leatham limestone belt	stock
alluvial ultramafic vegetation, upper Wairau	drainage, development

4.2.2

Objectives and Policies

Objective 1	The protection of areas of significant indigenous vegetation and habitats
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Policy 1.1	The Council will recognise and protect, and where appropriate enhance, areas of significant indigenous vegetation and significant habitats of indigenous fauna.
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Policy 1.2	Maintain or enhance indigenous vegetation and habitats and encourage and support voluntary restoration.
Policy 1.3	Maintain controls on land disturbance operations and discourage use of fire where significant environmental damage will result.
Policy 1.4	Avoid, remedy or mitigate the effects of land use activities which are detrimental to natural values.
Policy 1.5	Promote and where appropriate implement management options to achieve protection for areas of significant indigenous vegetation and significant habitats of indigenous fauna, including where appropriate, the establishment of reserves.
Policy 1.6	Promote landowner and public understanding of the range of management options available to achieve protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.
Policy 1.7	Promote landowner and public understanding of the importance of protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna because of their intrinsic, conservation, social, economic, scientific, cultural and educational worth, and for their contribution to natural character.
Policy 1.8	<p>The following criteria will be used to determine sites of significance:</p> <ul style="list-style-type: none"> • Representativeness; • Rarity; • Diversity and pattern; • Distinctiveness/special ecological characteristics; • Size and shape; • Connectivity; and • Sustainability. <p>(For the purposes of this policy, Appendix C to Volume One sets out guidelines for the application of ecological significance criteria in assessing a site.)</p>
Policy 1.9	Maintain an effective strategy for the containment/eradication of undesirable animals and plants.
Policy 1.10	Encourage the conservation management of high country grasslands and alpine herbfields.
Policy 1.11	To provide for the protection of natural wetland

Policy 1.12	<p>The loss of extent of natural inland wetlands is avoided, their values are protected, and their restoration is promoted, except where:</p> <p>(a) the loss of extent or values arises from any of the following:</p> <ul style="list-style-type: none"> (i) the customary harvest of food or resources undertaken in accordance with tikanga Māori (ii) restoration activities (iii) scientific research (iv) the sustainable harvest of sphagnum moss (v) the construction or maintenance of wetland utility structures (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020) (vi) the maintenance or operation of specified infrastructure, or other infrastructure (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020) (vii) natural hazard works (as defined in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020); or <p>(b) the Council is satisfied that:</p> <ul style="list-style-type: none"> (i) the activity is necessary for the construction or upgrade of specified infrastructure; and (ii) the specified infrastructure will provide significant national or regional benefits; and (iii) there is a functional need for the specified infrastructure in that location; and (iv) the effects of the activity are managed through applying the effects management hierarchy.
Policy 1.13	<p>To recognise the importance of restoring native riparian vegetation in the restoration and management of wetlands and indigenous aquatic ecosystems.</p>
Policy 1.14	<p>The adverse effects of subdivision, use or development, on areas of significant indigenous vegetation and habitats in the coastal environment, should be avoided as far as practicable. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects to the extent practicable.</p>

The Wairau/Awatere Plan area has been highly modified and therefore the distribution of areas of significant indigenous vegetation has become fragmented such that the need for their protection is greater. The criteria for determining significance (Policy 1.8), are those that have been used by the Council, in surveying sites of significance through its 'Significant Natural Areas' programme in the Plan area. For consistency with that survey work, the same assessment criteria have been included in the Plan. The criteria are set out in more detail in Appendix C.

Some special ecosystems and species in the region are not protected at all. Others are not accorded an appropriate level of protection, or once protected, are not properly managed to protect or enhance their ecological values.

Areas are too small to be viable and others have been badly damaged by introduced plants or animals. In some cases reserve boundaries no longer encompass the location of the population of the species to be protected.

The protection and management of remnant ecosystems on private land can be difficult to implement, especially in agricultural areas. This is of particular concern in relation to indigenous forest, wetlands and shrublands.

There is concern that if we manage only protected areas, rather than the wider environment surrounding special ecosystems, the health of both the special ecosystems and the surrounding environment will be threatened. As many remnant indigenous ecosystems are small and dispersed, their viability, and the viability of species within them, is endangered. Inappropriate developments have been allowed to further fragment and isolate ecosystems.

