

Marlborough Sounds

Resource Management Plan

Volume One

Objectives, Policies and Methods

February & March 2003

Resource Management Act 1991

Marlborough Sounds Resource Management Plan

It is hereby certified that this is the Marlborough Sounds Resource Management Plan approved in part by the Marlborough District Council on 19 September 2002 pursuant to an Order of the Environment Court dated 23 August 2002.

This approval in part excludes:

- Those parts of the Plan which constitutes a Regional Coastal Plan; and
- Those parts of the Plan identified by notation and coloured blue in Volumes I and II hereof.

The Common Seal of the Marlborough District Council was affixed on the 20th day of September in the presence of:


TOM HARRISON
MAYOR


ANDREW BESLEY
CHIEF EXECUTIVE



The Regional and District Plan became operative on **28 February 2003**

IT IS HEREBY CERTIFIED that this is the Regional Coastal Plan (being part of the combined

signing it on the 13 day of March . This approval in part excluded those parts of the Regional Coastal Plan identified by notation and coloured blue in Volumes I and II hereof.


CHRIS CARTER
Minister of Conservation

The Regional Coastal Plan became operative on **28 March 2003**

Marlborough District Council
Cnr Seymour and High Streets
PO Box 443, Blenheim

Phone (03) 520 7400

Fax (03) 520 7496

ISBN 1-9583733-4-5 Set

ISBN 1-9583733-5-3 Vol 1



RESOURCE MANAGEMENT ACT 1991

MARLBOROUGH SOUNDS RESOURCE MANAGEMENT PLAN

It is hereby certified that this is the Marlborough Sounds Resource Management Plan is approved by the Marlborough District Council.

The Minister of Conservation has also approved outstanding matters in respect of the Regional Coastal Plan

References to exclusions to operative status on the previous seal page are now redundant.

All changes to the Marlborough Sounds Resource Management Plan from the date of this seal page are recorded in the record of changes over page.

The Common Seal of the Marlborough District Council was affixed on the 25th Day of August 2011 in the presence of:

ALISTAIR SOWMAN
MAYOR



ANDREW BESLEY
CHIEF EXECUTIVE

The Regional Coastal, Regional and District Plan became operative in full on **25 August 2011**

Table of Contents

1.0	Introduction	1-1
1.1	Plan Purpose	1-1
1.2	Overview of Resource Issues	1-1
1.3	Plan Structure	1-2
1.4	Regional Coastal Plan	1-3
1.5	Plan Framework	1-3
1.6	Relationship With Other Legislation	1-4
1.7	Structure of Volume One	1-4
1.8	Information Requirements	1-6
1.9	Cross Boundary Issues	1-8
1.10	Monitoring and Review	1-10
1.11	Section 32 Requirements	1-16
2.0	Natural Character	2-1
3.0	Freshwater	3-1
4.0	Indigenous Vegetation and Habitats of Indigenous Fauna	4-1
5.0	Landscape	5-1
6.0	Tangata Whenua and Heritage	6-1
7.0	Air	7-1
8.0	Public Access	8-1
9.0	Coastal Marine	9-1
10.0	Urban Environments	10-1
11.0	Rural Environment	11-1
12.0	Open Space	12-1
13.0	Soil Conservation	13-1
14.0	Discharges of Waste to Land	14-1
15.0	Undesirable Plants and Animals	15-1
16.0	Natural Hazards	16-1
17.0	Hazardous Substances and Facilities	17-1
18.0	Land Transport	18-1
19.0	Water Transportation	19-1
20.0	Utilities	20-1
21.0	Outdoor Advertising	21-1
22.0	Noise	22-1
23.0	Subdivision and Development	23-1
Appendix One	Landscape	App One-1
Appendix Two	Natural Character Areas	App Two-1

1.0 Introduction

As a Unitary Authority the Marlborough District Council has the powers, functions and responsibilities of both a regional and district council. Under the Resource Management Act 1991 it therefore has an obligation to prepare a Regional Policy Statement, a Coastal Plan, a District Plan and such other Regional Plans as are necessary. With its dual responsibilities as both a district and regional authority the Council has taken the opportunity to integrate the management of the resources of the Marlborough Sounds in an unprecedented way by preparing this combined Regional, District and Coastal Plan, known as the Marlborough Sounds Resource Management Plan.

1.1 Plan Purpose

The purpose of the Plan is to promote the sustainable management of the natural and physical resources of the Marlborough Sounds area including the coastal environment while avoiding, remedying and mitigating any adverse effects of activities on the environment and to promote the integrated management of that area. In particular the Plan sets out the significant issues relating to: Natural Character; Freshwater; Indigenous Flora and Fauna and Their Habitats; Landscape; Tangata Whenua and Heritage; Air; Public Access; the Coastal Marine Area; Urban Environment; Rural Environment; Open Space; Soil Conservation; Discharges of Waste to Land; Undesirable Plants and Animals; Natural Hazards; Hazardous Substances and Facilities; Land and Water Transportation; Utilities; Outdoor Advertising; Noise; and Subdivision and Development. The Plan sets out objectives, policies and methods, including rules, to resolve these issues and to promote the sustainable management of the natural and physical resources of the Marlborough Sounds.

Accordingly, a number of issues or activities may be affected by the Objectives and Policies from several sections of the Plan. This combined plan integrates the sustainable management of natural and physical resources.

1.2 Overview of Resource Issues

Marlburians and an increasing number of people from further afield are quick to show enthusiasm for, and pay tribute to, the unique landscape and community of the Marlborough Sounds.

Although extensively modified by human activity the area is particularly interesting because of the diversity of physical features and the wide range of activities carried out.

Many people can identify with the “working environment” of the Sounds and its use as an economic base by farmers, commercial fishers, marine farmers, foresters, tourism operators and associated industry workers and business people.

Most, if not all of us appreciate the recreational opportunities the area offers - the strong landscape and seascape; the chance to “get away from it all”; places to explore from the land or the sea; the opportunity to enjoy the Sounds’ lifestyle as a visitor or as a bach owner; time to do a spot of recreational fishing, diving or boating.

Culturally the Marlborough Sounds is special to New Zealanders. Continuous human occupation of Marlborough's coastal area probably stretches back at least 1000 years. Maori place great importance on links to their traditional sites both on land and in the sea and value their mahingakai. Non Maori also appreciate many links with our country's history and the rich natural resources contained in the Sounds. An increasing number of people have already, or want to, make the Sounds their permanent home.

Another fascinating dimension is the unique plant and animal life found in the area. Native plants range from sub-tropical to sub-alpine. Some of the rarest animal and insect life in the world can be found in the Sounds.

The natural and physical resources of the Sounds and the activities which rely on these resources are all linked in some way. One activity may have an unexpected influence on resources or other activities in the Sounds' environment. For example, poorly conducted land clearing may generate sediment which gets into streams, the sea and then harms marine organisms, which in turn may affect marine farming. The sediment may also detract from the aesthetic and amenity expectations of tourists and visitors staying in nearby accommodation and using the Sounds.

We all have different values we place on the Sounds. We may also have a vision about how we would like the place to be in the future. Some want to see more commercial activity such as further diversification into marine farming. Others want limits placed on such activity. Some want to be allowed greater freedom to further subdivide their properties, others want no subdivision. Still others want to see major tourist development while some want to see no significant change. There are people who wish to promote eco-tourism, others who want further areas reserved - the list goes on.

These different visions create conflict. If the Sounds environment is to remain special, we need to manage it. To use the current terminology, we need to be managing the natural and physical resources in a "sustainable" way, so that our children and their children can appreciate the same good qualities. We must also manage the environment as a whole. In other words in an "integrated" way - not just the individual parts of it.

1.3 Plan Structure

The Marlborough Sounds Resource Management Plan is comprised of three volumes:

Volume One	Contains the introduction to the Plan which incorporates information requirements for resource consent applications, cross boundary matters and monitoring. Volume One contains the issues to be addressed by the Plan as a whole, the objectives, policies and methods to be used in promoting sustainable management of the natural and physical resources of the Marlborough Sounds and the environmental results anticipated from their implementation.
-------------------	--

Volume Two	Sets out the rules to achieve the objectives, policies and methods including the assessment criteria for those activities subjected to resource consents. Volume Two also contains the interpretation section which defines the words, terms and phrases used in the Plan.
Volume Three	Contains the planning maps for the Marlborough Sounds Resource Management Plan.

1.3.1 Areas to Which the Plan Applies

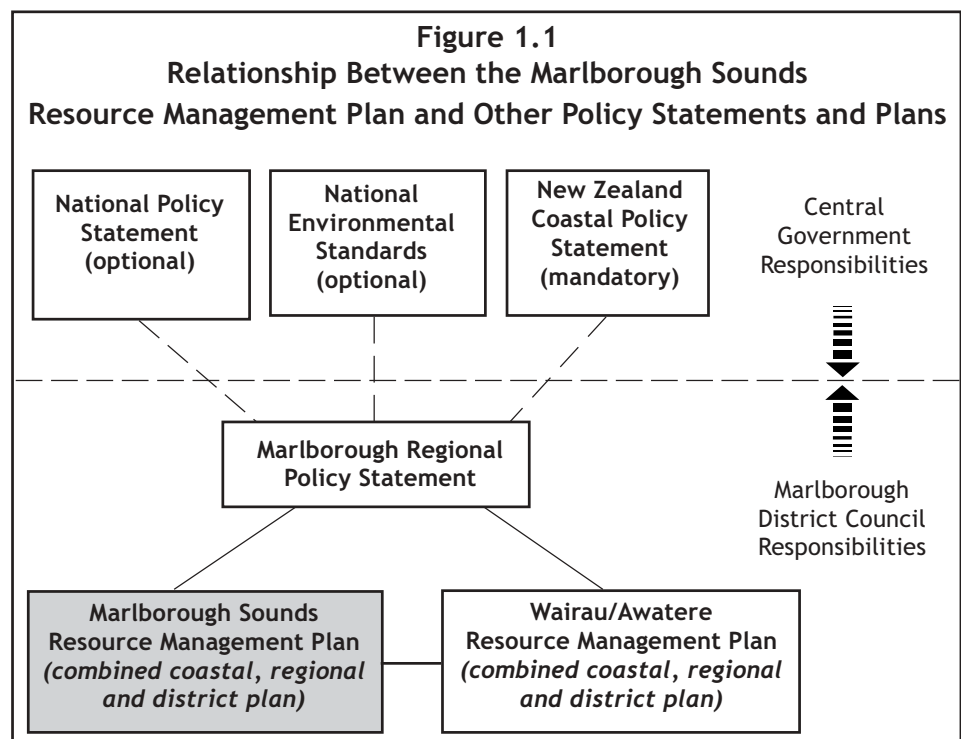
The Plan applies to the Marlborough Sounds area as defined on the planning maps; refer to Volume Three of the Marlborough Sounds Resource Management Plan.

The landward boundary follows approximately the ridgeline of the Bryant and Richmond Ranges while the seaward boundary is that of the outer limits of the Coastal Marine Area being the outer limits of the territorial sea (12 nautical miles) and the line of Mean High Water Springs (MHWS).

1.5 Plan Framework

Relationship Between the Marlborough Sounds Resource Management Plan and Other Policy Statements and Plans Prepared Under the Resource Management Act 1991

Figure 1.1 shows the relationship of the Marlborough Sounds Resource Management Plan to other policies and plans prepared under the Resource Management Act 1991. It is important to note that each level of policy or plan must not be inconsistent with the level above.



At the central government level, the Minister for the Environment is responsible for preparing National Policy Statements and National Environment Standards. Both are optional and as yet none have been prepared. National Policy Statements will guide local government decision making while National Environmental Standards, would through regulations, cover matters requiring a nation-wide approach such as pollution, ballast water, agricultural spray drift or air quality for example.

The New Zealand Coastal Policy Statement is mandatory and was prepared by the Minister of Conservation. This document sets up the framework for managing New Zealand's coastal environment within which local government prepares regional coastal plans.

The Marlborough Regional Policy Statement which is mandatory, provides an overview of the significant resource management issues of the region and contains the objectives, policies and methods to achieve integrated management of the natural and physical resources of the whole region.

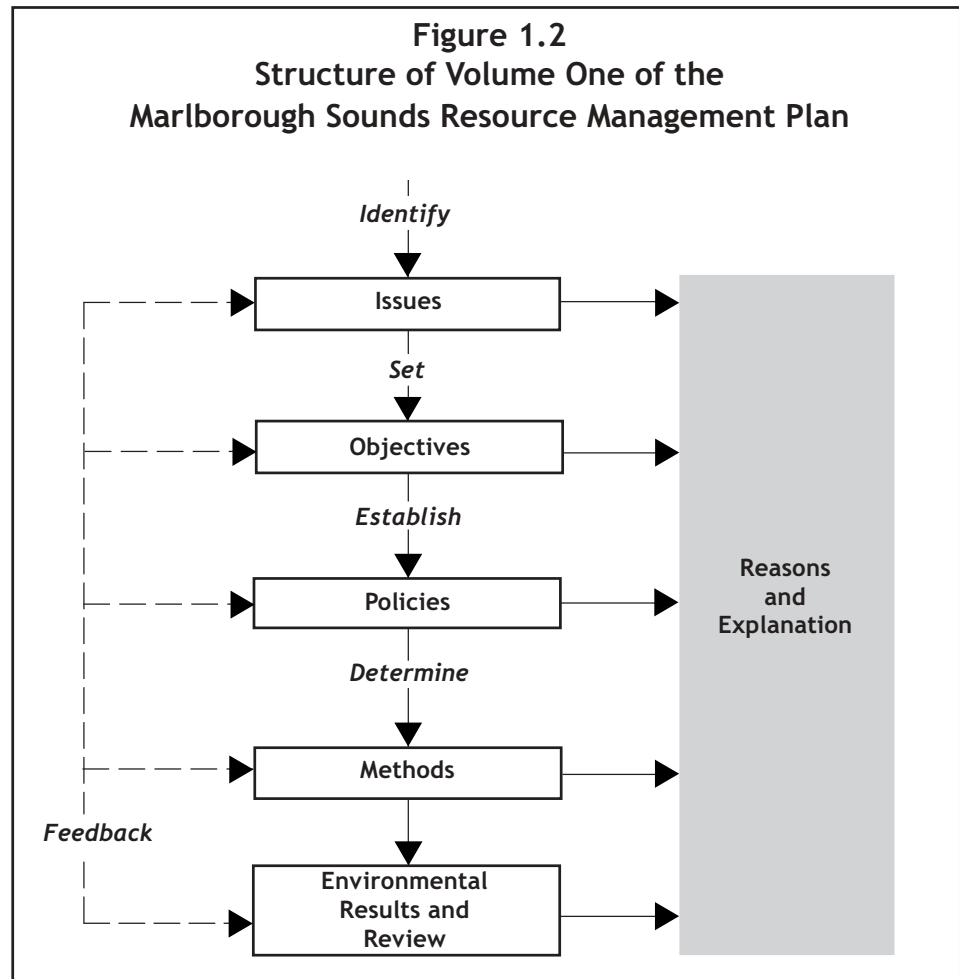
1.6 Relationship With Other Legislation

In preparing or changing regional, coastal and district plans, sections 66(2) and 74(2) of the Act require that the Council must have regard to the following:

- Management plans and strategies prepared under other Acts, in particular Conservation Management Strategies (Conservation Act 1987), Land Transport Strategies (Transit New Zealand Act 1989), Pest Management Strategies (Biosecurity Act 1993), and Reserve Management Plans (Reserves Act 1977);
- Relevant planning documents recognised by an iwi authority affected by this Resource Management Plan;
- Regulations relating to the conservation or management of taipure or fisheries;
- The Crown's interests in land of the Crown in the coastal marine area;
- Relevant entries in the Historic Places Register;
- Regulations made under the act to the extent that their content has a bearing on resource management issues of the region; and
- The extent to which this Marlborough Sounds Resource Management Plan needs to be consistent with policy statements and plans of adjacent regional councils and territorial authorities.
- Nelson/Marlborough Fish and Game Council.

1.7 Structure of Volume One

Sections 67 and 75 of the Act set out the matters to be addressed in Regional and District Plans. The matters dealt with in the greater part of Volume One of the Marlborough Sounds Resource Management Plan are shown diagrammatically in Figure 1.2. This Chapter (Introduction) also contains sections on information requirements for resource consent applications, cross boundary issues and monitoring.



1.7.1 Section 5 Resource Management Act Framework for Objectives and Policies

Volume One contains objectives and policies to address issues. These must all be read and interpreted in the context of promoting the sustainable management of natural and physical resources. Section 5(2) of the Act defines sustainable management as “managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while -

- a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations;
- b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.”

1.7.2 Integration

The provisions of each chapter of the Plan are to be read in conjunction with all other relevant provisions of the Marlborough Sounds Resource Management Plan. For the purposes of clarity, where inconsistency between provisions may exist then the more stringent of the provisions in question will take precedence.

1.8 Information Requirements

Preamble

As a unitary authority, the Marlborough District Council has the powers, functions and responsibilities of both a regional and a district council. With these dual responsibilities the Council has taken the opportunity to integrate the management of the resources of the Marlborough Sounds area by preparing a *combined* Regional, District and Coastal Plan - the Marlborough Sounds Resource Management Plan. This is of particular advantage to applicants for resource consent, in that as a Unitary Authority, the Council has become a one stop shop for applicants and the integrated structure of its Plan provides applicants with a single source of information.

Statutory Context

Since the Act's purpose "*...is to promote the sustainable management of natural and physical resources,*" these provisions of the Plan which relate to information requirements are fundamental to the administration of the Act. They provide a means by which the Council and the community can obtain sufficient information to allow for an understanding of the activity, its potential adverse effects and way in which those effects may be avoided, remedied or mitigated.

Making an Application

The Act contains general information requirements for resource consent applications. Section 88 of the Act sets out the requirements regarding information that must accompany applications for resource consents. This includes details on assessing effects on the environment.

The required type and detail of information will vary according to the: type, scale and frequency of anticipated effects; sensitivity of the receiving environment; and presence of special values at a site. Therefore, applicants should discuss the level of information required with Council staff prior to making a formal application for resource consent. Related information and guideline details, for making an application, are available at the Council's public counter or by telephone/facsimile upon request.

Matters that should be included in an assessment of effects on the environment are set out in the Fourth Schedule to the Act, under the headings:

1. Matters that should be included in an assessment of effects on the environment; and
2. Matters that should be considered when preparing an assessment of effects on the environment.

Without limiting the scope of the requirements for provision of the information required, all applications for resource consents shall provide the following general information:

- Outline of the activity including the scale of the proposal and a description of the characteristics of the site and location;
- Map of the location;
- Explanation of why the site has been chosen;

- Drawings (plans and elevations) of all structures associated with the activity, at appropriate detail and scale to the proposal;
- Description of how the activity will be undertaken, including construction, operation and maintenance schedules;
- Description of materials to be used by the activity;
- Other consents required by the Plan or any other plan prepared under the Act; and a
- Description of any effects on the environment, including those on known cultural or archaeological sites; and any effects on public open space, including reserves, road reserve land and the coastal marine area.

It is important for applicants for resource consent to understand that application processing will be delayed until the information supplied under section 88 of the Act is sufficient to allow the Council an understanding of the nature of the activity or its effects.

Assessment Criteria

The Council has refrained from including comprehensive guidelines for “specific” resource consent applications in this information section of Volume One, as this would introduce unnecessary repetition. It has however, chosen to supplement this general information section by providing a comprehensive range of “assessment criteria” for activities in Volume Two of the Plan.

The provision of these assessment criteria for certain ranges of activity enables an applicant for resource consent to understand how any particular activity will be assessed. This method of guidance has been chosen as it enables a prospective applicant to more easily determine the appropriate range of information to be included in an application. The assessment criteria are included within the General Rules section, the section on Subdivision and also within each of the Zone sections of Volume Two.

The Volume Two section on Standard Requirements for Subdivision and Development provides comprehensive details on the information required in an application for subdivision consent. It also provides thorough guidance to an applicant for land use activities (“developments”) which include site development, physical access requirements and an involvement with the servicing infrastructure and roading.

Further Information May Be Required

Because of the exhaustive range of activities that can be applied for under the Council’s combined Plan, and the variable nature of locations within the district, it can be difficult to determine all of the specific information that is necessary to be included for any particular activity or group of activities. Accordingly, as an application is progressed, the Council may require an applicant to provide further information under section 92 of the Act. This request can only be made prior to a formal hearing and only where it is necessary to enable the Council to:

- Better understand the nature of the proposed activity;
- Understand the effect the activity will have on the environment; and
- Understand how adverse effects may be mitigated.

Where Council is of the opinion that any significant adverse effect on the environment may result from an activity, to which an application for a resource consent relates, the Council may request specific information. This includes an explanation of any possible alternative locations or methods for undertaking the activity and the applicant's reasons for making the proposed choice, as well as the consultation undertaken by the applicant.

Where the application is for a discharge permit or a coastal permit to do something that would otherwise contravene section 15 of the Act (relating to discharge of contaminants) [or s.15B], the Council may require an explanation of:

- The nature of the discharge and the sensitivity of the proposed receiving environment to adverse effects;
- The applicant's reasons for making the proposed choice; and,
- Any possible alternative methods of discharge, including discharge into any other receiving environment.

The Council may also commission a report on any matters raised in relation to the application, including a review of any information provided under s.88 (4) or s. 92 of the Act.

1.9 Cross Boundary Issues

For administrative purposes of local government and resource management, the Marlborough District Council is a unitary authority having the powers and functions of both a regional council and a district council. This gives the Council responsibility for sustainable management of resource use and the effects of resource using activities within the Marlborough Sounds. This situation reduces the potential for cross boundary issues, but does not completely avoid their occurrence.

Cross boundary issues can arise from:

- Differences in policies and methods between adjoining plans or Councils;
- Adverse effects of activities in adjoining areas; and
- Different community aspirations and goals in adjoining areas.