*A number of introduced plants and animals in the region are environmentally damaging. The main problems include Old Man's Beard (*Clematis vitalba*), hieracium, briar, pigs, deer, goats, rabbits, feral cats, rodents, mustelids, hedgehogs and possums. There are a range of responses in dealing with undesirable plants and animals. This includes through the Council's regional pest management strategy, national pest management strategies and at times direct funding to landowners to help protect significant sites from pests. There are also other statutes such as the Wild Animals Control Act that control the farming of animals that have the potential to become pests.*

Policy 1.12 has been inserted into the Plan as a requirement of the National Policy Statement for Freshwater Management 2020.

4.2.3 Methods of Implementation

Rules	Rules will control vegetation and habitat disturbance. Rules will require ecological surveys and management plans in conjunction with resource consent applications in areas of significant indigenous vegetation and significant indigenous fauna habitat.
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Education	Increasing landowners and the public's knowledge and understanding of the occurrence of significant areas of ecological value not only leads to greater appreciation of those values but also the protection of the indigenous flora and fauna. This increased understanding can motivate voluntary action to maintain and enhance indigenous flora and fauna. Voluntary action includes the use of private conservation covenants on property titles. The Council will promote, and provide information on the need to protect the ecology of wetland areas.
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With regard to areas of significant indigenous vegetation and significant habitat of indigenous fauna the Council will:

- Provide information to landowners and the public to raise awareness of the importance of protecting areas of significance, through newsletters and state of the environment reporting.
- Encourage landowners to share information with the Council and directly affected others where there are sites of significance on their property.
- Provide information direct to landowners on the range of management options available to protect sites of significance.
- Encourage the voluntary implementation of regimes such as voluntary retirement, QEII Trust and other covenants, the

establishment of reserves and voluntary restoration to achieve the protection of areas of significance.

Pest Management	Maintain a regional pest management strategy with a focus on protecting indigenous vegetation, fauna, soil and water quality. Place conditions on resource consents where appropriate, to assist in containing/eradicating plant and animal pests.
Land Acquisition	The Council may consider acquiring sites with outstanding ecological values where land purchase is the only means available for protection of the values. The Council will also encourage other agencies to do this.
Research	The Council will undertake survey work in conjunction with other relevant agencies to identify ecological values requiring protection.
Financial Incentives	The Council will provide financial incentives to encourage the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna. Incentives may include: <ul style="list-style-type: none"> • Waiver of resource consent application fees for activities with the potential to assist in the protection of significant areas; and/or • Waiver or reduction of development contributions where developments, including subdivisions, will achieve protection or rehabilitation of a significant area; and/ or • Providing funding assistance for protection and management of sites e.g. fencing and pest control; and/or • Through the annual planning process, consider granting reductions in rating for properties where sites are protected through conservation covenants; and/or • Funding made available from central government for the protection of areas of significant indigenous vegetation and habitats of indigenous fauna.

Rules can go some way towards protection of indigenous fauna and flora. Education will most likely have the greatest benefit over time.

4.3 Water Ecosystems

4.3.1 Issue

Rivers, streams, waterbodies, wetlands and their margins have many ecological values such as habitats, physical systems, recreational resources and amenity values, and use of water resources may affect these values.

Many different fauna and flora, both indigenous and exotic have their habitat in the water environment. Rivers form ecological corridors linking the sea and other parts of the land for fish, birds and plant life. Different parts of different rivers also provide specific habitat for particular flora and fauna. A summary of the values associated with freshwater resources can be found in Appendix A to this volume.

4.3.1.1 Water Abstraction

Water abstraction reduces the flow or levels in rivers and lakes which in turn affects the water flow or levels, instream habitat, instream and amenity values, depth, width, velocity and temperature or quality; especially at times of river low flows. Significant abstractions occur on the Waihopai (to Gibson's Creek), Omaka and Awatere rivers. A less obvious "abstraction" is the Wairau Diversion that takes a large proportion of Wairau River flows without any specific control structure.

4.3.1.2 Damming and Diversion

This completely alters habitat upstream of the dam and often alters the flow regime downstream. Fish passage can be detrimentally affected.

Significant damming has occurred on the Branch and Waihopai Rivers for hydro-electric purposes, on the Upper Opawa River to block off Wairau flows, and on the Opawa Loop to reduce Upper Opawa and Taylor flows into the loop, and the Taylor flood detention dam.

4.3.1.3 River Control Works

These can directly damage fauna or flora or alter the physical channel form and substrate, and thus the habitat provided. River control works on the Wairau have narrowed the normal channel width making it a deeper channel. This has been done by strong bank edge protection works in the form of rocks and trees which in themselves provide more cover for fish.

The extensive bank edge tree planting significantly changes the riparian habitat. Unmaintained willows or other vegetation can lead to choking of the river channel downstream.

4.3.1.4 Gravel Extraction

Gravel extraction will affect channel form and thus habitat provided and its operation can directly affect fish spawning or bird nesting areas. It may also discolour water downstream if carried out in flowing water.

4.3.1.5 Barriers

Floodgated culverts and drop structures block fish passage or create artificially high velocity that prevent or inhibit fish passage.

4.3.1.6 Unfenced Channels

Unfenced stock can directly affect fauna, flora or water quality.

4.3.1.7 Adjacent Land Uses

These can cause changes in sedimentation or water quality.

Appendix A lists ecological values and concerns attributable to the more important waterways.

The general lack of specific knowledge about the ecological values of the Plan area mean a precautionary approach should be taken to any use or development of the water resources. As a matter of principle cognisance should be taken of:

- Physical factors - depth of water, flow patterns, water quality, banks and margins, physical diversity and slopes.

- Vegetation factors - shading, shelter, nesting, spanning links, water quality, buffering and physical support.
- Animal factors - feeding, breeding, nesting/shelter, escape, migration and movement.

4.3.1.8 Discharges

Discharges can affect water and habitat quality as well as causing direct and indirect effects on flora and fauna.

4.3.2 Objectives and Policies

Objective 1	The protection and enhancement of freshwater and riparian ecosystems.
Policy 1.1	To provide for the protection and natural functioning of aquatic ecosystems by avoiding, remedying and mitigating the adverse effects of water abstraction from all rivers, including the setting of sustainable flow regimes for specified important rivers.
Policy 1.2	To set water quality standards which provide for the protection and natural functioning of aquatic ecosystems and to control point and manage diffuse source contamination to maintain water quality standards.
Policy 1.3	Maintain and enhance wetlands, lakes and rivers as natural corridors where water and riparian margins can act as links along which fauna can move and flora can spread.
Policy 1.4	The loss of river extent and values is avoided, unless the Council is satisfied: <ul style="list-style-type: none"> (a) that there is a functional need for the activity in that location; and (b) the effects of the activity are managed by applying the effects management hierarchy.
Policy 1.5	In the absence of detailed knowledge on the hydrology or ecology of rivers, lakes and wetlands in the plan area, adopt a precautionary approach when considering changes to freshwater ecology and instream values.
Policy 1.6	To recognise and provide for the protection of the habitats of indigenous fish and birds, and trout and salmon in wetlands, lakes and rivers.
Policy 1.7	Avoid, remedy or mitigate any adverse effects of river work activity.
Policy 1.8	Promote environmental enhancement of particularly valued river environments, especially on Council owned land.
Policy 1.9	Require all river works to be carried out in accordance with the 'Rivers Management Code of Practice' contained within the Council document 'Marlborough Rivers - Management and Ecology (1994)'.
Policy 1.10	Protect Class A riparian margins from any adverse effects from undesirable animal and plant intrusions. (Refer to Appendix J - Volume Two)

Policy 1.11	Aim for a reasonable proportion of the flows to be divided between the lower Wairau and Wairau Diversion.
Policy 1.12	Develop operational plans for rivers where the flow is controlled (or partially controlled) by control structures operated by the Council.
Policy 1.13	To avoid, remedy or mitigate the adverse effects of activities within river and lake beds to protect instream values, including fish passage and recreational values.
Policy 1.14	The passage of fish is maintained, or is improved, by instream structures, except where it is desirable to prevent the passage of some fish species in order to protect desired fish species, their life stages, or their habitats.
Policy 1.15	To promote the use of water storage techniques to achieve the sustainable management of freshwater resources.
Policy 1.16	To avoid, remedy or mitigate the adverse effects of stormwater discharges and drainage activity on aquatic and riparian habitats and water quality.

Rivers, streams and waterways have many ecological values - as habitats, physical systems, recreational reserves and amenity values. Protection of the natural functioning of ecosystems is fundamental to the maintenance of these values. The policies recognise the importance of aquatic and riparian habitats and combine to form the basis of a policy strategy for the achievement of the objectives.

The ecological environment of the lower Wairau and habitat for fauna is affected by the flow regime of the river. At least half the volume of water in normal circumstances should be kept in the river.

Policies 1.4 and 1.14 have been inserted into the Plan as a requirement of the National Policy for Freshwater Management 2020.