Councils which adjoin the Marlborough Sounds planning area include: Tasman, Nelson, Wellington and the remainder of the Marlborough District. Like Marlborough, Tasman and Nelson are Unitary Authorities, while Wellington has separate district and regional councils. As well as geographical boundaries with adjoining Councils the Plan also needs to address administrative cross boundary issues. These issues arise from dealings with bodies having statutory responsibilities for activities with implications for sustainable resource management. These bodies include: Department of Conservation, Ministry of Fisheries, Maritime Safety Authority and Ministry of Transport.

Under the Act the mean high water spring boundary separates the primary management responsibilities for the land and water of the coast between agencies. Council, in conjunction with the Minister of Conservation is responsible for the management of the coastal marine area. Landward of mean high water springs the relationship does not occur and Council has full responsibility for sustainable management of the natural and physical resources.

The Council will continue to advise the community about its role and responsibilities for the sustainable management of the natural and physical resources of the Marlborough Sounds, and the links it has with other administrative agencies and interest groups. Council will also continue to liaise with other agencies and interest groups having responsibility for either managing or using the natural and physical resources of the Marlborough Sounds.

Cross boundary issues identified during the preparation of the Plan include:

- Inconsistent approach to the development of adjoining resource management plans;
- Inconsistent provision and co-ordinated management of similar recreational, cultural and tourist facilities within adjoining planning areas;
- Inconsistent approach to national roading that passes through the Plan area;
- Inconsistent management of adjoining resources within the coastal marine area including the management of coastal water quality, and coastal space for recreation and marine farming;
- Damage to natural values and features from effects of activities occurring outside the area or jurisdiction of the Plan;
- Inconsistent recognition of iwi issues; and
- Inconsistent approach to waste minimisation and management of hazardous substances, including hazardous waste.

Section 75(1)(h) of the Act requires the Plan to set out the process to resolve cross boundary issues. This Section of the Plan details the process to ensure:

- cross boundary issues are identified;
- processes for dealing with cross boundary issues are developed; and
- effects of cross boundary issues are avoided, remedied or mitigated.

To address cross boundary issues Council will:

- liaise with neighbouring regional and district councils and other statutory bodies to ensure integrated treatment of resource management issues;
- participate in inter agency groups and forums;
- exchange and share information;
- establish and maintain joint working parties;
- support research; and
- transfer its functions, powers or duties, in accordance with section 33 of the Act, where it is satisfied that the transfer is desirable when assessed according to:
 - the authority to which the transfer is made being representative of the appropriate community of interest relating to the exercise or performance of the function, power or duty;
 - efficiency; and
 - technical or special capability or expertise.

Most planning matters and resource consents are unlikely to have cross boundary effects. However, where an activity within the Plan area has effects outside the Plan area, the Council will:

- co-ordinate notification of the request or application with other statutory bodies;
- promote and facilitate pre hearing meetings;
- promote and facilitate joint and combined hearings, unless the Councils and the applicant agree the applications are sufficiently unrelated that joint hearing is unnecessary (section 102 of the Act); and
- monitor, and if necessary submit on other Councils plans, to promote consistency across regional boundaries.

Where an activity requires plan changes or resource consents near the Plan boundary and there is the potential for effects to be felt beyond the Plan area, the Council will:

- serve copies of applications and requests on adjoining Councils;
- promote and facilitate pre hearing meetings;
- promote and facilitate joint and combined hearings to involve the adjoining Council in the decision making process; and
- in terms of consultation under the First Schedule of the Act the affected community of interest will be notified even if this extends beyond the boundaries of the Plan.

1.10 Monitoring and Review

The process of monitoring and review are integral to Council's responsibilities under the Act.

Section 30(1)(a) of the Act requires the Council to:

"...review [the] objectives, policies and methods to achieve the integrated management of the natural and physical resources..."

Section 31(a) of the Act requires the Council to:

"... review [the] objectives, policies and methods to achieve integrated management of the effects of the use, development, or protection of land and associated natural and physical resources..."

Section 35(2) of the Act requires the Council to undertake research and gather information necessary to effectively carry out its functions under the Act. It also requires Council to monitor:

- (a) The state of the whole or any part of the environment to the extent that is appropriate to enable [it] to effectively carry out its functions under [the] Act; and*
- (b) The suitability and effectiveness of any ... plan...; and*
- (c) The exercise of any functions, powers, or duties delegated or transferred by it; and*

(d) The exercise of the resource consents that have effect in [the Plan area]- and take appropriate action (having regard to the methods available under this Act) where this is shown to be necessary.”

Monitoring is an important mechanism for assessing how the Plan and the Council are fulfilling the Act’s purpose of promoting sustainable management of the natural and physical resources of the Marlborough Sounds. It is information collection, recording, analysis and comparison that makes up monitoring and review. This process includes gathering information and maintaining records in respect of specific resources, the state of the environment, and the compliance of resource consents with their conditions.

With the number and range of resource management issues, and objectives, policies, and methods relating to the sustainable management of resources, that are contained within the Plan the scope for monitoring is huge. However, practical reality means that priorities need to be set for the monitoring programme. Monitoring will be prioritised and targeted to:

- Resource components of the Marlborough Sounds environment, including freshwater, coastal and land ecosystems, and air;
- Parameters of community wellbeing; and
- Deficiencies in existing monitoring programs.

Throughout Volume One of the Plan, ‘anticipated environmental results’ are specified for groups of linked resource management issues. These results form the basis for the monitoring programme.

The monitoring and review programme will be undertaken in a comprehensive strategy made up of three major components, being:

- State of the Environment Monitoring that measures existing and cumulative effects, and establishes environmental quality against which future changes can be measured;
- Consent Compliance Monitoring that compares anticipated and actual effects of specifically approved activities; and
- Plan Achievement Monitoring that assesses the effectiveness of achieving sustainable resource management as defined by the objectives and policies within the Plan.

Using a variety of monitoring procedures the anticipated environmental results suggest the monitoring strategy will need to include assessment of the Monitoring Factors defined in Table 1.1: Monitoring Factors.

Table 1.1: Monitoring Factors

Resource Issue	Anticipated Environmental Result	Monitoring Factor
natural character	preservation of values	defined significant areas and elements consents
water - wetlands, lakes and rivers	protection	water quality contaminants flow level
	use	abstraction consents
	food gathering recreation	use complaints
	ecological value clarity	defined values clarity complaints
water - groundwater	maintenance of aquifer	water quality groundwater level
indigenous vegetation, habitats of indigenous fauna	rare and endangered species diversity of habitats	species numbers distribution
landscape	maintenance of values	consents complaints
tangata whenua and heritage	traditional relationship	use access complaints
	protection of heritage resources	consents scheduled resources
air	quality	discharges suspended solids carbon monoxide lead visibility complaints
public access	maintenance of access	consents complaints
coastal marine	use	users uses

Resource Issue	Anticipated Environmental Result	Monitoring Factor
coastal marine (cont.)	recreation values	pathogens facilities
	occupation	consents location
	structures	consents location
	marine farms	consents location
	water quality	pathogens contaminants water quality discharge permits complaints
	alteration	site profile
urban environment	urban form	population employment commerce location
	residential character	consents complaints
	rural townships	consents
	ports and marinas	consents
rural environment	character amenity	land use vegetation cover
	diversity	activity consents
	subdivision	lot size consents
	wellbeing	employment income facilities services
open space	valued characteristics	users facilities
soil conservation	land disturbance	soil quality water sedimentation complaints

Resource Issue	Anticipated Environmental Result	Monitoring Factor
soil conservation (cont.)	historical values cultural values archaeological values	consents notice of disturbance complaints
discharge of waste to land	contamination	water quality soil quality
	landfill	consents
	amenity values	consents complaints
	waste reduction	landfill material landfill volume
undesirable plants and animals	spread	species numbers location
natural hazards	resource use	damage personal injury and death consents
	information	consents requests
	event responses	warning
hazardous substances and facilities	use storage transport	complaints community health disposal consents
	site contamination	contaminants soil quality water quality consents
land transport	safe and efficient transport system	traffic accidents
	environmental effects	consents complaints
water transport	navigation and safety	accidents complaints
	environmental effects	consents complaints
network utilities	services facilities	consents community health

Resource Issue	Anticipated Environmental Result	Monitoring Factor
outdoor advertising	safety convenience amenity information	consents accidents complaints facilities
noise	individual health	intrusive noise
	community health	ambient noise consents complaints
subdivision	values character	consents financial contributions reserves
	infrastructure	facilities reserves

Where appropriate, monitoring as a condition of consent approval and at the applicants expense will be required.

The annual monitoring programme will be specified in the Annual Plan, each financial year. Changes in funding availability, work priority, and response to particular situations will influence the specific content of the monitoring program in any particular year. Continuing analysis of monitoring data will enable an assessment of the appropriateness of the monitoring being undertaken and whether it is providing information appropriate to assessment of the effectiveness of the achievement of the Plan objectives and policies.

Monitoring results may indicate a necessity to change some of the objectives, policies and methods of the Plan prior to a full review. Should this become necessary Council shall change the Plan in accordance with the plan change procedures contained within the First Schedule of the Act.

Council has powers under Part XII of the Act to require persons to cease or not commence any activity which is or is likely to:

- Contravene the Act, any regulation, a rule in the Plan, or resource consent; or
- Be noxious, dangerous, offensive, or objectionable to such an extent that it has or is likely to have an adverse effect on the environment.

Under section 38 of the Act Council has authorized officers to carry out the functions and powers of enforcement officers. Enforcement officers may serve abatement notices against persons who are breaching the Act, a rule in the Plan or a resource consent, or operating in a manner which is having an adverse effect on the environment. In relation to noise an abatement notice require the adoption of the best practicable option of ensuring that the emission of noise from land or water does not exceed a reasonable level. If abatement notices are not acted on, the Environment Court may issue an enforcement order requiring compliance.

1.11 Section 32 Requirements

Section 32 of the Act requires Council to assess the extent to which an objective, policy, rule, or other method is necessary in achieving the purpose of the Act. It also requires other alternatives to be assessed, and costs and benefits weighed up.

Marlborough District Council considers that it has fulfilled its duties under section 32 of the Act in the preparation of the Plan. Explanations, which incorporate principle reasons for adopting objectives, policies and methods (including rules) are contained throughout Volume One of the Marlborough Sounds Resource Management Plan.

In general, the Marlborough District Council has sought to infuse the spirit of section 32 throughout the process of preparing the Plan.

2.0 Natural Character

2.1 Introduction

Section 6(a) of the Act declares as a matter of national importance: “the preservation of the natural character of the coastal environment (which includes the coastal marine area), wetlands, lakes, rivers and their margins, and the protection of them from inappropriate subdivision, use and development.”

Chapter One of the New Zealand Coastal Policy Statement expresses ways in which the natural character of the coastal environment can be preserved. It links natural character preservation with a number of other protection matters. An example is Policy 1.1.3(a) of the New Zealand Coastal Policy Statement which introduces the protection of “... landscapes, seascapes and landforms ...”. While the protection of outstanding landscapes is a matter of national importance under section 6(b) of the Act, its protection will also work towards the preservation of natural character. The combination of both seeks to promote the sustainable management of natural and physical resources.

Natural character can generally be described as being those characteristics (qualities and features) of a particular environment. The particular environment in the case of the Plan, is the coastal environment, freshwater environments or wetlands, lakes, rivers and their margins.

The natural character of the coastal environment and freshwater bodies is comprised of a number of key elements which include:

- Coastal or freshwater landforms;
- Indigenous flora and fauna, and their habitats;
- Water and water quality, including marine and freshwater ecosystems;
- Scenic or landscape values;
- Cultural heritage values; and
- Habitat of trout.

All parts of the Marlborough Sounds coastal and freshwater environments have some or all of these qualities and to that extent, all have some degree of natural character.

The preservation of natural character and protection from inappropriate subdivision, use and development will generally be achieved by a process which addresses those identified components of natural character. By identifying and explaining the process of natural character preservation and providing an integration mechanism in this chapter, natural character can be effectively addressed.

The process which addresses natural character is based on the identified components of natural character (above) and the way in which the Plan specifically manages these. In other words, a number of the policies and methods of implementation for preserving natural character are contained within other sections of the Plan. Based on the qualities or components of natural character identified above, the process is as follows.

2.1.1 Coastal or Freshwater Landforms

Examples of landform include tidal estuaries, dune formations, coastal cliffs, and bays and inlets. The Plan addresses adverse impacts on landform by incorporating controls on land disturbance and alteration to the foreshore and seabed. Refer to Chapter 13: Soil Conservation and section 9.4: Alteration to the Foreshore and Seabed.

2.1.2 Indigenous Flora and Fauna and their Habitats

Important vegetation and animals and habitats are incorporated into 'areas of significant ecological value' and policies to protect these are provided in Chapter 4: Indigenous Flora and Fauna and Their Habitats.

2.1.3 Water and Water Quality

Water management issues and water quality are addressed in Chapter 3: Freshwater and section 9.3.1: Coastal Marine Water Quality. The achievement of the policies in these sections and the implementation of the relevant rules in Volume Two will also contribute to the preservation of natural character.

2.1.4 Scenic or Landscape Values

Scenic or landscape values are essentially people's appreciation of the visual qualities of a particular area. Protection of visual qualities is provided in Chapter 5 Landscape and throughout a number of other chapters of the Plan (eg Open Space, and Rural and Urban Environments).

2.1.5 Cultural Heritage Values

Cultural heritage values include historic places of early settlement and sites of significance to iwi. Policies to manage Tangata Whenua and heritage values are contained within Chapter 6 and rules to protect specific heritage resources are contained in Volume Two.

The protection of the individual elements of natural character will go towards preserving the natural character of the coastal and freshwater environments and protecting them from inappropriate subdivision, use and development.

In addition to protecting those elements which contribute to natural character, it is important to address the cumulative effects of subdivision, use and development. Also, the irreversible adverse effects on natural character of some types of subdivision, use, and development need to be addressed. In such cases remedying or mitigating the change brought about by such activity can be complex.

This creates difficulties for ensuring the protection of natural character, which can only be assessed on a case by case basis. The policies which follow allow for this.

2.1.6 The Framework for Natural Character

Knowledge of the biophysical and ecological aspects of the above elements has been used to describe the overall natural character and to classify and map the Marlborough Sounds area into management units, known as **Natural Character Areas**. These classifications are based on a range of biophysical and ecological parameters, relating to collective characteristics, landforms, geological features, dynamic features and processes including climate, water, predominant

indigenous vegetation, distinctive biota, communities and habitats, and potential for restoration. This information describes the distinctiveness of the natural character within each natural character area.

Appendix Two of this volume of the Plan contains detailed description of:

- Overall natural character of the Marlborough Sounds across terrestrial, freshwater and marine environments; and
- Natural character of the following constituent natural character areas:
 - (i) Land:

D'Urville, Bryant, Cook Strait; Bulwer; Arapawa; Portage; Stokes; Nydia; Pelorus; Kaituna; Robertson; and
 - (ii) Coastal/marine:

Eastern Cook Strait and Outer Queen Charlotte; D'Urville Island - Northern Cook Strait; Port Underwood; Tasman Bay - Admiralty Bay; Middle Pelorus Sound; Inner Pelorus Sound; Tory Channel; and Queen Charlotte Sound.

Guidelines to interpretation and definitions of relevant terms are also contained in Appendix Two.

This natural character information is a relevant tool for management in helping to identify and protect those values that contribute to people's experience of the Sounds area. Preserving natural character in the Marlborough Sounds as a whole depends both on the overall pattern of use, development and protection, as well as maintaining the natural character of particular areas. The Plan therefore recognises that preservation of the natural character of the constituent natural character areas is important in achieving preservation of the natural character of the Marlborough Sounds as a whole.

The Plan requires that plan change and resource consent applications be assessed with regard to the natural character of the Sounds as a whole as well as each natural character area, or areas where appropriate. This method is further explained in the following methods of implementation and provided for in the zone rules.

2.2 Objectives and Policies

Objective 1	The preservation of the natural character of the coastal environment, wetlands, lakes and rivers and their margins and the protection of them from inappropriate subdivision, use and development.
Policy 1.1	Avoid the adverse effects of subdivision, use or development within those areas of the coastal environment and fresh-water bodies which are predominantly in their natural state and have natural character which has not been compromised.
Policy 1.2	Appropriate use and development will be encouraged in areas where the natural character of the coastal environment has already been compromised, and where the adverse effects of such activities can be avoided, remedied or mitigated.

Policy 1.3	To consider the effects on those qualities, elements and features which contribute to natural character, including: <ul style="list-style-type: none"> a) Coastal and freshwater landforms; b) Indigenous flora and fauna, and their habitats; c) Water and water quality; d) Scenic or landscape values; e) Cultural heritage values, including historic places, sites of early settlement and sites of significance to iwi; and f) Habitat of trout.
Policy 1.4	In assessing the actual or potential effects of subdivision, use or development on natural character of the coastal and freshwater environments, particular regard shall be had to the policies in Chapters 3, 4, 5, 6, 12,13 and Sections 9.2.1, 9.3.2 and 9.4.1 in recognition of the components of natural character.
Policy 1.5	Promote an integrated approach to the preservation of the natural character of the coastal and freshwater environments of the Marlborough Sounds.
Policy 1.6	In assessing the appropriateness of subdivision, use or development in coastal and freshwater environments regard shall be had to the ability to restore or rehabilitate natural character in the area subject to the proposal.
Policy 1.7	To adopt a precautionary approach in making decisions where the effects on the natural character of the coastal environment, wetlands, lakes and rivers (and their margins) are unknown.
Policy 1.8	To recognise that preservation of the intactness of the individual land and marine natural character management areas and the overall natural character of the freshwater, marine and terrestrial environments identified in Appendix Two is necessary to preserve the natural character of the Marlborough Sounds as a whole.

The above objective and policies seek to support other sections of the Plan in terms of their contribution to natural character and provide an integration mechanism for the management of natural character.

The preservation of the natural character of the coastal environment, wetlands, lakes and rivers (and their margins) and the protection of them from inappropriate subdivision, use and development is a matter of national importance which must be recognised and provided for in the Plan. The natural character of the Marlborough Sounds comprises those features and qualities which have been brought into being by nature. While it is seen as nationally important to preserve the qualities of natural character, it is not intended that this principle should preclude appropriate subdivision, use and development.

This level of direction is consistent with the policies contained within the New Zealand Coastal Policy Statement, including Policy 1.1.5. It provides a guide for decisions on plan changes, assessment of effects, consent decisions, and direction in determining appropriate measures to avoid, remedy and mitigate adverse effects of activities on natural character.

2.3 Methods of Implementation

Rules	Rules have been constructed to ensure that the elements which contribute to natural character in the Marlborough Sounds are protected from inappropriate subdivision, use and development. Refer to General Rules and Zone Rules, Volume Two. The establishment of a Conservation Zone and related rules, also contributes to the preservation of natural character in the Sounds.
Assessment Criteria	The provision of assessment criteria on discretionary activities to facilitate the consideration of natural character impact.
Information	The Council, in liaison with the Department of Conservation, will prepare and maintain a bibliography of published material on the natural and physical resources of the Marlborough Sounds.
Methods of Implementation	Natural character areas - The natural character of the Marlborough Sounds overall, and the constituent land and marine natural character management areas are described in Appendix Two. These descriptions must be considered in the preparation of resource consent and plan changes and in making consent and plan change decisions. These area descriptions also provide direction in determining appropriate measures to avoid, remedy and mitigate adverse effects.

The methods to achieve preservation of natural character in those areas where this is required by the Act, is the general outcome of a number of the rules provided by the Plan. The zoning mechanism identifies the most appropriate locations for more intensive development. For example, the Sounds Residential Zone indicates appropriate locations for residential development in the Sounds. Subdivision is a precursor to major changes to natural character. Controls on subdivision ensure that these changes are not adverse.

Rules will ensure, as far as is practicable, that subdivision, use and development harmonise with the natural character of the coastal environment and wetlands, lakes and rivers.

The natural character area framework is based on biophysical and ecological components listed in Appendix Two. This framework is in addition and complementary to the outstanding landscape areas identified in the Plan maps. (The outstanding landscape areas are based on the VAMPLAN method of identification and therefore represent an assessment of the visual values within the Marlborough Sounds.)

Plan users should also note that the natural character descriptions are a summary of the current knowledge of the plan area and constituent management

areas. The natural character descriptions are not exhaustive and will not preclude consideration of other natural character values and effects within resource consent and plan change processes or developing appropriate mitigation or environmental offsets. However, recognition of additional natural character attributes will not detract from those features identified in Appendix Two.

The linkages that exist across natural character areas and traversing land and marine areas are addressed through the appropriate wording of consent assessment criteria.

2.4 Anticipated Environmental Results

Implementation of the policies and methods relating to natural character will result in:

- The preservation of areas of uncompromised natural character in the coastal and freshwater environments;
- The protection of the elements and features which significantly contribute to the natural character of the coastal environment and wetlands, lakes and rivers and their margins; and
- The preservation of the core components that make up the natural character of the Marlborough Sounds overall and the constituent natural character areas identified in Appendix Two.

3.0 Freshwater

3.1 Introduction

The Marlborough Sounds and water are synonymous. Without it the Sounds would not be the Sounds. For the most part water quality in the Sounds is reasonably good and is reflected in the uses and values associated with the area. Some of these, such as marine farming, tourism, recreation and use by Maori for mahingakai, are dependent on clean, safe water.

Nevertheless there are some problems which arise from threats to the current state of water quality. These threats tend to be localised, for example around sewage outfalls or temporary, like the contamination of water in the Pelorus Sound by land run-off following heavy rain. Seasonal water availability in some areas during summer months has implications in terms of ecosystem stress while contamination of run-off water from land use can lead to a permanent reduction in water quality.

Because of the inter-related and dynamic nature of ecosystems, implementation of Regional Policy Statement objectives will have many implications for all aspects of the management of the water (and other) resources of the Marlborough Sounds area.

For the purposes of the Plan, water ecosystems have been separated into three types. This follows on from the Marlborough Regional Policy Statement. These are:

- Wetlands, Lakes and Rivers;
- Groundwater; and
- Coastal Marine.