4.3.3 Methods of Implementation

Rules	<p>Rules will provide for the protection of habitats and species.</p> <p>Ecological assessments will be required in conjunction with proposals to modify riparian and aquatic environments.</p> <p>Class A Riparian margins (refer to Appendix J, Volume Two) will be protected from stock intrusion by set back requiring buffer strips.</p> <p>Minimum flows and water quality standards will be set for important rivers.</p> <p>Implement land disturbance rules to mitigate run off, sedimentation, woody detritus, deposition and prevent damage to riparian areas.</p>
Information, Education and co-operation	<p>New ways of collecting or sharing information will be investigated.</p> <p>Contractors will be advised of appropriate environmentally friendly methods and river management.</p> <p>Landowners will be encouraged to fence off river and stream margins.</p>

Landowners will be encouraged to implement appropriate conservation management measures on river and stream margins.

Code of Practice Any body or person authorised to carry out river works shall adhere to the 'Rivers Management Code of Practice' contained within the Council document 'Marlborough Rivers - Management and Ecology (1994)' which will specify the manner in which river control works shall be carried out.

Land Acquisition The Council will require esplanade reserves and strips in accordance with the requirements in relation to subdivision and development. (Refer to "Esplanade Reserves and Esplanade Strips" in Standard Requirements for Subdivision and Development, Volume Two).

The Council may consider acquiring sites with outstanding ecological values particularly if the land has other values for Council activities. The Council will also encourage other appropriate agencies to do this.

Voluntary Action The Council will encourage the attachment of conservation covenants on private property titles to protect riparian strips on rivers greater than 3 metres in width.

Council Activities On suitable Council owned floodway land or river margins the Council will plant and maintain indigenous and other appropriate vegetation.

Consult with other interested parties wishing to develop wetland and other areas on Council owned floodway land.

Prepare reports on environmental enhancement options for the Spring Creek, Roses Overflow, Tuamarina, Opawa River, Opawa Loop, Taylor, Onamalutu, Renwick urban waterways and other river reaches.

The Council will carry out gravel extraction and channel shaping works near the diversion of the Lower Wairau and Wairau Diversion with the target of keeping average and low flows in the Lower Wairau of 50% to 80% of the total Wairau flow, but flood flows at 45%.

Operational plans will be developed in consultation with affected parties for Gibsons Creek, Grovetown Oxbow Lagoon and the Opawa Loop where the flow is predominantly controlled by Council operated gates. The Council will investigate the restriction of tidal flow to the Wairau Recreation Reserve estuary.

Monitoring Surveys will be carried out to determine instream values for important rivers and how these values change with time or are affected by river control, adjacent land use, water abstraction or other factors.

Flow monitoring will be carried out on major and representative rivers so as to link habitat requirements with actual flows.

Research Undertake research into methods of avoiding, remedying, or mitigating the effects of present land use practices on certain water

bodies especially spring fed creeks and still water bodies such as the Wairau Lagoons.

Investigation	The Council will complete investigations to determine the effects, including effects on instream flora and fauna, of the current apportionment of flow between the Wairau Diversion and the Lower Wairau as part of the process of reviewing that apportionment. This work will be undertaken in consultation with potentially affected parties including Nelson/Marlborough Fish and Game Council, Department of Conservation and iwi.
Liaison	The Council will liaise with the Nelson/Marlborough Fish and Game Council, Department of Conservation and the Nelson/Marlborough Eel Management Committee on its dredging programme on an annual basis in advance of the dredging being undertaken.
Riparian Management Strategy	The Council will prepare, in consultation with relevant parties, a Riparian Management Strategy to provide further guidance on the appropriate management of riparian margins so that their habitat, water quality, amenity and public access benefits are recognised and enhanced.
Identification of the values of water bodies	<p>The natural and human use values supported by surface water bodies within the Plan area are identified in Appendix A of Volume One of the Plan. These values include ecological, habitat, recreational and natural character values. Regard can be had to these values when considering resource consent applications required as a result of rules in this Plan.</p> <p>As more is learnt about the values supported by water bodies in South Marlborough, it is possible to add to Appendix A by way of plan change.</p>

4.4 Anticipated Environmental Results

Implementation of the objectives, policies and methods relating to indigenous flora and fauna and their habitats will result in:

- Sustainable habitats that enable maintenance or enhancement of population numbers and distribution of rare and endangered species;
- Maintenance or enhancement of the integrity and natural species diversity of land and water communities, habitats and ecosystems;
- Good stocks of native fish, trout, salmon and other aquatic life in fresh surface waters normally inhabited by these species;
- Attractive aesthetic environment of wetlands, lakes and rivers; and
- Adequate flows and water levels in wetlands, lakes and rivers including both the Lower Wairau and Wairau Diversion to maintain or enhance existing ecological conditions.