This chapter establishes objectives, policies and methods for freshwater ecosystems. That is, wetlands, lakes and rivers (surface freshwater) and groundwater. Coastal water management (including objectives, policies and methods for coastal water quality) has been incorporated into Chapter 9 Coastal Marine.

3.2 Wetlands, Lakes and Rivers

3.2.1 Issue

Degradation of the quality of water within wetlands, lakes and rivers due to use and development of resources.

While large areas of the Marlborough Sounds, in particular the Wakamarina and Upper Pelorus catchments, are still in their pristine state, the remaining area has a long history of human occupation and agricultural development. As a consequence, natural waterways and lake systems have been subject to many decades of run-off from land use activities.

Today the quality of fresh surface water within the Marlborough Sounds catchments varies depending on location and time of year. While the overall standard of surface water is reasonably good, there are localised areas which

at times exhibit lower water quality due to a build-up of sediment, nutrients or bacteria. The seasonality of water quality problems is illustrated by elevated bacteria in the Kenepuru Sound during summer corresponding to the influx of holiday makers, and elevated nutrient loading coinciding with winter run-off in the lower Kaituna Valley, lower Pelorus and Rai Valley areas.

While in many instances reduced water quality is of little significance apart from indicating a possible future problem, there are occasions where it has not been of a satisfactory standard to allow contact recreation activities or the gathering of aquatic fish and plants. The Kaituna and Rai Valleys and the Kenepuru and Inner Queen Charlotte Sounds have been identified through observation and measurement as being more susceptible than other areas to contamination. Of principal concern for the waterways of the Lower Kaituna and Rai Valleys has been levels of bacteria and to some extent nitrogen originating from agricultural activities. In the Kenepuru and Ngakuta/Momorangi Bay areas levels of bacteria from effluent disposal systems reach high levels during the summer tourist season.

The Marlborough Regional Policy Statement has emphasised the importance of freshwater quality by setting as an objective that it should be maintained at a level which provides for the sustainable management of aquatic ecosystems. This document also recognises that a long-term strategy is necessary to meet this standard.

Because these catchments and the freshwater bodies within them all drain into the coastal waters of the Marlborough Sounds, any degraded freshwater will also affect coastal ecosystems and compound any coastal water quality problem. It is important to maintain satisfactory water quality within the source areas.

Degradation of water quality may be related to land use and waste disposal practices. Consequently, it is necessary to control point source discharges which directly contaminate freshwater, and correct land use practices which indirectly contribute pollutants. At present these land-based activities have contributed to a minor degradation in water quality in most areas. To avoid further reductions in water quality and to improve standards in other areas such as the Lower Kaituna Valley, it is necessary to change some land use practices. Refer also to Chapter 13 (Soil Conservation) and Chapter 14 (Discharges to Land).

3.2.2 Objectives and Policies

Objective 1	Maintenance and enhancement of aquatic ecosystems and the management of the effects of activities on water quality in wetlands, lakes and rivers that enables: a) Contact water recreation; b) Food gathering; or c) Cultural integrity.
Policy 1.1	Avoid the direct or indirect discharge of untreated sewage or industrial/trade waste to freshwater.
Policy 1.2	Avoid the discharge of contaminants into freshwater where it will modify, damage or destroy any significant ecological value.

Policy 1.3	<p>Avoid the discharge of contaminants into freshwater where it will adversely affect:</p> <ol style="list-style-type: none"> a) areas identified by iwi as being of special spiritual, cultural or historical significance; b) areas identified as an outstanding landscape; and c) quality of water in the coastal marine area.
Policy 1.4	<p>When assessing a permit to discharge water or contaminants into a wetland, lake or river have particular regard to the classification of that water body and the need to:</p> <ol style="list-style-type: none"> a) Preserve, and where appropriate, restore the natural character of wetlands, lakes and rivers and their margins; b) Protect public health; c) Protect the visual aesthetics of the area; d) Protect the olfactory aesthetics of the area; e) Protect sites of spiritual, historical or cultural significance to Maori identified in accordance with Tikanga Maori, including waahi tapu, tauranga waka, mahinga maataitai and taonga raranga; f) Avoid, remedy or mitigate adverse effects on ecological systems including natural movement and productivity of biota, natural biodiversity and adverse effects on: <ul style="list-style-type: none"> • Fish spawning and nursery areas; • Bird-breeding and nursery areas; • Fish and bird migration through estuaries; • Feeding patterns; • Habitats important to the continued survival of any indigenous species; • Wildlife and freshwater biota; and • The intrinsic value of ecosystems.
Policy 1.5	Avoid, remedy or mitigate the adverse effects of land use activities on the quality of freshwater.
Policy 1.6	Promote and encourage land use practices and measures which avoid, remedy or mitigate adverse effects on water quality.
Policy 1.7	Promote and where necessary specify appropriate riparian management practices that will provide for: natural hazard management; provision of public access and recreation; and protection of riparian habitat diversity; in-stream habitat; and water quality.

The Pelorus, Kenepuru and Queen Charlotte Sounds are enclosed waterbodies with restricted flushing flows within the inner parts of these Sounds. Marlborough Sounds water quality is in part dependent on the freshwater flows into them. This means that the policies contained within Section 9.5.3 will apply to discharges to freshwater where it impacts on coastal water quality.

Water classification is an effective way of managing water that enables the maintenance or enhancement of water quality as appropriate. The classifications, of Class F for surface water and Class DW for groundwater, are consistent with the Marlborough Regional Policy Statement. Applying additional classifications over the underlying classifications for particular resources or parts of a resource will enable specific management to protect local values. This is important because classifications F and DW have standards that relate only to the protection of the fishery or drinking water aspects of the resource. Other values such as amenity or contact recreation can be maintained through the use of specific classifications. The narrative and alphanumeric standards used to define the water classifications are given in Appendix H, Volume Two.

Defining and requiring all mixing zones to meet a prescribed formula will ensure a consistent and equitable approach to water quality management and provide certainty for plan users.

Overall the policies will work towards enabling the continued health of the freshwater ecosystems to provide for the needs of the community both now and in the future.

3.2.3 Methods of Implementation

<p>Rules</p>	<p>Discharges of untreated human sewage into freshwater is prohibited. Rules and standards relating to discharges to land, which affect water quality, are included. Other discharges to freshwater are not provided for, thus, resource consents will be required for discharges to water and consent only granted where adverse effects are able to be avoided, remedied or mitigated.</p> <p>Existing consents for discharges will only be renewed after taking into account the above objectives and policies upon their expiry. In particular, a reduction in the level and concentration of contaminants will be required for discharges which cause adverse environmental effects, along with a timeframe for improvements of the discharge.</p> <p>Controls and guidelines will be adopted in respect of land and vegetation disturbance likely to adversely affect water quality in wetlands, lakes and rivers.</p> <p>Standards will define limits for the deposition or discharge of material to land which could result in contaminants being carried by run-off or leaching into a fresh water body or coastal water.</p> <p>A schedule and associated maps identifies significant water bodies where rules apply to manage adverse effects of activities on aquatic ecosystems and adjacent riparian margins.</p>
<p>Education/ Advocacy</p>	<p>The Council will develop and implement an educational strategy to support the objectives and rules contained in the Plan.</p> <p>The Council will provide information, technical advice and other assistance on ways to maintain, and where appropriate, improve the quality of non-point source discharges.</p>

	<p>For water bodies not identified for regulatory methods of riparian management, education and advocacy methods will target in particular, those areas identified by a working group of relevant interested organisations and individuals as having significant values that require protection or enhancement of riparian management by non-regulatory means.</p> <p>The Council will advocate the development of national policies relating to the use of agricultural chemicals.</p>
Liaison	<p>The Council will liaise with organisations, the Tangata Whenua and interest groups regarding the state of, and enhancement of, fresh water quality.</p> <p>In particular, the Council will liaise through a riparian management working group comprising of relevant organisations and individuals. The aims of the group will be to review and prioritise water bodies for non-regulatory methods of riparian management and determine appropriate methods of management. This working group will complete the initial prioritisation of water bodies by the end of the year 2000.</p>
Monitoring	<p>The Council will undertake comprehensive fresh water quality monitoring.</p> <p>Monitoring the effectiveness of regulatory and non-regulatory methods of riparian management in terms of achieving natural hazard management, provision of public access and recreation, protection and enhancement of riparian habitat diversity, in-stream habitat and water quality.</p>

Rules are necessary in part because the Act makes it an offence to discharge water into water or contaminants to land or water without a consent (refer section 15 of the Act). Thus some provision needs to be made in the Plan in order for the community to be able to make use of the resource where any adverse effects on the environment are able to avoided, remedied or mitigated.

It is however acknowledged that non-regulatory methods may be more appropriate and effective in some circumstances in achieving the objective, and accordingly these methods are also incorporated into the Plan.

3.2.4 Issue

Degradation of the quantity of surface water within wetlands, lakes and rivers due to use and development of resources.

Historically, the Marlborough Sounds has had sufficient surface water resources available to meet the requirements of water users in the area. However, increased subdivision and development over recent years, corresponding with an increased demand for surface water resources, has created at times a seasonal water shortage.

For the most part though, there is plenty of water available in the Marlborough Sounds area for most anticipated uses for the foreseeable future.

A normal excess of availability over demand is due primarily to a high rainfall and a relatively low demand. Annual rainfall varies between a maximum of 2400 and a minimum of 1200 mm throughout the Sounds, compared to Blenheim's total of around 700 mm per year. This abundance of rainfall is exemplified in the permanent nature of most river regimes, luxuriant vegetative growth and high watertables. The exceptions are areas located along narrow isthmus such as the one separating Queen Charlotte Sound from Kenepuru Sound. These areas generally have less storage capacity in surface water bodies and receive less rainfall.

In areas of the Sounds there is at times, a seasonal water shortage. It is therefore important to ensure that adequate storage facilities are available. Storage is generally able to provide for any temporary shortfall. In addition, the use of groundwater resources needs to be encouraged. The high watertable levels within the Sounds and particularly the hinterland area, means there is an abundance of, largely unused, groundwater.

Current pressure on water resources is only likely to adversely affect some of the rivers and streams within the Marlborough Sounds area, in a short-term seasonal manner, during a dry year. The policies will establish an environmental bottom line flow, based on the low flow of a particular catchment, to guide and ensure sustainable water management. The policies will work in with a precautionary approach towards the issuing of water permits and careful monitoring of water quantity within the freshwater bodies of the Marlborough Sounds and freshwater habitats.

3.2.5 Objectives and Policies

Objective 1	That the natural functioning of ecosystems is not disrupted by the taking, use, damming and diversion of fresh surface water.
Policy 1.1	Adopt a precautionary approach towards the allocation of surface water resources.
Policy 1.2	Give priority to the maintenance of fresh water flows over abstraction from permanently flowing rivers.
Policy 1.3	Avoid adverse environmental effects on fresh water ecosystems from the taking of fresh surface water. Generally this will mean not more than 30% of the five year seven day low flow is allocated for abstraction.
Policy 1.4	Encourage the use of groundwater (where this is available) as an alternative to surface water, provided it does not have an adverse effect on the environment.
Policy 1.5	Encourage, and where appropriate require, adequate water storage facilities in areas affected by seasonal water shortages, while avoiding, remedying or mitigating adverse environmental effects.
Policy 1.6	Activities, resource use, development and subdivision should not be dependent upon water being available from the natural resource base when disruption to the natural functioning of the ecosystems is likely.

Section 14 of the Act places restrictions on the taking of water. Policy is required to determine the circumstances in which the Plan will allow the abstraction of fresh surface water.

There is generally adequate freshwater available in the Marlborough Sounds to meet most demands from land-based activities and development. Given that one of the important principles guiding the Plan is to protect the natural character of wetlands, lakes and rivers, it is necessary to ensure that abstraction of fresh surface waters does not give rise to environmental stress. Policy 1.3 provides guidance in the form of an allocation limit based on the minimum low flow of a stream or river. The low flow being the lowest level recorded for seven continuous days over a five year period.

Objective 2	The avoidance or minimisation of conflicts between water users.
Policy 2.1	To promote the sustainable, equitable, efficient and beneficial use of water, when allocating surface water.

In some localities there will be insufficient surface water available for abstraction at certain times during the year. That is, demand for water will be greater than that which can be supplied from a particular surface water body. This could lead to conflicts among users as to priority or claim to the resource. Policy 2.1 indicates priority principles for resolving any potential conflicts. These are based on Policy 7.2.3(b) of the Marlborough Regional Policy Statement.

3.2.6 Methods of Implementation

Rules	<p>The Council will control the abstraction of surface water and allocate the amount of water that can be taken subject to adequate flows and levels remaining in wetlands, lakes and rivers.</p> <p>Controls or guidelines, whichever is appropriate to the circumstances, which have regard to the availability of surface waters for abstraction, will attach to water permits for abstractions of surface waters.</p> <p>In areas affected by temporary water shortages, storage will be required as a condition of subdivision.</p>
Liaison/Early Warning System	The Council will liaise with fresh surface water users and provide an early warning system for potential ecological stress brought on by extraction during periods of low seasonal flow.
Advocacy and Education	The Council will encourage the establishment of alternative systems such as rain water storage, efficient use of water, and water conservation measures to reduce reliance on abstraction during periods of low seasonal flow.
Monitoring	The Council will continue to monitor the flows and levels of freshwater bodies, paying particular attention to those areas where abstraction occurs.

Rules are necessary in part to control the circumstances under which abstraction is permitted. Changes in attitude towards the conservation of the resource are best achieved through education.

3.3 Groundwater

3.3.1 Issue

The groundwater resource susceptibility to degradation due to use and development of resources.

Groundwater is an important source of water for many purposes in the lower Kaituna, Pelorus and Rai Valley areas. Uses include municipal supply for the township of Havelock, industry such as mussel processing, dairy shed and domestic supply. Generally though, it is a very under used resource throughout the Marlborough Sounds plan area. In some areas, such as the outer Marlborough Sounds, this is due to limited extent and availability.

Because the principal groundwater systems are located in a high rainfall area there is little concern over their ability to supply foreseeable demand with the exception of the Havelock Harbour area where there is the potential for saltwater intrusion. Generally speaking there is an excess of groundwater from an agricultural perspective.

Of more concern is the susceptibility of these shallow and generally unconfined aquifers to contamination from agricultural run-off, leaching of nitrates and effluent disposal systems. Watertables are close to ground level in many areas and provide easy access for contaminants from waste and leave a shallow depth in which to filter potential pollutants. High rates of rainfall increase the potential for leaching of contaminants from the surface to the shallow watertable. The inter-dependence between groundwater and surface water resources means the contamination of one will potentially lead to the contamination of the other.

3.3.2 Objectives and Policies

Objective 1	Management of the effects of activities so that: the quality of groundwater is maintained, or where appropriate enhanced; and the quantity of groundwater is maintained at a level which will protect and sustain ecosystems.
Policy 1.1	Avoid, remedy or mitigate the reduction of groundwater quality by contamination from land use activities that discharge to land and water, or disturb the land.
Policy 1.2	Avoid, remedy or mitigate any adverse environmental effects arising from the taking and use of groundwater.
Policy 1.3	Avoid any allocation of groundwater resources which could result in a permanent lowering of water levels below the natural fluctuation range.
Policy 1.4	Avoid, remedy or mitigate adverse effects arising from the construction or alteration of bores.

The objective and policies are designed to provide for the sustainable management of the groundwater resource in a way which will safeguard surface water ecosystems and provide for the wellbeing of present and future generations.

Wide fluctuation in the levels and flows of water in aquifers occur naturally. These fluctuations relate to seasonal and annual variations of river flows and rainfall. The groundwater systems have evolved to accommodate the natural range of fluctuations in flows and levels of water. The use of water should not alter aquifer flows and levels in a way which is irreversible so that the groundwater levels are unable to recover.

Refer to Chapter 14 (Discharges of Waste to Land) for more detailed policies relating to the effects of land use activities on water quality.

3.3.3 Methods of Implementation

Rules	Council will control the abstraction of groundwater, beyond a determined level, with safeguards to protect freshwater flows and levels.
Investigation	Promote the investigation of potentially contaminated sites and promote remedial works where problems are identified. Investigate the operation of septic tanks in areas where contamination of groundwater is identified and require remedial works to be carried out.
Education	Undertake an education programme in the use and maintenance of septic tank systems to minimise the effects of sewage effluent on land and water ecosystems. Undertake an education programme addressing the potential of land uses to contaminate infiltration waters recharging aquifers.
Research	Support research into the cumulative effects of land-based activities on groundwater quality.

Section 14 of the Act restricts the taking of water, therefore, rules are necessary to clarify the circumstances under which groundwater may be extracted. The investigative and research methods are directed at enhancing existing water quality.

Further methods relating to land use effects on groundwater quality are included in Chapter 14 (Discharges of Waste to Land).

3.4 Anticipated Environmental Results

Implementation of the policies and methods relating to water will result in:

- Protection of all wetland, lake and river ecosystems while enabling the community to make use of the fresh surface water resource;

- Maintenance of food gathering and recreational amenity values relating to water ecosystems;
- The safeguarding of areas of special freshwater ecological significance;
- Protection of visual aesthetics;
- The natural clarity of any permanently flowing river or lake not conspicuously reduced due to sediment or sediment laden discharge originating from the site of a land disturbance operation;
- Land disturbance which does not result in woody material being left in any permanently flowing river, lake or wetland;
- Preservation of the natural character of wetlands, lakes, rivers and their margins; and
- Continued maintenance of the water within the aquifers in a condition and at a level which makes them suitable and available for use as indicated by the level of the watertable and the quality of the water.

The following Policies have been added to this plan as directed by the National Policy Statement Freshwater management 2011 in accordance with Section 55 of the Resource Management Act 1991.

3.5 Water Quality

1. When considering any application for a discharge the consent authority must have regard to the following matters:
 - a) the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and
 - b) the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.
2. This policy applies to the following discharges (including a diffuse discharge by any person or animal):
 - a) a new discharge or
 - b) a change or increase in any discharge -

of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.

3. This policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management takes effect on 1 July 2011.

3.6 Water Quantity

1. When considering any application the consent authority must have regard to the following matters:
 - a) the extent to which the change would adversely affect safeguarding the life-supporting capacity of fresh water and of any associated ecosystem and
 - b) the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.
2. This policy applies to:
 - a) any new activity and
 - b) any change in the character, intensity or scale of any established activity -
that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).
3. This policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management takes effect on 1 July 2011.

4.0 Indigenous Vegetation and Habitats of Indigenous Fauna

4.1 Introduction

Section 6(c) of the Act requires that the Plan recognises and provides for “... *the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.*” This acknowledges the importance of native plants and animals.

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].

Policy 1.1.2 of the New Zealand Coastal Policy Statement seeks to “... protect areas of significant indigenous vegetation and significant habitats of indigenous fauna in that environment by:

- a) *avoiding any actual or potential adverse effects of activities on ...*
 - (i) *areas and habitats important to the continued survival of any indigenous species; and*
 - (ii) *areas containing nationally vulnerable species or nationally outstanding examples of indigenous community types”*

A number of other criteria for the protection of indigenous vegetation and the habitats of indigenous fauna are incorporated into the New Zealand Coastal Policy Statement. These are reflected in the policies of this chapter of the Plan.

The physical character of the Marlborough Sounds, particularly its steep topography and huge length of coastline, has created a great diversity of landforms and habitats, both coastal and terrestrial. This is then reflected in the variety of ecological communities and species present in the Sounds, including many that are unique. Generally, the land in the Sounds planning area is steep. The only flat land is located at the head of some bays and in the valley bottoms of the Pelorus, Rai and Kaituna River systems.

Important coastal or marine habitats include extensive mud substrate, particularly in the inner Sounds. Towards the outer Sounds and through much of Queen Charlotte Sound, coarse sand, shell and bedrock offer a habitat to a more diverse and complex marine community. Occasional isolated reefs or outcrops are highly productive habitats featuring a high diversity of plants and animals. Tidal wetlands occur at the heads of the larger Sounds.

A large variety of indigenous species occupy these habitats and a number are rare or uncommon for various reasons. Some of the more well known include the horse mussel, brachiopods, tubeworms, elephant fish, blue cod, dolphins and whales, and a variety of birdlife.

On land the indigenous vegetation (mainly beech forest) is very important in its own right, because it contains a number of endemic and/or rare plants and animals, and generally as it provides a habitat for important indigenous fauna.

The Marlborough Sounds are home to a great variety of indigenous fauna including some uncommon or rare native forest birds such as the kaka and the falcon.

The freshwater resources in the Sounds also contribute to the important ecological or natural values of the Sounds. The Pelorus River system is a significant trout fishery as is the Kaituna River. While all other freshwater ecosystems are free of introduced fish, that, combined with the small size of the catchments and the accessibility to sea, means that the freshwater catchments of the Sounds are good freshwater habitat for a variety of native fish. The habitat of eel and whitebait is of special concern to iwi.

A number of very significant ecological values are present within the Marlborough Sounds. The primary resource management issue in respect of these values, is the potential for adverse effects from the use of land and water on indigenous flora and fauna.

4.2 Issue

Degradation of indigenous vegetation and the habitat of indigenous fauna (and trout and salmon) from the adverse effects of land and water use

The effects of concern or the significant threats to indigenous vegetation and the habitat of indigenous fauna (and trout and salmon) include:

- Degradation or destruction of areas of significant indigenous flora and fauna through logging, burning, grazing, land development and invasive plant and animal pests;
- Degradation or destruction of the habitats of native fish, and trout and salmon, through the drainage of wetlands, pollution of waterbodies, removal of riparian vegetation and diversion and damming of water;
- Degradation of coastal marine habitats arising from structures, works or activities occurring within the coastal marine area or contamination of water arising from the effects of land-based activities; and
- The adverse effects of the interaction of people and the natural ecosystem (eg; through the pressures of domestic and international tourism).

4.3 Objectives and Policies

Objective 1	The protection of significant indigenous flora and fauna (and trout and salmon) and their habitats from the adverse effects of use and development.
Policy 1.1	Identify areas of significant ecological value which incorporate areas of indigenous vegetation and habitats of indigenous fauna.
Policy 1.2	Avoid, remedy or mitigate the adverse effects of land and water use on areas of significant ecological value.
Policy 1.3	Promote public understanding of the importance of protecting areas of significant ecological value from the adverse effects of activities because of their intrinsic,

	conservation, social, economic, scientific and educational worth, and for their contribution to the natural character of the Sounds.
Policy 1.4	Promote the establishment of reserves for the purpose of protecting land containing indigenous vegetation and the habitats of indigenous fauna.
Policy 1.5	Support the establishment of marine reserves for the purpose of protecting marine habitats for scientific study and the benefit of the public.
Policy 1.6	Ensure that particular regard is given to protecting trout and salmon habitat (including fish passage) and recreational values provided by the Rai, Pelorus, Wakamarina, Kaituna, Opouri, Tunakino, Ronga, Tinline Rivers and Waitohi Stream.
Policy 1.7	<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 1.8	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 1.9	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.

Indigenous plants and animals are an integral part of the natural character of the Marlborough Sounds area. They are also important to the future wellbeing of the Marlborough Sounds. In addition to their intrinsic value, plants and animals are significant for cultural, economic, scientific and educational uses and biological diversity.

Natural habitats which are appropriately identified and managed can help preserve rare, endangered, representative or characteristic species. Effective protection of areas of significant ecological value requires public support. It is important that the policies work towards ensuring that ecological values are both retained and appreciated by present and future generations.

Marine reserves are valuable mechanisms for protecting important or representative marine habitat. The Marine Reserves Act 1971 (administered by the Department of Conservation) is a statutory mechanism that can offer a direct means of protecting significant marine areas. The Marine Reserves Act provides for the setting up and management of areas of sea and foreshore as marine reserve for the preservation of areas as natural habitat of marine life for scientific study and the benefit of the public. Marine reserves also protect the intrinsic values.

Section 7(h) of the Act requires that the habitat of trout and salmon be considered. In the Marlborough Sounds planning area, trout have been established in the Pelorus River and its tributaries (including the Rai River), the Kaituna River and Waitohi Stream.

Refer to Chapter 12: Open Space and Chapter 23: Subdivision and Development for further policies and methods relating to the management and acquisition of reserves.

Policies 1.7, 1.8 and 1.9 have been inserted into the Plan as a requirement of the National Policy Statement for Freshwater Management 2020.

4.4 Methods of Implementation

Schedule/ Information database	Areas of significant ecological value have been identified in consultation with the Department of Conservation in accordance with specific criteria identified in Department of Conservation Occasional Publication No. 16: 'Ecologically Important Marine, Freshwater, Island and Mainland Areas
--------------------------------------	---

	<p>from Cape Soucis to Ure River Marlborough New Zealand'. Following this, the Council has incorporated a schedule which defines the ecological values protected by the Plan. The areas containing significant ecological values are indicated on the planning maps in Volume Two, Appendix B.</p> <p>A schedule and associated maps have been incorporated into the Plan identifying specific water bodies that will be subject to regulatory methods of riparian management. These water bodies have been identified on the basis of natural hazard management, provision of public access and recreation, riparian habitat diversity, in-stream habitat and water quality.</p> <p>The Council will develop criteria for identifying significant sites and appropriate methods for recognising and providing for protection of their ecological values in accordance with section 6(c) of the Act. This will be done in consultation with a working party consisting of landowner representatives and the Department of Conservation. Wider consultation will take place with other interested parties.</p> <p>The Council will develop and maintain an information base of significant sites on land other than Department of Conservation owned land, using as a basis the areas identified in the publication 'Ecologically Important Marine, Freshwater, Island and Mainland Areas from Cape Soucis to Ure River, Marlborough, New Zealand - Recommendations for Protection'. This database will be developed in consultation with affected landowners.</p> <p>Subsequent to a review of existing related provisions a plan change providing for the management of significant sites in accordance with section 6(c) and the First Schedule of the Act, shall be notified by the Council within three years of the Plan being made operative.</p>
<p>Rules</p>	<p>The rules provide that any modification of any of the values associated with the areas identified on the schedule as having significant ecological value, will be assessed as a Discretionary Activity.</p> <p>Rules will control the clearance of indigenous vegetation and indigenous forest in certain circumstances.</p>
<p>Education</p>	<p>Increasing landowners' and the public's knowledge and understanding of the occurrence of significant areas of ecological value not only leads to a 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 conservation covenants on property titles.</p>

Support	<p>Support and assist in the setting up of marine reserves in appropriate locations.</p> <p>Support landowners' voluntary protection of indigenous vegetation through covenants.</p>
Land Acquisition	<p>The Council will consider acquiring sites with outstanding ecological values where land purchase is the only means available for protection of those values. This will include the Council accepting land as reserve fund contributions, where appropriate. The Council will also encourage other agencies to do this.</p>
Research	<p>The Council will encourage ongoing research to define significant ecological areas.</p>
Incentives	<p>Provide incentives to landowners to encourage protection of significant sites.</p> <p>Incentives may include:</p> <ul style="list-style-type: none"> • Waiver of resource consent application fees for the activities with the potential to affect ecologically significant areas, as shown in Volume Three, and/or • Waiver or reduction of development contributions where developments, including subdivisions, will achieve protection or rehabilitation of an ecologically significant area, as shown in Volume Three, and/or • Through the annual planning process, consider granting reductions in rating for properties where sites are protected through conservation covenants.

The rules relating to areas identified as having significant ecological value will work towards protecting the extensive conservation worth of the Marlborough Sounds.

Land acquisition is not always a viable method of protecting ecological values, nor is it generally necessary. However, it does provide an important back stop.

Education will improve the community's understanding and respect for ecological values.

4.5 Anticipated Environmental Results

Implementation of the policies and methods relating to indigenous vegetation and the habitats of indigenous fauna will result in:

- Maintenance and enhancement of population numbers and distribution of rare and endangered species;
- Maintenance of the diversity of land and water habitats; and
- Good stocks of native fish and trout in fresh surface waters normally inhabited by these fish.

5.0 Landscape

5.1 Introduction

Section 6(b) of the Act requires that provision be made in the Plan for *“the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development.”*

The Marlborough Regional Policy Statement develops this further in Policy 8.1.3 *“avoid, remedy or mitigate the damage of identified outstanding landscape features arising from the effects of excavation, disturbance of vegetation, or erection of structures.”*

In addition, the dynamic landscapes and seascapes of the coastal environment are among the most important components of natural character and amenity values in the Sounds, both requiring provision for their preservation [sections 6(a) and 7(c) of the Act]. Many areas with outstanding landscape values are also areas of high natural character. The visual and scenic qualities of coastal landscapes and seascapes also contribute to amenity, recreational, and tourism values and thereby enhance the social and economic wellbeing of the community.

The Marlborough Sounds has landscapes which are unique in New Zealand and are valued for their semi-wilderness aspects, scenic beauty, recreational capability and their social, economic and cultural utility. This chapter of the Plan establishes objectives, policies and methods to achieve the protection of these valued landscapes from inappropriate subdivision, use and development.

5.1.1 Identification of Outstanding Natural Features and Landscapes

In its entirety, the landscape of the Marlborough Sounds Plan area has outstanding visual values. It displays a broad range of types of visual landscapes and features which are often of greater value for their collective contribution than for their individual value. The location of the Sounds at the top of the South Island with the role as a sea corridor and gateway to the South Island ensures a high public profile as a travel route.

Some of the visual features of the Sounds which contribute significantly to its outstanding character are:

- The curving coastline with a range of tidal estuaries and sandy and rocky beaches;
- Island landforms set with a skyline backdrop;
- Highly weathered coastal cliffs;
- Rolling ridgelines along the skyline;
- A complex mosaic of vegetation patterns which gives rise to a range of textures and colours in the landscape; and
- Uninterrupted sequence from hilltop to seafloor.

Within the overall landscape of the Marlborough Sounds there are some parts which can be described as individually outstanding such as coastal cliffs including those facing Cook Strait and on D'Urville Island, the Rangitoto Islands, French Pass Channel and the coastal forests and waters of Tennyson Inlet. Other outstanding features and landscape components can be identified and, where they occur, are generally:

- Headlands;
- Spurs and steep hillsides;
- Skylines;
- Significant hills and landform peaks;
- Water;
- Shorelines and small coves;
- Indigenous forests;
- Mudflats and tidal estuaries;
- Flat valley floors; and
- Cliff faces.

Areas of outstanding landscape value are indicated on the planning maps in Volume Three. This material is intended to provide a guide to assist those involved in resource consent applications to assess adverse effects on outstanding landscape criteria and values.

5.2 Issue

The adverse effects of inappropriate subdivision, use or development on outstanding natural features and landscapes.

The natural and physical resources of the Sounds offer vast opportunities for a range of uses and development activities. Some of these are highly compatible with the underlying landscape and seascape character. Others have potential to compromise the integrity of that character. The landscape of the Sounds has been host to over 150 years of farming, feral grazing, fire, forestry, fishing and coastal settlement. The Sounds landscape overall is therefore highly modified and is constantly changing with the cycles of land use patterns.

Within the overall issue stated above it is important to attempt to define the types of subdivision, use and development which would be 'inappropriate' and could adversely affect landscape values. In respect of both the areas of outstanding landscape identified and any other area valued for landscape or visual reasons, inappropriate subdivision, use and development may include:

5.2.1 Structures on Land

In the coastal environment in particular, buildings and other structures that have the potential to intrude and compromise the natural quality of the landscape. In some landscape contexts the siting, bulk and design and contrasting colours of buildings can be inappropriate. Network utilities and associated buildings (towers, masts, transmission dishes and lines) where located on hilltops can have significantly detrimental effects on the visual values of important skylines.

5.2.2 Structures on Water

Similarly the siting, bulk and design of structures and equipment located on the surface of water can interrupt the consistency of seascape values and detract from the natural seascape character of a bay or wider area.

5.2.3 Land Disturbance

Roads and tracks can be highly visible within the landscape where they cut across the faces of hills or where their construction requires substantial earthworks and landform change. Sensitive design and construction can minimise some of these adverse effects but in other visually prominent situations it may be that the visual effects are unable to be mitigated and the alignment is simply inappropriate.

Similarly the earthworks associated with creating building platforms can be highly visible within the landscape. In some situations vegetation rehabilitation can mitigate or remedy the effect over time. In others the highly prominent location of the site may mean that no amount of subsequent mitigation would reduce the significance of the adverse landscape effect.

Mining can have significant detrimental effects on visual landscape values where open cast methods are used.

5.2.4 Change of Vegetation Cover

Changes in land use practices and crops grown can have significant visual effects. The change from pastoral farming to production pine forestry has been significant throughout the Sounds and the hinterland. It is part of the cycle of change within the working landscape of the area and is not necessarily a detrimental change wherever it occurs. In the context of some landscapes and features, though, the removal of significant indigenous cover and replanting with exotic species could have a detrimental effect on the landscape. Some changes in vegetation can enhance the landscape values of an area.

5.2.5 Subdivision

The visual effects of human settlement are the intrusion of structures and land disturbance mentioned above. The act of subdivision of land is instrumental in determining where new building development and roading is to be located. Although the legal process of subdivision itself does not cause direct visual effects, the activities and patterns of development which follow it can be significant (new boundary fencing, new land management practices, new buildings, roads and jetties).

5.3 Objectives and Policies

Objective 1	Management of the visual quality of the Sounds and protection of outstanding natural features and landscapes from inappropriate subdivision, use and development.
Policy 1.1	Avoid, remedy and mitigate adverse effects of subdivision, use and development, including activities and structures, on the visual quality of outstanding natural features and landscapes, identified according to criteria in Appendix One.

Policy 1.2	Ensure that any long-term adverse effects on landscape from land disturbance and earthworks are avoided, remedied or mitigated.
Policy 1.3	Within identified outstanding natural features and landscapes, ensure that any land disturbance or earthworks undertaken, incorporate measures to mitigate any short-term adverse effects or enhance landscape quality in the long-term.
Policy 1.4	Require activities involving vegetation clearance to incorporate measures to mitigate any significantly adverse visual landscape effects by appropriate rehabilitation, including revegetation.
Policy 1.5	Ensure that all proposed new allotments are capable of providing a building platform for future buildings which is located in such a way that potential adverse effects on outstanding natural features and landscapes can be avoided, remedied or mitigated.
Policy 1.6	Encourage retention of areas or stands of indigenous vegetation where they contribute significantly to landscape character and quality.

The objective, and the policies to achieve landscape protection, are included in the Plan primarily because the Act and the New Zealand Coastal Policy Statement require, as a matter of national importance, the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development.

The Marlborough Regional Policy Statement also indicates the need for the Plan to address the protection of visual or landscape values.

The objective and policies are intended to apply specifically to those areas identified as having outstanding landscape value (refer to Volume Three - Maps). However, the policies also apply in the general to all other areas, particularly when an application for a moderate or large-scale activity is being assessed. That is, when some type of visual or landscape assessment is necessary in order to ensure that any adverse visual effects are avoided, remedied or mitigated.

5.4 Methods of Implementation

Area Identification	Areas of outstanding landscape value have been identified in accordance with specific criteria (refer to Volume One - Appendix One). These are indicated on the planning maps (Volume Three).
Rules	Landscape values underpin the construction of rules and the zoning pattern adopted for the Plan.
Assessment Criteria	Landscape impact has been included as a matter for assessment on a number of Discretionary Activities where visual or landscape effects are likely. Such assessments will be required to take into account the values identified and shown on the planning maps.

Guidelines	The Council will develop landscape guidelines in accordance with the policies outlined in this chapter. Such guidelines will provide subdividers, land users and building applicants with information on suitable siting, design and use of colour for buildings and structures.
Education	The Council will provide landowners in areas identified as being of outstanding landscape importance with information on the values attributed to their land.
Covenants	The Council will encourage the use of voluntary open space or conservation covenants, or other agreements as a means of protecting an area of landscape value.
Subdivision	The Council may impose conditions of consent for subdivision, where appropriate, requiring landscape covenants be registered on the land title or the vesting of certain land as reserve in order to protect landscape values.
Land Acquisition	The Council will consider acquiring a site with outstanding landscape values where land purchase is the only means available for protection of the values.
Incentives	<p>The provision of incentives to promote the protection of outstanding natural features and landscapes which has been shown to meet the criteria in Appendix One.</p> <p>Incentives will be investigated further and may include:</p> <ul style="list-style-type: none"> • Waiving resource consent application fees; • Waiving development contributions where property development incorporates the protection of an identified outstanding natural feature or landscape; and • Through the annual planning process, consider granting reductions in rating for properties where outstanding natural features and landscapes are protected through either rules in the Plan or by an open space or conservation covenant.

The methods provide a general framework for the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development. It is important to note that it is not outright protection which is sought by the objective, policies and methods above, but rather protection from inappropriate subdivision, use or development.

There are numerous means available to moderate landscape impact. For example, a structure on land, such as a residential dwelling or a transmission mast can have a lesser visual effect if it is appropriately located on the site, the shape and size is moderate and reflects the surrounds, and the external finish is non-reflective and incorporates neutral colours. A number of the areas identified as having outstanding landscape value are in public ownership, generally administered by the Department of Conservation. Such areas are unlikely to face many visual or landscape threats.

5.5 Anticipated Environmental Results

Implementation of the policies and methods relating to landscape will result in:

- Large areas of the Sounds area dominated by the interplay between deep, clear waters and indigenous vegetation rising from shore to ridgeline; and
- Minimum intrusion into the landscape by inappropriate land and water-based activities and their structures.

6.0 Tangata Whenua and Heritage

6.1 Tangata Whenua

The Act requires that the Council recognises and provides for the relationship of Maori with their ancestral lands, water, sites, waahi tapu and other taonga [section 6(c)]. It further requires the Council to have particular regard to kaitiakitanga [section 7(a)], and to take into account the principles of the Treaty of Waitangi (section 8). Further, the Marlborough Regional Policy Statement includes principle 3.2.1(b) to "Incorporate, where appropriate, the aspirations, heritage and values of the iwi of Marlborough into resource management decision making".

Kaitiakitanga is the traditional practice of managing resources so as to conserve and protect them. As a concept, it is based on spiritual, social and economic associations with these resources, and includes tribal rights to the use of an area. The management practices embodied in the application of Kaitiakitanga are very much in keeping with the philosophy driving the Act. In particular, Kaitiakitanga provides for the restoration of ecological harmony, the efficient use of resources and provision for the needs of both present and future generations.

Tangata whenua are kaitiaki (or guardians) of their coastal resources. As such they have assumed the responsibility to ensure that the mauri (or life essence) of these resources is protected. The mauri of a resource embodies a spiritual as well as a physical essence. From the Maori perspective damage to resources also carries spiritual damage.

It is possible to damage resources (eg; through pollution or despoliation) to the extent that they can lose their mauri entirely. Protecting the mauri ensures the maintenance of its integrity and protection of supply for future generations.

The concept of mauri therefore imposes a discipline on tangata whenua as kaitiaki, and because of their spiritual, social and economic connection to the resource, it is kaitiaki who have the responsibility for ensuring that the mauri of the resource is protected. In this sense, the Marlborough Sounds Resource Management Plan must recognise the role of tangata whenua as kaitiaki for the coastal environment. To this end the Plan endeavours to facilitate that role through a process of consultation. This chapter is designed therefore to provide some key overall objectives and some 'management' type policies, perhaps not adequately covered by other objectives, policies or methods.

6.1.1 Issue

Potential omission of Maori values and exclusion of Iwi in the use, development and protection of all resources, including traditional resources.

The dominant issues raised by iwi are:

- Exclusion from the decision making process;
- Proliferation, abuse and over use of resources; and

- Recognition of the Maori holistic systems of values within resource management decision making. These values being:
 - Te Taha o Te Ao (environment);
 - Te Taha Hinengaro (way of life);
 - Te Taha Wairua (spiritual and customary values); and
 - Te Taha Tinana (healthy body).
- Exclusion from the use, development and protection of traditional resources;
- Degradation of water quality as a result of pollution;
- Damage and destruction of waahi tapu and areas of special interest;
- Introduction of species into existing ecosystems;
- Pollution of all resources; and
- Uncontrolled waste disposal.

In general, iwi issues relate alongside resource management issues. A number of them are addressed directly within the relevant sections of the Plan. For example, iwi concerns relating to the degradation of water quality have been incorporated into Chapter 3 (Freshwater) and section 9.3.1 (coastal water quality). Other issues of importance to iwi are addressed below.

6.1.2 Objectives and Policies

Objective 1	Recognition and provision for the relationship of Marlborough’s Maori to their culture and traditions with their ancestral lands, waters, sites, waahi tapu and other taonga.
Policy 1.1	Recognise and protect sites of significance to tangata whenua, including waahi tapu, taiapure, maataitai, tauranga waka and areas of taonga raranga.
Policy 1.2	Recognise values important to tangata whenua, including the concepts of mauri, effects on the mana of iwi or hapu, and the ability of tangata whenua to provide manaakitanga.
Policy 1.3	Recognise the role of tangata whenua as kaitiaki in the coastal marine area.
Policy 1.4	Recognise and provide for continued tangata whenua access to, and use, of traditional coastal resources such as maataitai, taiapure and taonga raranga.
Policy 1.5	Maintain and facilitate communication with iwi representatives which ensures that where appropriate, issues of importance to iwi are drawn to the Council’s attention.

Individual areas have special significance for each iwi. For example, Tory Channel has significant values for Te Atiawa.

Notwithstanding the requirements of the Act, the Council is committed to sustainable management of the resources of the Sounds and wherever practicable to a partnership with Maori on all matters of common interest.

The above policies are a way in which the Marlborough Sounds Resource Management Plan can assist in recognising and providing for matters of concern to the tangata whenua. The Plan also endeavours to carry these and other principles forward to the construction of other elements of the Plan.

6.1.3 Methods of Implementation

Management	<p>Where a resource consent application is in or immediately adjacent to a site of significance to tangata whenua, the applicant will be required to notify and consult directly with the affected tangata whenua to determine -</p> <ul style="list-style-type: none"> • whether the granting of the resource consent would have any adverse effects on the values that give the site significance to the tangata whenua; and • how any actual or potential adverse effects which might result from the activity could, in the view of the tangata whenua, be avoided, remedied or mitigated. <p>Where a site of significance to tangata whenua is also an archaeological site the applicant will also be required to contact the NZ Historic Places Trust, in accordance with the Historic Places Act 1993, in order to enable the implementation of the archaeological authority provisions of that Act.</p>
Resource Consents	<p>Resource consents will not be granted for proposals which will unduly restrict the access of Tangata Whenua to sites of cultural significance on land of the Crown, unless that access can specifically be provided for, or the loss can be adequately remedied.</p> <p>For all resource consent applications which involve the permanent allocation of lands of the Crown or extraction of sand, shingle or other natural material from lands of the Crown, if there is any Treaty of Waitangi claim to the resource in question, appropriate conditions will be placed on any consent granted in order to ensure that the Crown's Treaty obligations with respect to that resource are not compromised.</p>
Prohibited Activity	<p>The Plan prohibits marine farming from some parts of the coastal marine area. In addition to other reasons (refer section 9.2.1, Policy 1.1), this will facilitate Tangata Whenua access to traditional coastal resources.</p>
Specific Identification	<p>Specific recognition will be accorded to the two known marae within the Sounds area (Waikawa and Te Hora).</p>

Sites of significance to Maori include waahi tapu, tauranga waka, mahinga maataitai and areas of taonga raranga. The Council will hold sufficient information to indicate that an area is important, and consultation would have to be undertaken directly with iwi for details.

Resource Consent applications could potentially affect the values of sites which are of significance to tangata whenua, (for example an activity which disturbs the seabed could affect the fisheries values of mahinga maataitai). The applicant will need to show whether any actual or potential adverse effects can be avoided, remedied or mitigated (in that order of preference). This could be achieved through changes in design of the proposal, negotiation with tangata whenua over appropriate compensation, or conditions on the resource consent. The tangata whenua group affected may be an iwi authority, but is more likely to be a smaller group such as a land-owning trust, a hapu, or a whanau.

The marae are active living centres of the Maori community with potential for development and change.

The range of activities undertaken on marae is expected to be wider than, for example, residential sites. It is considered that zonings (Residential or Rural) may unduly hinder the functioning and development of marae. It is considered to be necessary and appropriate to provide for special 'marae' identification with sufficient flexibility to enable marae to function and develop whilst protecting important amenities of surrounding environments.

6.2 Heritage

The Marlborough Sounds are rich in both Maori and European history. The early inhabitants of New Zealand were a sea-faring people. When canoe provided the major means of transportation practically all habitation was located along the coast. Throughout New Zealand the majority of archaeological sites are concentrated in coastal areas reflecting the fishing, hunting, gathering and horticultural opportunities that these areas offered.

Buildings with heritage significance are located in Robin Hood Bay, Rai Valley and Havelock and Picton townships.

The Marlborough Sounds has a number of historic and notable trees the majority of which are located in or around the townships. These trees are an important contribution to both the heritage and the visual character of the Sounds.

Heritage resources contribute to environmental quality, and consequently the community's wellbeing, in many ways. The ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value describes places of cultural heritage value.

"In general such places:

- i) Have lasting values and can be appreciated in their own right;*
- ii) Teach us about the past and the culture of those who came before us;*
- iii) Provide the context for community identity whereby people relate to the land and to those who have gone before;*
- iv) Provide variety and contrast in the modern world and a measure against which we can compare the achievements of today; and*
- v) Provide visible evidence of the continuity between past, present and future."*

In addition, the heritage resources of the Marlborough Sounds are becoming increasingly important as tourism grows, bringing with it the advantage of commercial support for enhancement of the historical environment.

The Historic Places Act 1993 gives the New Zealand Historic Places Trust the authority to register (and protect) heritage resources. Their activities, however, are limited to protecting those places which are significant on a national basis.

Many of the items or places which contribute to the heritage of the Plan area are of local importance rather than national significance. It is often these resources which face the greatest threat from modification or destruction. This is largely due to the difficulties associated with identifying the particular resources which contribute to the heritage and character of the Sounds. But also, difficulties arise with determining the most appropriate means of protection, for example regulatory or incentive approaches.

Information on the nature and location of archaeological sites in the Plan area is limited. While a large number of sites have been recorded in the Plan area, the coverage is by no means complete.

This is obviously an ongoing process. The Council and the community need to be able to assess heritage resources, indicate their importance and afford them different levels of protection. Heritage resources need to be reassessed from time to time so that as time passes new items can be protected and older or scarcer items can be given more protection.

Heritage resources are often fragile and may be adversely affected by activities, development or lack of care and maintenance. The challenge is to manage change, recognising the need to allow communities to alter and grow, while ensuring that significant heritage resources are retained for both present and future generations.

6.2.1 Issue

Retaining a sense of the cultural heritage that contributes to the character of the sounds.

In managing the use and development of the natural and physical resources, regard must be given to the cultural heritage resources and values which contribute to the character of the Sounds. To give effect to this obligation the Plan must:

- a) Identify those heritage resources which contribute to the character of the Sounds and therefore need to be retained; and
- b) Adopt suitable measures to secure the preservation of the identified heritage resources.

The Council, along with the community, has the responsibility to ensure that heritage resources are protected and retained for future generations.

The New Zealand Coastal Policy Statement refines the Council's heritage role in respect of the coastal environment. Heritage values are referred to in the general principles section of the New Zealand Coastal Policy Statement and again at section 3.1.2. Section 3.1.2 requires the identification of, and that appropriate protection be given to historic areas and areas of cultural significance.

6.2.2 Objectives and Policies

Objective 1	The preservation of the Plan area heritage resources including: historic buildings, places and sites, waahi tapu, archaeological sites and areas, and heritage trees.
Policy 1.1	Recognise the heritage resources of the Plan area which have been identified as specified in section 6.2.3, and provide the necessary protection to avoid or mitigate any adverse effects of activities on these resources.
Policy 1.2	Research and assess additional items of heritage value in the Plan area (of local significance) according to the criteria specified in section 6.2.3, in consultation with landowners and other agencies including NZ Historic Places Trust, New Zealand Archaeological Association, Department of Conservation and iwi.
Policy 1.3	Provide incentives for the preservation of all heritage resources of the Plan area.
Policy 1.4	Consider favourably proposed uses of scheduled heritage resources which may not be permitted as of right on the site concerned but which will encourage preservation and maintenance of the item.
Policy 1.5	Ensure that regard is had for heritage preservation with all subdivision, use and development in the Plan area.

The heritage resources of the Plan area are an important contributor to the character of the area. The policies work towards ensuring that they are retained and appreciated by present and future generations.

6.2.3 Methods of Implementation

Schedule	<p>The Council will maintain a register of significant heritage resources in accordance with section method 7.3.4(b) of the Marlborough Regional Policy Statement and will include this as an appendix to the Plan (Volume Two, Appendix A).</p> <p>Resources registered will include those on the Historic Places Trust Register (established under section 22 of the Historic Places Act 1993), heritage trees [as identified by the Royal New Zealand Institute of Horticulture (Inc)], a number of items identified by previous planning schemes and any other item incorporated in the Plan in terms of the criteria specified below. These criteria enable Council or interested parties (eg: local iwi, property owners) to identify things with heritage value and have them included on the schedule.</p> <p>Known archaeological sites (as supplied by the Department of Conservation and the New Zealand Archaeological Association Site Record files) are included on the Council's register of heritage resources. However, they have not been included in the Appendix to the Plan for reasons of cultural</p>
----------	--

sensitivity. Information on archaeological sites is available from the Council, the Department of Conservation, the New Zealand Archaeological Association and iwi.

The register will include an indication of the importance of the item to the community in order for different levels of protection to be assigned. The schedule (refer Volume Two, Appendix A) includes these classifications.

Items so registered will be subject to special controls and procedures as specified in the rules. They may also be eligible to receive the benefits provided by the incentives outlined below.

Criteria for Identifying Specific Heritage Resources

Criteria for selection of places or objects:

- a) Whether the place or object has value as a local landmark, over a length of time;
- b) Whether the place or object has historic association with a person or event of note, or has strong public association for any reason;
- c) Whether the place or object reflects past skills, style or workmanship which would make it of educational or architectural value;
- d) Whether the place or object is unique or rare, or a work of art;
- e) Whether the place or object is important to tangata whenua;
- f) Whether the place or object is physically prominent or well sited;
- g) Whether the place, as a whole, rather than in separate units, reflects a townscape which has developed in earlier years and has value for the Marlborough Sounds both now and in the future; and
- h) Whether the place or object forms part of a precinct or area of heritage value.

Criteria for identifying heritage trees

Criteria for selection of heritage trees (notable and historic trees):

- a) Any tree commemorating an important local event either in Maori or European history, settlement and development;
- b) Any tree that is regarded as an important landmark and has been acknowledged as such for a significant period of time;
- c) Any tree that has historic association with a well-known public figure or has had strong public association for some reason;

	<p>d) Any rare or important species; and</p> <p>e) A stand of trees conforming to the above.</p>
Rules	<p>The inclusion of rules to protect scheduled heritage resources from damage or destruction. Different levels of protection will be attached to the various types of heritage resources and the differing classifications based on the heritage value or importance of the resource.</p> <p>The maintenance and minor alteration of heritage resources will be allowed for in order to ensure that heritage features are sustained and continue to provide a useful resource to the community.</p>
Incentives	<p>The provision of incentives to promote the protection of scheduled and any other heritage resources. Any other heritage resources means any non-scheduled item which can be shown to meet some or all of the criteria for identifying heritage resources.</p> <p>Incentives will be investigated further and may include:</p> <ul style="list-style-type: none"> • Waiving resource consent application fees; • Permitting alternative uses of buildings to encourage the retention of heritage features (scheduled heritage resources only), refer to Policy 6.2.2.1.4; • Consider waiving development contributions where property development incorporates the protection of a scheduled heritage resource (scheduled heritage resources only); • Through the annual planning process, consider granting reductions in rating for properties where heritage resources are protected through either rules in the Plan or by a Heritage Order under the Act. • Consider providing development incentives to encourage the community, in particular the owners of heritage properties, to retain heritage resources; and • Heritage award programmes (through the annual planning process).
Education	<p>Promote and encourage public awareness of heritage resources and the importance of retaining them for the future, through the provision of information.</p> <p>All places or objects subject to a heritage order will be included in the schedule of heritage resources in the Plan and are shown on the planning maps. Thus these items will be subjected to the rules which relate to scheduled items so long as they are consistent with the heritage order. In addition, they may also be the subject of any further controls by the heritage order, due to the requirements of sections 193 and 193A of the Act. That being the written consent of the relevant heritage protection authority prior to undertaking any activity which might affect the heritage order or the resource which is subject to the order.</p>

The combination of rules, incentives and heritage orders will promote both the preservation of important heritage resources and the community's appreciation of heritage values.

6.3 Anticipated Environmental Results

Implementation of the policies and methods relating to culture and heritage values will result in:

- The relationship of Tangata Whenua to their culture and traditions being maintained and enhanced;
- The preservation of the heritage resources of the Marlborough Sounds;
- The appreciation and enjoyment of the Marlborough Sounds' heritage by the community.

7.0 Air

7.1 Introduction

There is very little data on air quality in the Marlborough Sounds area. The general perception is that the Sounds have few air pollution problems typified by the high visual clarity of the air. The low level of concern can be attributed to the sparse distribution of people and the climatic conditions of the Sounds. There are few sources of air contaminants and the relatively strong winds and high rainfall combine to either disperse or wash out most air contaminants.

Air quality concerns can be divided into three categories: global, local and nuisance.

Discharge of certain contaminants can have global impacts. The most important of these to New Zealand are the discharge of ozone depleting substances and greenhouse gases.

Both global warming and a depleted ozone layer have the potential to adversely affect the health and wellbeing of the people of the district. Ozone depletion can give rise to increased skin cancers in animals and humans and affect plant growth. Global warming may make existing ecosystems unsustainable and cause sea level rise.

Local contamination of the air occurs through discharge of dust, smoke, odour and agrichemicals.

The Act divides the control of discharges to air into two types. First discharges from industrial or trade premises are not allowed unless the discharge is expressly allowed by a rule in the Plan, resource consent, or regulations. Second, discharges from all other sources are allowed unless the discharge contravenes a rule in the Plan. The Act allows some existing discharges to continue.

The rules in the Plan are directed at allowing a range of activities to continue, while ensuring that any adverse effects on air quality are avoided, remedied or mitigated. However, discharges from vessels, motor vehicles and trains are not managed by the content of the Plan. Like global air quality issues, these discharges need to be addressed as national issues.

7.2 Issue

Managing air quality in the Plan area in the absence of ambient air quality information.

Ambient air quality refers to the overall quality of the air and is a measure of its variation from a pristine state. As such, it is a measure of the cumulative effects of human and natural activities on air quality. Knowledge of ambient air quality is essential for an effects-based air quality management program.

Without knowledge of the ambient air quality there is an inherent danger in setting standards which may in effect grant license to pollute. This would certainly be the case if air quality standards developed for major New Zealand cities were to be adopted for the Sounds area.

The Plan therefore sets minimum standards for industrial and commercial zones as a precautionary means of dealing with the immediate effects of discharge to air while maintaining a primary focus on monitoring of ambient air quality.

7.2.1 Objectives and Policies

Objective 1	The establishment of air quality indicators and the monitoring of the air resource, to indicate the cumulative effects of activities on ambient air quality.		
Policy 1.1	Adopt the following provisional indicator standards for ambient air quality:		
	Guideline	Averaging Time	Method of Measurement
Particulates (PM₁₀)	50mg/m ³	24 hours	AS 3580.9.6-1990
	40 mg/m ³	Annual	AS 3580.9.7-1990
Sulphur Dioxide	350 mg/m ³	1 hour	AS 3580.4.1-1990
	120 mg/m ³	24 hours	
Carbon Monoxide	30 mg/m ³	1 hour	AS 2695-1984
	10 mg/m ³	8 hours	
Ozone	150 mg/m ³	1 hour	AS 3580.6.1-1990
	100 mg/m ³	8 hours	
Nitrogen Dioxide	200 mg/m ³	1 hour	AS 3580.5.1-1993
	100 mg/m ³	24 hours	
Lead	0.5-1 mg/m ³	3 month	AS 2800-1985
Fluoride	<i>Special Land Use</i>		
	1.8 mg/m ³	12 hours	AS 3580.13.1-1993
	1.5 mg/m ³	24 hours	AS 3580.13.2-1991
	0.8 mg/m ³	7 day	
	0.4 mg/m ³	30 day	
	0.25 mg/m ³	90 day	
	<i>General Land Use</i>		
	3.7 mg/m ³	12 hours	AS 3580.13.1-1993
	2.9 mg/m ³	24 hours	AS 3580.13.2-1991
	1.7 mg/m ³	7 day	
	0.84 mg/m ³	30 day	
	0.5 mg/m ³	90 day	
	<i>Conservation Areas</i>		
	0.1 mg/m ³	90 day	
	Hydrogen Sulphide	7 mg/m ³	30 minutes

Policy 1.2	Monitor and review ambient air quality indicators and standards during the life of the Plan.
------------	--

Ambient air quality is dependent on the distribution and scale of contaminant discharges, and regional climate. The above indicators are selected as appropriate for monitoring ambient air quality in the Plan area. Use of these provisional indicators is the implementation of a precautionary approach to management of discharges to air. Monitoring ambient air quality entails measurement of long-term trends rather than short-term events.

The Council will undertake air quality monitoring to enable development of an ambient air quality management strategy. Information on ambient air quality allows the Council to:

- *Identify and prioritise air quality issues;*
- *Justify control over discharges to air;*
- *Assess policies for management of air quality;*
- *Assess effectiveness of discharge control measures; and*
- *Monitor long-term trends in air quality.*

It is necessary to set appropriate air quality indicators and standards for assessment purposes. These will give an indication of the affect that discharges to air have on the receiving environment.

7.2.2 Methods of Implementation

Monitoring	<ul style="list-style-type: none"> • Establish objectives and monitoring criteria, based on a region-wide assessment of monitoring needs, that meet the requirements of local and national interests; • Develop an air quality monitoring strategy and establish a monitoring network; • Set regular review periods to assess the effectiveness of the monitoring program and define other monitoring requirements; and • Develop and maintain an emission inventory within the life time of the Plan.
------------	--

The only method of quantifying air quality is to monitor it. Monitoring air quality is both expensive and requires specialised skills and equipment. The most effective way of meeting monitoring needs is through a collaborative approach with other councils, both in establishing and running the monitoring program and sharing skills, equipment and available data.

7.3 Issue

Enabling the community to provide for its health and wellbeing.

Rules within the Plan manage air quality by allowing discharges from industrial or trade premises (subject to various conditions) and regulating all other discharges from premises. Many of the rules in the Plan are therefore directed at allowing a range of activities to continue, while ensuring that any adverse effects on air quality are avoided, remedied or mitigated.

7.3.1 Objectives and Policies

Objective 1	The adverse effects of discharging contaminants into air be avoided, remedied or mitigated, including adverse effects on local ambient air quality, community wellbeing, amenity values, resources or values of significance to tangata whenua, ecosystems, and water and soil.
Policy 1.1	Ensure that all persons discharging contaminants into air, avoid, remedy or mitigate any adverse effect arising from that discharge. This includes all effects likely to be noxious, dangerous, offensive, or objectionable to such an extent that there is an adverse effect on the environment.
Policy 1.2	Promote measures which avoid or reduce the discharge of contaminants to air at their source.
Policy 1.3	Ensure that any measures adopted to avoid, remedy or mitigate the effects of discharge of contaminants to air, take account of the alternative receiving environments.
Policy 1.4	Promote the use of industry guidelines as a means of reducing the effects of discharges from industrial premises.
Policy 1.5	Promote an appropriate roading hierarchy as a practical means to reduce the adverse effects of vehicle emissions.

Most discharges to air are waste disposal in that they contain unwanted by-products of processing. It is now standard practice to minimise waste at source. These policies apply this principle to the discharge of contaminants to air. Measures to control discharges can themselves have an impact on the environment. For example, scrubbers using water can contaminate water with heavy metals, and hence the need to mitigate the effects of mitigation measures.

7.3.2 Methods of Implementation

Rules	<p>Rules enable the discharge of contaminants to air from industrial trade premises and other potentially significant point sources by:</p> <ul style="list-style-type: none"> • Permitting with conditions, discharges which have no, or only minor, adverse effects on human health, amenity values, or natural and physical resources.
-------	--

	<ul style="list-style-type: none"> Requiring a discharge permit for all discharges which if uncontrolled, may have adverse effects on human health, amenity values or natural and physical resources; and Rules, standards and conditions have been developed for activities that: generate dust; produce odour; require the application of agrichemicals; and, produce smoke.
Education	Provide information to the community on the adverse effects of burning treated timber to the community.

Ensure that adequate educational material is available for users of agrichemicals on the prevention and minimisation of adverse effects on non-target plants and animals.

Rules are based on environmental effects of discharges of contaminants to air. Education will be used for these matters where environmental effects are minor or the adverse effects are temporary and occur infrequently. For effects on the environment arising from global trends, regulatory approaches applied within the Plan area are unlikely to bring about resolution of the issue, but should prevent further contribution to the related adverse effects.

7.4 Issue

The depletion of atmospheric ozone and increase in greenhouse gases caused by discharges to air.

Reduction of the global protective ozone layer allows more ultraviolet radiation to reach the earth's surface. This can have adverse effects on both human health and sensitive ecosystems. In humans this can mean skin cancers and eye damage. It will also affect plant growth, animal health and marine ecosystems. Substances which reduce the ozone layer include a group of chemicals used in aerosols, refrigeration and electronics.

The effects of reduced ozone will be highly significant in Marlborough due to the high annual sunshine.

Activities such as increased energy use and industrialization have increased atmospheric methane and nitrous oxide concentrations. Altering the concentrations of these greenhouse gases gives rise to the phenomenon known as global warming. The possible consequences of global warming include:

- Changes in climatic patterns, including greater frequency of extreme weather events;
- Rising sea levels due to thermal expansion of the oceans and melting ice caps;
- Damage to ecosystems and increased soil erosion as a result of climatic changes.

At present, the extent and magnitude of the effect of global warming is unknown. However, even small alterations in climate may affect social and economic wellbeing as well as the natural environment.

7.4.1 Objectives and Policies

Objective 1	Reduction of discharges into air of ozone depleting substances and greenhouse gases to a level which is consistent with central government initiatives and directives.
Policy 1.1	Support and promote, as appropriate, central government initiatives to reduce discharges of ozone depleting substances and greenhouse gases.
Policy 1.2	Provide input to central government on the effects of its policies on the Marlborough Sounds environment.

Depletion of the ozone layer is a global issue. Initiatives and policies need to be co-ordinated on a national level within the framework of international protocols or agreements the government has signed, such as the Montreal Protocol. The Ozone Layer Protection Act 1990 (and its amendments) is Government's main tool for implementation of protocol obligations. The role of the Council is primarily advocacy, promotion of public awareness and, implementing and monitoring national policies.

It is difficult to predict how changes to the climate will impact on Marlborough except to suggest the region may become hotter and drier. Therefore many agricultural and horticultural practices may no longer be sustainable without significant irrigation. Equally significant is the potential impact of rises in sea level on the Sounds area.

Central government has primary responsibility for co-ordinating the reduction of greenhouse gas emissions in New Zealand, and has set a target which will hold net carbon dioxide levels at 1990 levels by the year 2000.

7.4.2 Methods of Implementation

Liaison	Liaise with the appropriate central government agencies to ensure consistency with central government air quality management initiatives.
Education	Promote the recovery, re-use and recycling of ozone depleting substances and encourage the use of alternative technologies where appropriate. Promote more efficient use of fuels and the use of less polluting fuels (eg; electricity rather than open fires for domestic heating), including fuels used in motor vehicles. Promote industrial and waste management practices that reduce greenhouse gas emissions.
Advocacy	Provide local input to central government on the effects of its policies in Marlborough and the development of future government policy.
Monitoring	Monitor the changes in ambient air quality.

The objectives, policies and methods that have been adopted reflect the differing central and local government roles. Many of the methods help meet waste management, energy efficiency and transportation objectives.

The role of the Council is primarily one of advocacy, promotion of public awareness and implementation and monitoring of national policies on a local basis. Development of a regulatory approach would be difficult and prohibitively expensive. However, the Council will still need to monitor the effects of Government policies on the Marlborough environment. The Council has an obligation to the people of Marlborough to make any adverse effects of national policies known to Government.

7.5 Anticipated Environmental Results

Implementation of the policies and methods relating to air will result in:

- No measurable deterioration in ambient air quality throughout the Plan area;
- Local ambient air quality being enhanced in those areas where it is, or has been, degraded by specific discharges of contaminants to the air.

8.0 Public Access

8.1 Introduction

New Zealand has a long history of public ownership and an expectation of access to and use of the coastal environment, wetlands, lakes and rivers. This expectation of the public is no less for the Marlborough Sounds which contains approximately 1400 kilometres of coastline, including some of the most attractive coastlines in scenic and recreational terms in New Zealand.

Section 6(d) of the Act requires, as a matter of national importance, that public access to and along the coastal marine area, lakes and rivers be maintained and enhanced.

While public access is an issue which spans the boundary between the coastal marine area and its landward edge, there are clear differences between the rights of access over land as opposed to the rights of access within the coastal marine area.

There are a number of locations around the Marlborough Sounds where public access is naturally restricted, for example, the coastal cliffs on the western side of D'Urville Island. Public access to river margins and the coastal area is also restricted in some areas because of private ownership (riparian rights).

Other circumstances exist where access is limited or needs to be limited. The New Zealand Coastal Policy Statement (Policy 3.5.1) and the Marlborough Regional Policy Statement (Policy 7.2.10(b)) outline those circumstances which include:

- To protect areas of significant flora and significant habitats of indigenous fauna;
- To protect Maori and heritage values;
- To protect public health and safety;
- To ensure a level of security consistent with the purpose of a resource consent; and
- In other exceptional circumstances sufficient to justify the restriction notwithstanding the national importance of maintaining that access.

Public access is already restricted to some parts of the Marlborough Sounds where there is a need to protect special values such as endangered wildlife. The restriction on public access to these locations (which are generally islands), is governed by legislation other than the Resource Management Act 1991. Also, the Defence Act 1990, enables access to be restricted to defence areas, including areas used for temporary military training activities.

Port operations also result in some restrictions to public access in order to provide for the safety of people. At marinas, public access has been the subject of control to maintain security for marina tenants.

Access to and from residential properties in the Sounds is often facilitated by foreshore structures (jetties, boatsheds and moorings). While these are a reasonable expectation of Sounds property owners, they do occupy part of the public domain and can detract from the use and enjoyment of that public domain by other people.

Within the coastal marine area, some structures compromise the right of access, while others may change its nature. For example, structures ranging in scale from private jetties to public marinas and port facilities essentially alienate part of the foreshore and adjoining waters from public use, although they do provide access to both private and public property. Other activities such as marine farming, while having the potential to bring economic benefits to the district, not only physically impede access over water, but may also have a psychological effect in limiting people’s interest in accessing an area for recreational purposes.

The Marlborough Regional Policy Statement advocates that the continued recreational use of marine resources is essential to the continued social wellbeing of the community. It is appropriate that the Council places a high priority on maintaining public access for recreational purposes. It is important therefore to identify those areas where public usage of the foreshore is high and protect them from development which restricts public access.

Dependent on site characteristics, some structures (particularly jetties) are able to be shared between landowners. It is appropriate therefore to encourage the joint use of structures where circumstances permit. In addition, foreshore structures should be located so that their effect on public access is minimised.

8.2 Issue

Managing activities so that access to and along the coast, lakes and rivers is maintained at current levels and wherever practicable enhanced.

8.3 Objectives and Policies

Objective 1	That public access to and along the coastal marine area, lakes and rivers be maintained and enhanced.
Policy 1.1	Avoid, remedy or mitigate the adverse effects on public access caused by the erection of structures, works or activities in or alongside lakes and rivers.
Policy 1.2	Adverse effects on public access caused by the erection of structures, marine farms, works or activities in or along the coastal marine area should as far as practicable be avoided. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects, to the extent practicable.
Policy 1.3	To prevent the erection of structures and marine farms that restrict public access in the coastal marine area where it is subjected to high public usage.
Policy 1.4	Provide for reasonable public access across jetties erected to serve private properties.
Policy 1.5	Continue to assess the need for enhancing public access to and along the coastal marine area, lakes and rivers.

Policy 1.6	Acquire at the time of subdivision esplanade reserves, or negotiate strips, in accordance with the criteria set out in Volume Two (Chapter 28, Standard Requirements for Subdivision and Development) with regard given to the values listed in Appendix I - Schedule of Water Bodies for Riparian Management purpose.
Policy 1.7	Purchase esplanade reserves and negotiate esplanade strips as and when funding from development and subdivision levies permit.
Policy 1.8	Public access to and along the coastal marine area, lakes and rivers should be maintained and enhanced, except where restriction depriving the public of such access is necessary to: <ul style="list-style-type: none"> • Protect areas of significant indigenous vegetation and/or significant habitats of indigenous fauna; • Protect Maori cultural values; • Protect public health and safety; • Ensure a level of security consistent with the purpose of a resource consent or designation; • Enable defence purposes under the Defence Act; or • In other exceptional circumstances sufficient to justify the restriction notwithstanding the national importance of maintaining that access.
Policy 1.9	Specify and promote riparian management practices, determined by a schedule of water bodies based on criteria which includes provision of public access and recreation.

It is intended that activities or works will be controlled where public access is important and particularly where the shoreline topography permits easy access. On shorelines close to major population centres it is important to maintain them free of structures that restrict public access.

Although it is a reasonable expectation for Sounds property owners to have ready access to their property, it does not necessarily follow that every property should have its own jetty. Therefore where circumstances permit, the Council will require such structures to be shared. In addition the Council will generally require that all jetties are available to the public for personal safety, navigational safety as well as for access to the Sounds Foreshore Reserve.

Public access along lakes and rivers is also important.

8.4 Methods of Implementation

Rules	Planning maps, Appendix I and rules identify or indicate: <ul style="list-style-type: none"> • Where access to and along the coastline, lakes and rivers is generally allowed by incorporating the Sounds Foreshore Reserve and other esplanade reserves into the Conservation Zone. In addition, any road reserve, where the road has not been formed, which abuts the coastline
-------	--

	<p>has also been incorporated into the Conservation Zone. This zone seeks to promote public access.</p> <p>The Council may include conditions on resource consents that:</p> <ul style="list-style-type: none"> • Require jetties to be shared with adjoining properties; • Where public access to and along rivers and streams, within the Sounds area, is desirable; • Allow general public access across jetties; • Restrict the rights of public access in accordance with Policy 8.3.1.8 above. <p>A schedule and associated maps identifies significant water bodies where rules apply to specify the width of riparian management zones on criteria which includes provision of public access and recreation.</p>
Subdivision	The reserves policy, contained within Chapter 23, and criteria set out in Volume Two (Chapter 28 Standard Requirements for Subdivision and Development) establish the circumstances under which esplanade reserves will be acquired.
Guidelines	Guidelines prepared by the Council will assist applicants to consider where structures in the coastal marine area should be located and how they should be designed so as to minimise the effects on public access.
Research	Council will carry out research to assess the need for enhancement of physical access to and along the coastal marine area, lakes and rivers.
Voluntary Agreement	On the basis of proven need the Council may negotiate for access strips to enhance public access to and along the coastal marine area and the margins of wetland, lakes and rivers.

Rules and conditions are considered appropriate to use for the promotion of public access. The acquisition of esplanade reserves and negotiation of strips upon subdivision of land will enhance public access to the coast, lakes and rivers.

Because the nature of the Sounds shoreline is so irregular, it is difficult to pre-determine standards for location and design of structures. Therefore, guidelines are seen as an appropriate means of assisting applicants in deciding where to locate structures and their design.

8.5 Anticipated Environmental Results

Implementation of the policies and methods relating to public access will result in:

- Public access maintained to at least current levels;
- Improved access through the acquisition of esplanade reserves and negotiation of strips; and
- Minimum interference on foreshore from structures.

9.0 Coastal Marine

9.1 Introduction

The Act defines the coastal marine area as being that area surrounding the coastline from mean high water springs to the outer limits of the territorial sea (12 nautical mile limit). This includes the foreshore, the seabed, the coastal water and the airspace above the water. By virtue of this definition, a vast proportion of the Marlborough Sounds planning area is coastal marine area.

Section 12 of the Act places restrictions on the use of this area. Generally these restrictions mean that no person can use the coastal marine area in any way, unless it is allowed for by a rule in a regional coastal plan (the Plan) or by a resource consent. This includes disturbance of the foreshore or seabed and any occupation of the coastal marine area to the exclusion of other persons.

Management of the coastal marine area is the responsibility of the Marlborough District Council (as one of its regional functions) under section 30(1)(d) of the Act. This function is shared between the Council and the Minister of Conservation. The Minister, amongst other things, must approve the regional coastal plan and in the case of the Plan the relevant coastal sections.

The Minister is also responsible for the New Zealand Coastal Policy Statement which has an important influence on Council's management of the coastal environment. The Plan cannot be inconsistent with the Statement.

The Council's role in the coastal marine area is twofold and follows from the way in which people's use of the coastal marine area is restricted under the Act. Council has the role of allocating the right to occupy space in the coastal marine area. That is, allocating or authorising the use of public resources for private benefit. The Council also has the role of promoting the sustainable management of the natural and physical resources of the coastal marine area. This carries the onus of ensuring that these resources and the qualities associated with them, remain available for the use, enjoyment and benefit of future generations.

The Council's primary tool for managing the coastal marine area and fulfilling its section 30(1)(d) functions, is the Plan. The main issues identified by the Plan in relation to the coastal marine area follow on directly from Council's role in the management of the coastal marine area. Within the Urban Environment section the Plan deals specifically with Port and Marina activities separately from this Coastal Marine section.

The Act contains provisions enabling the regional councils to implement a system of coastal tendering to safeguard the Crown's interest in the foreshore and seabed, as well as to secure benefits such as meeting a public expectation that coastal allocation will be fair and efficient.

A reform of the legislation covering the management of marine farming - the Aquaculture Reform 2004 - came into effect on 1 January 2005. The aim of the reform was to create a more integrated aquaculture management regime, with a balance between enabling economic development, looking after the environment, settling the Crown's Treaty obligations to Maori, and responding to community concerns. As a result of this reform, marine farming is now mostly covered by the Resource Management Act, with one process for planning where marine farms should go and for granting consents for them to occupy coastal

space. Areas for new marine farming (Aquaculture Management Areas - AMAs) need to be identified in the Plan, and coastal permits for marine farms within AMAs are issued by the Council. The Ministry of Fisheries contributes to the Plan process by testing for any undue adverse effects on commercial, customary or recreational fisheries prior to an AMA being approved in the Plan. Space within AMAs is also to be allocated to iwi to settle Maori claims to commercial marine farming.

9.1.1 Coastal Occupancy Charges

The Resource Management Amendment Act 1997 gave regional councils the opportunity of introducing a charging regime for the occupation of coastal space within the coastal marine area. The amendment placed a responsibility on councils to place a statement in their Regional Coastal Plans, either to set out a charging regime or to say they will not do so. The Act also specified that any money so collected must be spent on the sustainable management of the coastal marine area.

Section 64A of the Act requires Council to have regard to both public and private benefits in determining whether or not a coastal occupation charging regime should apply. Council must consider the extent to which:

- Public benefits from the coastal marine area are lost or gained; and
- Private benefit is obtained from the occupation of the coastal marine area.

The premise underlying coastal occupation charges is that exclusive occupation of the coastal marine area is a privilege not a right - it is public space over which everyone has a right of access, and if used so as to exclude others a similar option of use, the public should be compensated for that exclusion and loss of opportunity.

Most occupations will result in elements of both public and private benefit, and the extent to which they are exclusive will vary. The identification of benefits (public/private) is limited to those directly arising from a structure which is occupying the space, not the associated activity that is facilitated by that structure being present. The benefits or otherwise of the associated activity are assessed through the coastal permit process.

Council has carried out an exercise to assess the relative benefits associated with different types of occupation. This has allowed a comparative assessment in terms of where the principal benefit lies. If charges are to offset the loss of public opportunity as a consequence of exclusive occupation, they should apply in principle wherever there is a net private benefit to the occupier.

In carrying out this exercise Council considers that it is justified in principle in charging for occupation of coastal space in circumstances where net private benefit is greater than net public benefit. In these circumstances the Council is committed to introducing a coastal occupancy charging regime.

Council has completed an information database on the various occupations within the Coastal Marine Area and is satisfied that it now has adequate information in that database to enable the implementation of a coastal occupancy charging regime. However, further work, is required to determine the circumstances in

which charges will be imposed (and possibly waived), the level of charges and use of monies received, as well as preparing plan provisions, including objectives, policies and methods, to implement such a regime.

In determining an appropriate regime for charging for the occupation of coastal space, the Council will take account of the scale of the occupancy, such as the amount of coastal space occupied, as well as the private versus public benefit discussed above

The Council is committed to this process and proposes to introduce provisions dealing with coastal occupation charges into the Marlborough Regional Policy Statement. A new regional policy statement is scheduled to be notified in December 2009. These provisions would then be implemented through plan change or plan review processes.

The Act requires that any money received by the Council from a coastal occupation charge must be used only for the purpose of promoting the sustainable management of the coastal marine area. Through the Marlborough Regional Policy Statement, this Resource Management Plan and State of the Environment Monitoring, the Council has already set out some of the issues for sustainably managing the coastal marine area.

In the context of the Plan, issues concerned with promoting the sustainable management of the coastal marine area can be found in many of the chapters of the Plan, given the integrated nature of the document. However those chapters of specific relevance include the following: Natural Character (2); Indigenous Flora and Fauna and their Habitats (4); Landscape (5); Tangata Whenua and Heritage (6); Public Access (8); and Coastal Marine (9).

9.1.2 Aquaculture Management

The Act states that aquaculture activities (marine farming) can only take place within areas identified in the Plan as Aquaculture Management Areas (AMAs). Marine farming is prohibited outside AMAs. Council has the main role in managing marine farming in the Marlborough Sounds. Providing for marine farming within AMAs enables effects on the community, environment and economy to be managed in an integrated way through the Plan preparation processes, before individual applications for marine farms are considered. The cumulative effects of several marine farms in one area can also be considered.

The Ministry of Fisheries (MFish) continues to play a significant role in the creation of AMAs. Before starting on the public notification processes for including a new AMA in the Plan, Council must request MFish to undertake an assessment as to whether the proposed AMA would have an "undue adverse effect" on commercial, customary or recreational fishing. Areas within the proposed AMA that would unduly affect customary or recreational fishing will be removed from the proposal prior to notification. Any areas that would unduly affect commercial fishing will be identified in the Plan and anyone wanting to

establish a marine farm in those parts of the AMA must first reach an agreement with the affected quota holders before they can apply for a resource consent.

Part of the Aquaculture Reform 2004 included the settlement of Treaty of Waitangi commercial aquaculture claims through the Maori Commercial Aquaculture Claims Settlement Act 2004. These provisions are intended to settle all Maori claims to commercial marine farming interests since September 1992. Iwi are provided with an allocation of area for marine farming equivalent to 20% of marine farming spaces allocated since 1992 and 20% of new marine farming space. This is partly met through the allocation to iwi of some of the new space that comes available through the creation of AMAs. This is intended to ensure iwi have access to coastal marine space to develop their marine farming interests, and to allow the marine farming industry to develop without risks from ongoing Treaty claims.

Existing lawfully established marine farms are deemed to be AMAs, which means they do not need to be included in the Plan through a Plan Change. Marine farming permits and licences granted under previous Marine Farming and Fisheries legislation are generally deemed to be coastal permits.

When resource consents for a marine farm are about to expire, if the site is in an AMA, the existing marine farmer can make an application for a new marine farming consent for the same water space. The application from the existing marine farmer will be decided first, before any other application can be considered for that space.

Creating new AMAs requires a Plan Change. There are three different processes available to undertake this:

- a Council-initiated Plan Change, where Council decides to undertake a plan change to establish an AMA in the coastal marine area;
- a standard Private Plan Change, where any person or organisation can request a change to the Plan to establish an AMA in the coastal marine area; and
- a Council Invited Private Plan Change (I P P C), which involves the Council inviting applications from the public to establish new AMAs. The Council may identify areas of the coastal marine area which will be excluded from applications. These Plan Changes are processed in a similar manner to Private Plan Changes.

All these processes follow the consultation and public notification processes set out in the Act.

Removal or modification of existing AMAs in the Plan, including deemed AMAs, also involves a Plan Change process.

Once an AMA is created, 20-40% of authorisations (or the right to apply for a resource consent for marine farming) are allocated by the Council to a trustee to resolve historic Treaty claims, and the remaining authorisations become publicly available.

Where AMAs have been created through a Council-initiated Plan Change, the remaining authorisations are allocated by public tender. Where an AMA has been created through the IPPC process the remaining authorisations are allocated to the person or organisation that requested the Plan Change. Where an AMA has

been created through the standard Private Plan Change process the Act specifies that the authorisations are allocated by public tender unless an alternative method of allocation is used. Once the authorisations have been allocated, the holders of the authorisations then need to apply for resource consents for marine farming.

9.2 Issue

Restriction of public access to the coastal marine area due to the private occupation of coastal space.

Occupation of coastal space involves the Council allocating or authorising the use of public resources for private benefit.

In some cases the use of resources sought is temporary or non-exclusive, generally associated with surfacewater activities such as shipping, recreational boating, swimming or with seabed disturbance activities such as dredging or dumping. In other cases the use of resources requires a degree of use which results in the exclusion of other persons or activities, for example: ports, marinas, marine farms and structures (jetties, swing moorings, boatsheds, and subaqueous cables). Such uses generally rely on a coastal location and to varying degrees, contribute to the wellbeing of individuals and the community in general. Further, the Act and the New Zealand Coastal Policy Statement both recognise that 'use' can be made of the coastal marine area resources and that this does involve occupation of coastal space for private benefit.

There are particular locations in the Marlborough Sounds where there is significant competition for coastal space for use as moorings. As demand for such private use of water space increases, the allocation of coastal marine space needs to be managed effectively and comprehensively to ensure that moorings are efficiently laid out, to avoid conflict with competing uses and users.

For these reasons, it is necessary and appropriate that activities or 'uses' which require a coastal location and which consequently involve the occupation of coastal space, are provided for in the Plan. In providing for uses which require access to areas of, or the resources of, the coastal marine area, adverse cumulative and other environmental effects must be addressed. Namely the wider context of enabling the community to provide for its social, economic and cultural wellbeing, and preserving the natural character of the coastal environment.

The marine farm industry that has developed in the Marlborough Sounds is of significant value to the nation in terms of export earnings, and also to the region in terms of the employment and income flows that are derived from the industry. A substantial infrastructure involving processing facilities, ports, harvesting vessels and a multitude of other services has developed based on the marine farm industry and Sounds communities have been revitalised as a result of the development of the industry. All of that infrastructure is reliant

The next page is 9 - 4

upon marine farming which utilises the coastal marine area. The provisions of the Plan recognise that to maintain the strength of the industry, generally it is essential for resource consents to be able to be renewed to continue those marine farming activities. In addition, expansion of the salmon farming industry has been enabled in three locations where the Plan provides for the establishment of new marine farms for salmon, where adverse environmental effects can be satisfactorily avoided, remedied or mitigated.

The Plan recognises that in appropriate areas of the Sounds provision needs to be made respectively for cultural uses, for conservation, residential/recreation interest and the interest of important industries utilising Sounds resources such as marine farming, tourism, forestry and land-based farming.

In addition, ongoing research is constantly occurring as to other means of aquaculture production involving species other than the present predominant species of mussels and it is possible that some other species may involve lesser effects on the environment through having less visible surface structures. The current Plan provisions are based on the predominant bi-valve marine farm structures. It may become necessary for those provisions to be re-addressed by plan change as has been achieved for three sites for the salmon farming industry.

The Marlborough Regional Policy Statement (Policies 7.2.10) highlights a number of key considerations for assessing proposals to occupy areas of coastal space. Essentially, public access and recreational use are identified as matters of prime importance for Marlborough. Any allocation for private benefit must not compromise these important values.

Further important values are highlighted by the Regional Policy Statement in order to guide the allocation of space for aquaculture, these include "...marine habitat sustainability, habitat protection, landscape protection, navigation and safety, and, compatibility with other adjoining activities" (Policy 7.2.10(d)). Tangata whenua values, including access to traditional coastal resources, is also an important consideration in the allocation of coastal space.

Being able to use and develop the public resources of the coastal marine area is a privilege. Often people expect this as of right, particularly if they own land adjacent to the coastal marine area.

9.2.1 Objectives and Policies

Objective 1	The accommodation of appropriate activities in the coastal marine area whilst avoiding, remedying or mitigating the adverse effects of those activities.
Policy 1.1	Avoid, remedy and mitigate the adverse effects of use and development of resources in the coastal marine area on any of the following: <ul style="list-style-type: none"> a) Conservation and ecological values; b) Cultural and iwi values; c) Heritage and amenity values; d) Landscape, seascape and aesthetic values;

	<ul style="list-style-type: none"> e) Marine habitats and sustainability; f) Natural character of the coastal environment; g) Navigational safety; h) Other activities, including those on land; i) Public access to and along the coast; j) Public health and safety; k) Recreation values; and l) Water quality.
Policy 1.2	Adverse effects of subdivision, use or development in the coastal environment should as far as practicable be avoided. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects to the extent practicable.
Policy 1.3	Exclusive occupation of the coastal marine area or occupation which effectively excludes the public will only be allowed to the extent reasonably necessary to carry out the activity.
Policy 1.4	<p>Manage the effects of port and harbour activity by establishing a boundary around specific areas suitable and necessary for port activities in:</p> <ul style="list-style-type: none"> • Picton (including Shakespeare Bay); and • Havelock.
Policy 1.5	<p>Manage the effects of marina activity and future development by establishing a boundary around the marina areas at:</p> <ul style="list-style-type: none"> • Picton; • Waikawa; and • Havelock.
Policy 1.6	Ensure recreational interests retain a dominant status over commercial activities that require occupation of coastal space and which preclude recreational use in Queen Charlotte Sound, including Tory Channel, but excluding Port and Marina Zones.
Policy 1.7	Avoid adverse effects from the occupation of coastal space in or around recognised casual mooring areas.
Policy 1.8	Ensure that moorings within Waikawa Bay are allocated in an efficient and co-ordinated manner.
Policy 1.9	<p>Avoid moorings in Waikawa Bay Coastal Marine Zone 1 outside of the Mooring Management Areas and Waka Moorings Management Areas, except where:</p> <ul style="list-style-type: none"> a) Moorings are for providing access to immediately adjoining properties; or b) Moorings are a new consent for an existing mooring; and <p>provided adverse effects on the environment are avoided, remedied or mitigated.</p>

Policy 1.10	Avoid any adverse cumulative effects of foreshore structures by taking into account the existence of other suitable structures prior to erecting new ones.
Policy 1.11	Avoid foreshore structures in areas of recreational use where there is an adverse effect on recreation values.
Policy 1.12	Provide for defence purposes under the Defence Act 1990, provided adverse effects are avoided, remedied and mitigated.
Policy 1.13	Enable roading activities where adverse effects on the coastal environment can be avoided, remedied or mitigated, and provide for the protection of existing roads from coastal processes.
Policy 1.14	To enable a range of activities in appropriate places in the waters of the Sounds including marine farming, tourism and recreation and cultural uses.
Policy 1.15	Enable the renewal as controlled activities of marine farms authorised by applications made prior to 1 August 1996 as controlled activities, apart from exceptions in Appendix D2 in the Plan.
Policy 1.16	Consideration of other methods of marine farming having lesser effects than long line bi-valve farming in the future.
Policy 1.17	Enable the marine farming of salmon by identifying three appropriate sites in the Plan as Coastal Marine Zone 3, where salmon farming is a discretionary activity.

By controlling the erection of structures and other activities (including marine farms) that use or occupy coastal space, the effects of these are able to be addressed. The extent of occupation and development needs to be controlled to ensure water space is efficiently allocated and to enable all users to obtain benefit from the coast and its waters.

Waikawa Bay is a finite coastal resource that is utilised by a range of cultural recreational and commercial activities.

Policy 9.2.1.1.7 recognises that unconstrained casual mooring areas are important, and often crucial in terms of safety, for anchoring boats on a casual basis.

However, due to ongoing demand for moorings at Waikawa Bay, and the different uses competing for water space, the location of swing moorings there needs to be managed in a comprehensive way to enable the efficient use of this Bay for various users. The Mooring Management Areas provided in the Bay establish the locations where swing moorings are appropriately located. New moorings outside a defined Mooring Management Area are discouraged unless they are for the specific purpose of mooring vessels associated with land ownership/residents adjacent to those mooring locations (Policies 9.2.1.1.8 and 9.2.1.1.9).

The Mooring Management Areas have been designed to enable safe manoeuvring of vessels between the shore, their berthage and the inner parts of the Bay. The moorings can be managed either by a Bylaw, which would provide for the moorings to be allocated and managed by the Council, or, if no such Bylaw is

enacted moorings are allocated and managed in Waikawa Bay by the Council via the resource consent process. Moorings comprise a limited discretionary activity inside of the Mooring Management Area within the Bay, if no Bylaw is in place.

The policies seek to provide guidance and control on the individual and cumulative adverse environmental effects of marine farms and structures and their use, particularly visual effects. The term 'structure' is defined by the Act as any building, equipment, device or other facility made by people and which is fixed to land (ie; the foreshore or seabed) and includes any raft (section 2).

Separate provision for marine farm transfer sites is no longer appropriate as there is no consistent demand for any particular location or description of the effects of transferring marine farms. Accordingly, transferring a marine farm is treated as a new site where adverse effects can be considered.

Council acknowledges that management and allocation of fisheries resources is to be determined under the provisions of the Fisheries Act 1996 as opposed to the Act. However, Council can control the effects created by fishing as long as those controls are not imposed for a fisheries purposes eg; controls imposed for the protection of vulnerable, unique coastal substrate.

The importance of public access and recreational use is recognised in a number of the occupation policies above, (particularly 1.5) as required by the Marlborough Regional Policy Statement. Council sees the future wellbeing of Marlborough and particularly the Sounds area linked to an increase in the recreational use of coastal resources. It is therefore important to ensure that allocation for coastal space for private use does not occur at the expense of public access and recreation values. It is also important to remember that there are no inherent development rights within the coastal marine area.

Policy 9.2.1.1.2 reflects Policy 3.2.2 of the New Zealand Coastal Policy Statement, which provides a hierarchy whereby adverse effects should be avoided as far as practicable in the first instance, and where these effects cannot be avoided they must be mitigated and remedied to the fullest practicable extent. This is a general policy that applies throughout Chapter 9.

Policy 9.2.1.1.15 recognises that three sites have been specifically identified to provide for salmon farming, after being assessed as appropriate locations.

Policies which further address the environmental effects of activities occupying coastal space need to be considered in conjunction with those above. Refer to section 10.6: Port and Harbour Activities; Chapter 10.7: Marina Activity; Chapter 19: Water Transportation; and, the second issue in this chapter, section 9.3.

9.2.2 Methods of Implementation

Zoning	<p>The coastal marine area is incorporated into three coastal marine zones (except for port and marina areas).</p> <p>The limits of the Coastal Marine Zones align with the boundary of the coastal marine area, being the: outer limits of the territorial sea; and line of mean high water springs and where the line crosses a river, as agreed between the Minister of Conservation and the Council in the Memorandum of Agreement dated 4 December 1995 or any subsequent amendment to that agreement.</p> <p>Rules have been incorporated to control activities and structures in these zones.</p> <p>In Coastal Marine Zone 1 the Plan identifies those areas where marine farms are prohibited in accordance with Policies 9.2.1.1.1 and 9.2.1.1.6. These areas are identified as being where marine farming will have a significant adverse effect on navigational safety, recreational opportunities, natural character, ecological systems, or cultural, residential or amenity values.</p> <p>In Coastal Marine Zone 3, the Plan identifies three appropriate sites to provide for the development of salmon farming in accordance with Policy 9.2.1.1.15.</p> <p>In addition to the three coastal marine zones the Plan identifies particular zones for the following activities:</p> <ul style="list-style-type: none"> • Port and harbour activity; and • Marina activity. <p>Such areas are managed for these activities.</p>
Rules	<p>Rules and resource consents generally provide for activities which require coastal space where the adverse effects of occupation are avoided, remedied or mitigated in terms of the assessment criteria and standards identified.</p> <p>Within Coastal Marine Zone 2 out to 50 metres from mean low water mark, and beyond 200 metres from mean low water mark, marine farms are non-complying activities. In those areas marine farming involving fin fish farming may be appropriate and it is recognised that consent may be granted by a resource consent application.</p> <p>Rules enable the use of the coastal marine area for defence purposes.</p> <p>Moorings within the Mooring Management Area are managed via the resource consent process as a restricted discretionary activity as the default management process, unless a Bylaw is in place which provides an alternative management framework.</p>

Other Legislation	The Council will use its powers and functions under harbour legislation to control navigational conflicts between surface water activities. Moorings in the Mooring Management Areas at Waikawa Bay may be managed through a management plan under a bylaw promulgated under the Local Government Act 2002 as an alternative to the default resource consent process.
Liaison	The Council will send notice of permissions for structures to the Hydrographic Office of the Royal NZ Navy, and the Maritime Safety Authority.
Monitoring	The Council will monitor the effects of permitted and consented activities in the coastal marine area to: determine the effectiveness of plan policies and rules; assess compliance with consent conditions; and promote sustainable management.

Rules and zoning will provide certainty with respect to what can and cannot be done in the coastal marine area. In addition, they provide the environmental certainty and control which is needed in this sensitive area.

Policy 3.2.1 of the New Zealand Coastal Policy Statement requires plans to define the type of use and development that would be appropriate in the coastal environment. The policies and methods (ie, rules) provide guidance to resource users on this.

Three specific sites appropriate for new salmon farms have been identified in the Coastal Marine Zone 3.

9.3 Issue

Adverse effects of activities on the natural and physical resources of the coastal marine area.

Given the geography of the Marlborough Sounds, the coastal marine area performs a significant role as a receiving environment. The Marlborough Sounds are large, drowned river valleys. Queen Charlotte Sound is the simpler of the two, approximately 45 km long and indented by many small bays and coves. Pelorus Sound is a complex maze of large inlets, bays, coves and islands. The drowned river valleys are only part of the catchments which extend inland as far as the Marlborough Sounds planning area. To a significant extent it is the activities taking place on the land which determine the environmental quality of the coastal marine area. The coastal marine area is effectively the end point for all activities and their effects.

Rigid controls are necessary in the coastal marine area as this is the 'environmental sink' where the effects of all coastal and land-based activities impact. Coastal marine ecosystems depend on uncontaminated seawater, undisturbed seabed or foreshore and healthy land and freshwater ecosystems adjacent to the coast.

The next page is 9 - 9

Environmental effects in the coastal marine area are felt in essentially two ways.

- Degradation of coastal water quality; and
- Alteration to the foreshore or seabed.

Environmental effects are brought about by a number of activities taking place in the coastal marine area and others occurring on land.

Examples of activities which affect (and often depend upon) the quality of the coastal marine area include, but are not limited to marine farming, commercial fishing, recreation and tourism, port and marina activity, waste disposal, farming and forestry, reclamation and placement of moorings.

Controls on the effects of activities and use of the coastal marine area are necessary to ensure that the sustainable management of the coastal resource is promoted.

9.3.1 Discussion: Coastal Marine Water Quality

The Marlborough Regional Policy Statement identifies a number of activities that have the potential to adversely affect coastal marine water quality. Contaminated coastal water can in turn, adversely affect iwi values, public health, visual aesthetics, coastal ecosystems and industries dependent on uncontaminated water (including tourism and marine farming).

The Marlborough Regional Policy Statement identifies three groups of activities which may affect water quality based on the origin of the contaminant. They are:

- Run-off from land;
- Discharges from boats and water-based activities; and
- Point source discharges from land.

A number of land use activities in the Marlborough Sounds have the potential to contaminate coastal water. The contaminants may include pesticides, herbicides and fertilisers that are applied to the land or directly into streams, micro-biological contamination from animal waste, sediment from soil erosion and contaminants contained in leachate from rubbish tips and developed areas adjacent to the coastal waters.

A number of water quality issues arising from water-based activities are of concern to the residents of Marlborough. These include the discharges from vessels including ballast water, sewage and litter as well as spills resulting from shipping incidents. Other sources of contamination include the leaching of anti-fouling paints from ships' hulls, nutrient enrichment and waste from marine farms and the discharge of fish waste during fish processing operations at sea. The Council is responsible for controlling discharges (excluding ballast water discharges) and dumping of waste from ships and offshore installations through the Resource Management (Marine Pollution) Regulations 1998 developed under sections 15A, 15B and 15C of the Act. The regulations do not apply to discharges or dumping into the coastal marine area from land.

Point source discharges refer to discharges from a pipe or recognisable and definitive point. These may include sewage outfalls, discharges of industrial waste, stormwater discharges, overflows from septic tanks and run-off of contaminants from particular sites such as boat building or maintenance areas, or from specific storage areas adjacent to coastal waters. Potential

contamination arises from disturbance to the foreshore or seabed. The water quality effects of this issue are included under Section 9.4: Alteration to the Foreshore and Seabed. Further, coastal marine water can be adversely affected by contaminants present in freshwater ecosystems draining into the coastal marine area. This issue is covered at source under Chapter 3 freshwater of the Plan.

Finally, climate can exacerbate water quality. During periods of high rainfall water quality in the Sounds deteriorates through greater quantities of run-off and stormwater discharge. For example, rainfall over certain levels can cause pollution which results in the immediate closure of marine farm harvesting until water quality is improved to the level where shellfish can be safely consumed.

9.3.2 Objectives and Policies

Objective 1	Management of the effects of activities so that water quality in the coastal marine area is at a level which enables the gathering or cultivating of shellfish for human consumption (Class SG).
Policy 1.1	Avoid the discharge of contaminants into the coastal marine area where it will modify, damage or destroy any significant ecological value.
Policy 1.2	Avoid the discharge of contaminants into the coastal marine area where it will adversely affect: <ul style="list-style-type: none"> a) Areas identified by iwi as being of special spiritual, cultural or historical significance; or b) Areas identified as outstanding landscape.
Policy 1.3	No discharge, after reasonable mixing, (either by itself or in combination with other discharges) should limit the consumption of seafood from the coastal marine area.
Policy 1.4	Recognise and provide for the need to: <ul style="list-style-type: none"> a) Preserve the natural character of the coastal environment; b) Protect public health; c) Protect the visual aesthetics of the area; d) Protect the olfactory aesthetics of the area; e) Protect sites of spiritual, historical or cultural significance to Maori identified in accordance with tikanga Maori, including waahi tapu, tauranga waka, maataitai and taonga raranga; f) Avoid , remedy or mitigate adverse effects on ecological systems including natural movement and productivity of biota, natural biodiversity and adverse effects on: <ul style="list-style-type: none"> • shellfish areas; • fish spawning and nursery areas;

	<ul style="list-style-type: none"> • bird-breeding and nursery areas; • fish and bird migration through estuaries; • feeding patterns; • habitats important to the continued survival of any indigenous species; • wildlife and marine biota; and • the intrinsic value of ecosystems. <p>g) Avoid, remedy or mitigate adverse effects on existing lawful activities, particularly marine farming, fishing, recreation and tourism activities when assessing a permit to discharge water or contaminants into the coastal marine area.</p>
Policy 1.5	<p>Progressively eliminate discharge of human sewage direct to the coastal marine area from land-based wastewater treatment facilities , including existing authorised discharges, except where:</p> <ul style="list-style-type: none"> a) The allowance of the discharge better meets the purpose of the Act than disposal onto land; b) There has been consultation with the tangata whenua in accordance with tikanga Maori and due weight has been given to sections 5, 6, 7 and 8 of the Act; and c) There has been consultation with the community generally.
Policy 1.6	<p>Ensure that every coastal permit to discharge contaminants into the coastal marine area contains conditions requiring the discharger to monitor the effects of the discharge and compliance with the water quality classification (SG).</p>
Policy 1.8	<p>Prevent the dumping of non biodegradable waste anywhere in the coastal marine area including rubbish from vessels.</p>
Policy 1.9	<p>Avoid the discharge of wastes by ensuring the adequate and convenient provision of facilities for the collection and appropriate disposal of litter, sewage and residues from vessel maintenance.</p>
Policy 1.10	<p>Avoid, remedy or mitigate any adverse effects of sediment or other contaminants from land-based activities entering coastal water.</p>
Policy 1.11	<p>Avoid where practicable, remedy or mitigate the adverse effects of the disposal of bio-degradable rubbish.</p>

The Marlborough Regional Policy Statement identifies water quality standard SG, as set out in the Third Schedule to the Act, as the water quality standard which is generally sought for Marlborough coastal marine waters. Objective 9.3.2.1 carries this over as the general aim for coastal water quality under the Plan. In doing this, it is important to acknowledge that present water quality in a number of areas is degraded to a state where water quality standard SG is not achievable in the immediate future, however it is anticipated that the objectives, policies and rules contained in the Plan will ensure that eventually the water standard is met.

The water quality standard is the minimum needed to achieve Objective 5.3.2 of the Marlborough Regional Policy Statement, “that water quality in the coastal marine area be maintained at a level which provides for the sustainable management of the marine ecosystem.” Shellfish are a good water quality indicator species because of their filter feeding characteristics and their accumulation and harbouring of contaminants.

The policies identified work to achieve the standard set by Objective 9.3.2.1. Discharges of contaminants from a point source to the coastal marine area have the potential to significantly affect coastal water. In particular, human sewage, even when treated, carries with it a greater potential for the transmission of disease than any other contaminant. Its discharge to water is also intolerable to Maori, therefore the necessity for stringent control over this. However, as a result of the introduction of sections 15A, 15B and 15C of the Act control of discharges of contaminants and dumping from ships will be controlled by the Resource Management (Marine Pollution) Regulations 1998.

Run-off from land is possibly the most pervasive form of pollution in the Marlborough Sounds. The Plan acknowledges this both above and throughout the Plan. Control is needed at the source of the problem, namely on land. (Refer to Chapter 13: Soil Conservation and Chapter 14: Discharges of Waste to Land).

9.3.3 Methods of Implementation

Rules	<p>Rules are used to control discharges to water within the coastal marine area. In particular, the discharge of human sewage as a point source discharge will be assessed as a Discretionary Activity in order to establish the impact of any contaminants on the water quality standard.</p> <p>The Council will ensure that appropriate assessment, monitoring and enforcement of rules will be undertaken.</p>
Mixing Zone	<p>For each resource consent application to discharge contaminants, a zone of reasonable mixing will be determined (by way of condition on the resource consent) as a means of ensuring compliance with the water quality standard (SG).</p> <p>Criteria to be taken into account in determining the extent of the zone of reasonable mixing include:</p> <ol style="list-style-type: none"> a) The need to minimise the size of the mixing zone; b) The need to avoid, remedy or mitigate adverse effects within the mixing zone; and c) The characteristics of the discharge and receiving environment including: <ul style="list-style-type: none"> • Design of the outfall (eg; single or multi-point diffuser); • Depth of water over the outfall; • Density difference between the effluent (usually freshwater) and the receiving water (often saline) which determines its buoyancy; • Speed and orientation of currents across the outfall;

	<ul style="list-style-type: none"> • Degree of stratification in the water column which may limit vertical mixing; • Tidal and wind-driven currents; • Rate of breakdown and inactivation of the waste; • Topography of the coastline; and • Mixing characteristics within the waterbody itself.
Review	<p>The Council will within one year of the Plan becoming operative consider whether or not it is appropriate to review the conditions of existing discharge permits, pursuant to section 128(1)(b) of the Act, in order to enable the water quality standard (SG) to be met.</p> <p>When considering whether these discharges need to be upgraded the Council will consider:</p> <ul style="list-style-type: none"> • The adverse effects associated with the discharge; • Any geographical or technical difficulties involved; and • The likely costs that will be imposed on consent holders by the upgrading of the discharge. <p>For discharges that the Council considers need to be upgraded, the Council will establish reasonable timeframes within which existing discharges will be upgraded.</p>
Enforcement	The Council will initiate a programme to ensure that unlawful discharges in the coastal marine area are discontinued or a resource consent in respect of the discharge is obtained.
Liaison	The Council will liaise with the Port Company to establish additional litter, boat maintenance residue and boat sewage disposal facilities as necessary.
Education	The Council will implement an education and awareness programme addressing the adverse effects of discharging from boats. As a part of this, boat operators will be actively encouraged to provide holding tanks and/or plant for treatment of waste prior to discharge.
Support	The Council will in conjunction with interested persons/organisations, organise or support beach clean up operations as required.
National/Other Controls	<p>The Council will implement the Resource Management (Marine Pollution) Regulations 1998 in relation to discharges from ships and offshore installations.</p> <p>In accordance with the Maritime Transport Act 1994, the Council will implement a Tier II Oil Spill Contingency Plan to mitigate the adverse effects of oil pollution in the coastal marine area.</p>
Monitoring	The Council will undertake a comprehensive coastal water quality monitoring programme in conjunction with other relevant agencies that involves:

- a) State of the environment monitoring including:
 - Near shore coastal water quality;
 - Estuarine water quality; and
 - Bathing beach water quality with a particular emphasis on pathogens that pose a threat to public health.
- b) Impact monitoring to assess the effects of authorised and unauthorised discharges of contaminants on coastal water quality and the benthic environment;
- c) Compliance monitoring to ensure that all holders of coastal permits involving the discharge of contaminants to water meet the conditions of their permits;
- d) Record keeping including:
 - State of the environment, impact and compliance monitoring information;
 - Requests for information from iwi, other agencies and the public; and
 - The number of notified and non-notified coastal permits applied for and the number granted and declined in each category.
- e) Reporting to the Council on a regular basis the results of the above state of the environment, impact and compliance monitoring activities; and
- f) In conjunction with other agencies, the Council will undertake a comprehensive monitoring programme of the foreshore conditions of Long Island - Kokomohua Marine Reserve.

A number of methods are included to implement the objective and policies outlined above. It is the implementation of the rules though, which is likely to be the most effective means in achieving the water quality sought and the sustainable management of coastal water.

Refer to Chapters 13 Soil Conservation and 14 Discharges of Waste to Land for methods relating to coastal water contamination as a result of run-off from land.

9.4 Alteration to the Foreshore and Seabed

Section 12 of the Act places restrictions on use of the foreshore and seabed within the coastal marine area. Essentially, no person may reclaim or drain, disturb (excavate, drill or tunnel), deposit substances or remove any natural material (sand, shingle, shell) in respect of the foreshore and seabed, unless it is provided for by either a rule in the Plan, or by a resource consent. These types of actions which are restricted by section 12 of the Act, are all taken to be alterations to the foreshore or seabed.

Various activities involving alterations to the foreshore and seabed are undertaken within the Plan area. A number provide considerable benefits to the community. An example is the clearance, cutting and realignment of river

mouths to lessen potential effects of flooding events. The ability for people or authorities to undertake this activity provides considerable benefits and it is likely that the need for this activity will continue in the future. Therefore, the Plan needs to provide for alterations to the foreshore and seabed where there are no or only very minor adverse effects resulting.

The main issue in relation to alteration is the need to provide for alterations to the foreshore and seabed while avoiding, remedying or mitigating the adverse effects of this activity. The objective and policies which follow address this issue, while the following examples of foreshore and seabed alterations seeks to further explain and define the issue. These examples are not exhaustive and the provisions of this section apply to any alteration to the foreshore or seabed within the coastal marine area.

Alterations, that change the physical shape of the foreshore and/or seabed include:

Reclamation, Drainage and Impoundment

Outside the main port areas at Picton and Havelock, large scale reclamations are not a feature of the Sounds. Aside from the reclamations associated with the commercial facilities at Elaine Bay and Oyster Bay (Port Underwood), reclamations in the Sounds are generally limited to small abutments for jetties. These are commonly two or three square metres in area. The impoundment which bounds Waikawa marina is effectively a reclamation of the foreshore and seabed.

Probably the most significant adverse effect of a reclamation is the burial of the seabed. This threatens habitats associated with the seabed and potentially the life-supporting capacity of a much larger surrounding area. Other potential effects associated with reclamation include interruption to the water movement patterns, exclusion of water-based uses, visual impacts and construction effects.

Dredging

Dredging of the foreshore and seabed is generally undertaken to allow ship or boat navigation in areas which would otherwise be too shallow. It is most often required around ports and marinas, particularly within and approaching the Havelock port area. Dredging is also carried out for the purpose of clearing, cutting or realigning river mouths. Generally though, very little dredging and spoil disposal occurs in the Marlborough Sounds. Periodically, a limited amount of material needs to be removed from alongside jetties. This normally occurs at the head of a bay where siltation has occurred over a number of years and has eventually made a jetty unusable at low tides. There are various means of disposing of dredging spoil, but generally within the Sounds, land disposal has been used and preferred in the past.

Both dredging and dredging spoil disposal can have significant adverse environmental effects. The main effect of dredging is the physical destruction and/or removal of any benthic aquatic life within the dredged area (organisms that live in or on the bottom sediments). Dredging can also affect water movement patterns and alter the physical nature of sediments, thus potentially affecting habitats.

Extraction of Sand, Shingle, Shell and Other Natural Material

Very little extraction of material from the coastal marine area is undertaken within the Marlborough Sounds. A small amount of sand is removed from Shelly Beach and used for beach enhancement and protection works on the nearby Waikawa and Picton foreshores.

The effects of extraction will relate to the physical disturbance associated with removing material and the type of operation or technique used for extraction.

Disturbance Associated with Coastal Structures and Marine Farms

Disturbance of the foreshore and/or seabed will arise as a result of coastal structures being fixed to the beach or sea floor. There are a considerable number of structures in the Sounds ranging from jetties, moorings, log-loading facilities, retaining walls, submarine cables and the structures associated with marine farms.

The environmental effects of fixing these (and numerous other) structures to the foreshore and/or seabed are in general, the modification or in some cases the destruction of benthic aquatic life and changes to natural water and sediment movement. In addition, marine farms (particularly sea cage fish farming) can lead to sedimentation as faeces, uneaten feed pellets, and other organic matter cleaned from the cages falls to the sea floor. This, in turn, can alter the habitat of the benthic community. Longline shellfish farming can cause a similar but lesser effect from organic matter dropping to the sea floor.

Other Disturbance

Numerous other activities which take place in the coastal marine area have the potential to destroy, damage or disturb the foreshore and seabed. These activities include, but are not limited to water transportation activities (eg; ships, conventional and fast ferries, launches and concentrations of smaller boats); the cleaning of blocked pipes (eg; stormwater outfalls); beach tidying and grooming; the removal of vegetation (eg; around structures); and the burial on the foreshore of dead marine mammals and other marine fauna.

Alterations to the foreshore or seabed can have adverse effects. Activities which result in alteration of the foreshore or seabed can disturb or destroy Maori cultural values of mahinga maataitai or taonga raranga and spiritual values of waahi tapu and their sites of significance. Natural character can also be degraded, along with landscape values and habitat or ecological values. Modification, interruption or interference with physical coastal processes can also occur, potentially leading to increased erosion and scouring. A temporary decrease in water clarity and quality in the vicinity of the works is common.

9.4.1 Objectives and Policies

Objective 1	Protection of the coastal environment by avoiding, remedying or mitigating any adverse effects of activities that alter the foreshore or seabed.
Policy 1.1	Avoid, remedy or mitigate the adverse effects of activities that disturb or alter the foreshore and/or seabed on any of the following: <ul style="list-style-type: none"> a) Conservation and ecological values;

	<ul style="list-style-type: none"> b) Cultural and iwi values; c) Heritage and amenity values; d) Landscape, seascape and aesthetic values; e) Marine habitats and sustainability; f) Natural character of the coastal environment; g) Navigational safety; h) Other activities, including those on land; i) Public access to and along the coast; j) Public health and safety; k) Recreation values; and l) Water quality.
Policy 1.2	<p>Any reclamation drainage or impoundment within the coastal marine area shall be considered inappropriate unless it can be demonstrated that:</p> <ul style="list-style-type: none"> a) An alternative method or land-based site (above MHWS) for the activity for which the reclamation, drainage or impoundment is to be used is not practicable; b) Efficient use of coastal space is made by using the minimum area of the coastal marine area necessary for the reclamation, drainage or impoundment; and c) The finished appearance of the reclaimed or drained area, or the impoundment, including its size, shape and the materials used is as far as practicable compatible with the environment in which it is located.
Policy 1.3	<p>Ensure that material used to create and form any reclamation or impoundment does not include contaminants which have the potential to adversely affect the coastal marine area.</p>
Policy 1.4	<p>Recognise the necessity of maintenance dredging, in particular, that associated with: continuing the use of existing coastal structures, port and marina activities, and for river control.</p>
Policy 1.5	<p>Any proposal for dredging within the coastal marine area shall demonstrate:</p> <ul style="list-style-type: none"> a) The necessity for dredging; b) An appropriate disposal method; and c) The measures undertaken to avoid, remedy or mitigate adverse effects on marine habitats, recreation values, adjacent activities or users, water quality and other adverse environmental effects.
Policy 1.6	<p>Promote land-based disposal of dredging spoil.</p>
Policy 1.7	<p>Recognising (by way of controlled activity status) the importance of renewing the majority of existing marine farms authorised by applications made before 1 August 1996 while mitigating adverse effects on the environment by way of conditions.</p>

Policy 1.8	Providing for minor adjustments to boundaries of resource consent areas for existing farms without increasing their size so as where necessary to reduce adverse effects or to recognise existing locations of farms.
Policy 1.9	Enable the adverse visual or ecological effects of particular farms to be addressed when the rules expressly provide for that.
Policy 1.10	Recognise the necessity of maintenance, improvement and enhancement of roading structures and that these activities may, in some circumstances, result in an alteration of the seabed or foreshore.
Policy 1.11	Recognising (by way of discretionary activity status in the Coastal Marine Zone 3) provision for salmon farming at three appropriate sites.

Some alteration to the foreshore and seabed is necessary to enable the continuation of normal coastal marine activities. The policies seek to provide a guide for their continuation while controlling the potentially significant adverse effects which can arise from any alteration to the foreshore and seabed. Some alteration is also necessary to enable salmon farming at three identified sites.

9.4.2 Methods of Implementation

Rules	In general, rules provide for certain alterations to the foreshore and seabed as Permitted Activities subject to specific performance standards. Most alterations however, will be assessed on their merits, as a Discretionary Activity.
Assessment Criteria	The assessment criteria for Discretionary Activities involving foreshore and seabed alterations, enable the effect of the alteration on the coastal marine area to be assessed. An assessment of the effect of the proposed alteration on Maori, cultural and heritage values, natural character, landscape and ecological values will also be required.
Monitoring	The Council will monitor the effects of permitted and consented activities in the coastal marine area to: determine the effectiveness of plan policies and rules; assess compliance with consent conditions; and promote sustainable management.

The use of rules and associated assessment criteria, and performance standards where minor alterations are permitted, allows for control over the adverse effects of alterations to the foreshore and seabed. It also enables the numerous variabilities which exist in assessing the effects of the various types of alterations to the foreshore and seabed, to be taken into account.

9.4A Issue

Allocation of the right to apply for a coastal permit for marine farming in Aquaculture Management Areas (AMAs) in a manner that is effective, efficient and fair to all parties involved.

As explained in Section 9.1.2 of the Plan, there are three different processes for Plan Changes to include new AMAs in the Plan. With a Council-initiated Plan Change, authorisations are allocated by public tender. Where an AMA has been

created through the IPPC process, authorisations are allocated to the person or organisation that requested the Plan Change. These methods are considered to be effective, efficient and fair to the parties involved.

Under the standard Private Plan Change process, any person or organisation can request a change to the Plan to establish an AMA in any part of the coastal marine area. These Private Plan Changes are processed in terms of Schedules 1, Part 2 and 1A of the Act. The time, resources and costs involved with evaluating new AMAs and providing for them in the Plan through a Plan Change process are considerable. With a standard Private Plan Change, these costs will be borne by the applicant. The Council recognises that people or organisations are not likely to make requests for new areas, unless they have some certainty that they will receive the right to apply for a coastal permit for marine farming should the Plan Change succeed. While the Act states as a default that authorisations should be allocated by public tender, the Council acknowledges that public tendering does not give the Plan Change applicant sufficient certainty that they will receive the right to apply for a coastal permit for marine farming within that new AMA.

In order to enable effective, efficient and fair use of a standard Private Plan Change approach for the consideration of new AMAs, the Council considers that the Plan should specify an alternative method of allocating the right to apply for coastal permits for marine farming. The alternative allocation method adopted by the plan is considered to be fair and provide certainty to the Plan Change applicant.

In addition, the public tendering process assumes multiple applications for authorisation allocations. Public notification, calling for authorisation applicants, is the default process in the Act. In circumstances where there can only be one applicant (the Private Plan Change applicant), this process of public notification for authorisations is considered unnecessarily time-consuming and costly. The Plan, therefore, adopts an alternative method which provides the right to apply for coastal permits for marine farming directly to the operative Private Plan Change applicant. This method is considered to be more efficient and avoids unnecessary delays in the process.

9.4A.1 Objectives and Policies

Objective 1	An effective, efficient and fair process for the allocation of the right to apply for coastal permits for marine farming in Aquaculture Management Areas
Policy 1.1	Allocation of authorisations by way of public tendering for coastal space in AMAs created through Council Plan Changes.
Policy 1.2	Processes for obtaining the right to apply for coastal permits in AMAs that are effective, efficient and fair, and provide sufficient certainty for marine farmers to enable proposals for new AMAs and marine farms to be put forward for evaluation through standard and Council Invited Private Plan Changes.
Policy 1.3	Allocation of new coastal space to iwi in accordance with the procedures established through the Aquaculture Reform 2004.

9.4A.2 Methods of Implementation

<p>Zoning</p>	<p>Aquaculture management areas (AMAs) will be included in the Plan as Aquaculture Management Area Zones (AMA Zones).</p> <p>Existing, lawfully established marine farms are deemed to be AMAs.</p> <p>All new marine farms must be established in an AMA Zone following the granting of the necessary resource consents for coastal permits.</p> <p>At some later date, Council may decide to propose new AMA Zones in the Plan by way of Council-initiated Plan Change or IPPC processes, as priorities and resources for Council determine.</p> <p>New AMA Zones may be established in the Plan by way of requests for Private Plan Changes.</p> <p>AMA Zones will be managed for aquaculture activities (marine farming).</p>
<p>Rights to apply for coastal permits for marine farming</p>	<p>Authorisations for available space within AMA Zones, which have been included in the Plan as a result of a Council-initiated Plan Change, will be allocated by way of public tender.</p> <p>An alternative method is specified in the Plan for obtaining the right to apply for available space within AMA Zones which have been included in the Plan as a result of a request for a standard Private Plan Change. In these circumstances, the right to apply for available space within AMA Zones will be offered to the first person whose Private Plan Change was complete and successfully resulted in an operative AMA Zone for that area of coastal marine area</p> <p>Where the right to apply for available space or the resulting coastal permit for marine farming is not taken up or lapses, allocation will be by way of public tender.</p>

9.5 Issue

Ships capable of travelling at speed or generating significant wake in enclosed waters have the potential to conflict with a range of other coastal users and values and generate adverse environmental effects.

9.5.1 Discussion

The amount of energy contained in waves generated by ships adds substantially to the natural energy levels in the environment and these increased energy levels are responsible for generating adverse effects on the environment including changes to shoreline morphology, sub-tidal and inter-tidal zone habitats, impacts on public safety, public access and enjoyment of the coastal environment and the amenity values of the area. The speed at which some ships travel also has implications for the safety of those using the coastal marine area.

The tikanga Maori (customary values and practices) of Te Atiawa have been adversely affected by the operation of ships, particularly the fast ferries, with a decline in kaimoana and associated mana. The need for iwi to practice kaitiakitanga and ensure that Queen Charlotte Sound and Tory Channel are available for future generations is paramount. (This issue is partially covered in Chapter 6.) Other iwi, besides Te Atiawa, who establish manawhenua through the courts, or other processes, may in time also be appropriately recognised in managing the ship wake issue.

It needs to be recognised that shipping activity contributes to the social and economic wellbeing of people and communities by providing an important link between the North and South Islands and also by providing a means of transport for goods within the Sounds. (This issue is also covered in Chapter 19 Water Transport.) Tory Channel and inner Queen Charlotte Sound in particular comprise a transportation route of national significance for shipping activity and, as such, it is important to recognise this route as a resource that needs to be sustainably managed in the P lan.

In managing the effects of the wake generated by conventional ships in Tory Channel and Queen Charlotte Sound, it is accepted that shipping operators have certain operating parameters that affect ship speed that need to be accounted for. In particular, the operators of conventional inter-island shipping services, have relied on an ability to operate their fleets of conventional ships at speeds of up to 20 knots in Tory Channel and inner Queen Charlotte Sound. This operating speed has been necessary historically to enable conventional vessels to achieve a sufficient number of daily crossings of Cook Strait to maintain a generally accepted level of service and for these services to remain socially and economically viable, from the perspective of the wider community.

The operation of the fast ferries has been controlled within Tory Channel and Queen Charlotte Sound by a Navigation Bylaw since 15 December 2000. This bylaw resulted in fast ferry operators being required to slow the speed of their ships from up to 40 knots to 18 knots within the confines of Tory Channel and Queen Charlotte Sound. Whilst the bylaw was primarily intended to manage navigation safety issues within the waters of the Sounds, evidence obtained from monitoring carried out by the Council indicated that the ship speed reduction had resulted in environmental benefits as well. Prior to the fast ferry speed restrictions being put in place there was wide community concern about the adverse effects being created by the waves generated by these ships-operating in

the Sounds. Some residual concerns remain about the effects of ship-generated waves on marine biology, shoreline geomorphology, shoreline structures, recreational values, small boat safety and Maori cultural values. The Council continues to monitor these values and effects. Recent indications are that, since the introduction of the fast ferry speed restrictions, there has been some improvement and recovery in the condition of the environment, particularly around the coastal margin of the Sounds.

The potentially adverse effects of ship-generated waves need to be managed in a manner that provides for the continued economic, social and cultural wellbeing of all people and communities, while sustaining the coastal environment. This is particularly so for the future as it is likely that shipping activity within Tory Channel and Queen Charlotte Sound will increase. International regulations for roll-on roll-off passenger ferries have introduced enhanced safety requirements regarding ship stability for vessels carrying more than 400 people. This will ultimately mean that larger ships are expected to be operating along the inter-island ferry route. This along with industry trends towards the use of larger, faster ships means that there is potential to generate greater effects in future than those experienced presently.

Shipping activity in other areas of the Marlborough Sounds such as Pelorus and Kenepuru Sounds is different to that of Queen Charlotte Sound and Tory Channel. The majority of shipping within Pelorus and Kenepuru Sounds is coastal or local in nature and relates to the transport of tourists, logs, livestock as well as fishing and marine farming fleets. These vessels are generally smaller and travel at speeds that are slower than ships such as the fast ferries and conventional ferries. It is considered unlikely that other areas of the Sounds will develop the type or extent of shipping experienced in Tory Channel or Queen Charlotte Sound given the lack of, or potential, to develop a deep water port within these other areas. At this stage therefore, there is currently little justification for the regulation of shipping activity in these areas.

In addition there is an increasing number of larger recreational vessels using the Sounds waters, some of which travel at speeds similar to the fast ferries. Although it is not proposed to control these vessels at this stage, the potential for adverse effects from their wake may need to be assessed in the future in light of their growing numbers.

9.5.2 Objective and Policies

Objective 1	To ensure that the environmental effects of ship-generated waves and speed are managed so that potential conflict with other coastal users and values is avoided, remedied or mitigated.
Policy 1.1	Enable as a permitted activity the continuing use of the National Transportation Route and Queen Charlotte Sound by ships travelling up to 15 knots.
Policy 1.2	Enable as a permitted activity the continuing use of the National Transportation Route for existing inter-island shipping services up to speeds that reflect the operating regime that was current at 14 November 2002.

Policy 1.3	Apply controls to shipping activity in Queen Charlotte Sound and Tory Channel, based on the amount of energy produced by ship-generated waves, which may cause adverse environmental effects.
Policy 1.4	<p>When considering applications for consent for ships that are expected to propagate waves having energy levels in excess of limits specified in the Plan, to have particular regard to the potential for adverse effects on:</p> <ul style="list-style-type: none"> • Places and cultural values of importance to Te Atiawa; • The shoreline and lawfully-established shoreline structures; • Amenity values enjoyed by residents; • People's use and enjoyment of the foreshore and coastal marine area for recreational activities; and • The natural character of the coastal environment of the Sounds.
Policy 1.5	Work with the community and the shipping industry to continually assess the appropriateness of the overall framework for shipping activities in light of environmental and technological changes or the occurrence of unforeseen effects from shipping activity.
Policy 1.6	Undertake monitoring to assist in developing appropriate approaches to managing the effects of shipping activity in Queen Charlotte Sound and Tory Channel.
Policy 1.7	Work in partnership with Te Atiawa in managing the effects of ship-generated waves in Queen Charlotte Sound and Tory Channel.
Policy 1.8	Recognise and provide for Te Atiawa's continued access to, and use of, traditional coastal resources in Tory Channel and Queen Charlotte Sound and in particular, recognise the value of Tory Channel for Te Atiawa, in terms of the concepts of mauri, mana and manaakitanga that this area brings to this iwi.
Policy 1.9	Maintain the life supporting capacity of coastal ecosystems by avoiding, remedying or mitigating the adverse effects of ship-generated waves and speed.
Policy 1.10	Maintain people's ability to safely use the foreshore and the coastal marine area for a range of recreational activities.
Policy 1.11	Maintain people's ability to effectively use any lawfully established structure for that structure's intended purpose.

The policies set out a framework that provides certainty for all existing users of the Sounds as to an accepted level of effects within Queen Charlotte Sound and Tory Channel where the adverse effects of ship-generated waves and speed have been apparent. The policies seek to achieve an acceptable balance between the positive benefits that flow from inter-island shipping activity and the need to appropriately manage the adverse effects of inter island shipping activity on the coastal environment.

The policies enable certain inter-island ships to continue to operate at speeds through the National Transportation Route, consistent with the operating parameters that existed as at 14 November 2002, being the date variation 3 to the Plan was notified, to include the issue of ship wake and speed.

The controls for managing the effects of shipping activity in Queen Charlotte Sound and on the National Transportation Route are based on ship-generated wave energy. The Environment Court has determined that the amount of energy appropriate for the National Transportation Route is to be founded on the environmental effects associated with conventional ships operating prior to the introduction of the M.V. Aratere in 1999. The energy limits included in the Plan are therefore based on the need to ensure that damage or change at the shore is minimised, that cultural values of Te Atiawa and the amenity values enjoyed by residents are provided for and that the natural character of the Sounds environment is protected.

The Council will continue to monitor the state of the Sounds environment and the impact of ship generated waves on the environment. It is envisaged that the methods currently included in the Plan for addressing the issues arising from ship-generated waves will be used until such time as more is learned about the type and wave-generating characteristics of future ships to be introduced to service on the National Transportation Route. Plan policies and methods will be adapted in future where changes in the type, scale or intensity of shipping result in the need for a different response to worsened environmental effects associated with Ship-generated waves.

The provision of accurate and up to date information on the environmental effects of waves generated by shipping activity is the foundation of an adaptive management regime that continually assesses the overall framework established to manage the issue. The direction established by the above policies is based on the assumption that the effects of ships can be effectively and efficiently managed. Information will need to continue to be collected, analysed and an assessment made with regard to the effectiveness and efficiency of the regulatory framework. This process is fundamental to an adaptive management regime, which recognises the uncertainty of understanding the effects of change in the coastal environment. It is envisaged that the existing operators of inter-island ships will be a key contributor to this process, so that future endeavours to manage the issue will be based on the best available information and will best represent the interests of stakeholders. This is strongly preferred over an approach where the Council is required to act on its own in regulating shipping activity in the Sounds.

This is consistent with the adoption of an adaptive management approach that is responsive to new information and better understanding. This is based on a collaborative approach, which becomes available through the monitoring and shared analyses of existing and future shipping activities, state of the environment monitoring and future technological advances in ship design.

The Sounds' community, and those who use the Sounds for recreational use, have Tory Channel and Queen Charlotte Sound specifically managed in respect of ship-generated waves. This also includes protecting their health and safety. In terms of cultural matters, the proposed framework also recognises the significance of the National Transportation Route and its surrounding area to Te Atiawa and ensures that their involvement in this matter is ongoing.

In providing for a National Transportation Route for shipping activity, it is recognised that there will inevitably be unavoidable adverse effects on the environment of Queen Charlotte Sound and Tory Channel. Ongoing research and monitoring will be required so that appropriate action can be taken in a timely way. The shipping industry will be encouraged to contribute to this research and monitoring work and to assist in devising ways of managing the effects of shipping activity into the future.

It is not possible to completely avoid present and future adverse environmental effects generated by ships using Tory Channel and Queen Charlotte Sound without imposing very restrictive controls. Such controls are not regarded as being a realistic or justifiable option given the important regional and national economic benefits derived from the operation of ships using this transportation route.

There are other policies in the Plan that further address the environmental effects of shipping activity and, which need to be considered in conjunction with those above. Refer particularly to Chapter 6: Tangata Whenua and Heritage; Chapter 8: Public Access and Chapter 19: Water Transportation.

9.5.3 Methods of Implementation

Area Identification	Tory Channel and part of Queen Charlotte Sound have been identified as a National Transportation Route -see Volume Three. The National Transportation Route is located in Tory Channel and extends into inner Queen Charlotte Sound (between West Head, Ruakaka Bay, and a point southwest of Kaitapeha Bay) to the Port of Picton (excluding Grove Arm). Queen Charlotte Sound (excluding the National Transportation Route) has also been defined as being part of an established shipping route.
Rules	<p>Rules relating to the use of surface waters by ships apply to Queen Charlotte Sound and Tory Channel. The use of surface waters in these areas is subject to maximum speed limits and for controlled activities, a maximum wave energy limit as well.</p> <p>The areas to which speed limits apply are defined in Volume Three Maps.</p>
Other Legislation	Navigation and public safety within the harbour limits are also the responsibility of the Council as a harbour authority. The Council's Harbourmaster, under Harbour Bylaws, the Navigation Bylaw 2000, the Maritime Transport Act and associated Maritime Rules, (or any successor to the above bylaws or regulations) carries out these functions. Harbour bylaws may impose additional constraints on speed eg; the 5 knot harbour speed limit.

<p>Compliance and Enforcement</p>	<p>The Council will monitor the activity of ships in Queen Charlotte Sound and Tory Channel for compliance purposes to ensure that ships do not exceed permitted speed levels and also to monitor for compliance with individual consent conditions.</p>
<p>Monitoring</p>	<p>The Council will monitor the effect of ship-generated waves as part of its responsibilities for state of the environment monitoring. A monitoring framework and programme were established by the Council in collaboration with the Department of Conservation following the introduction of the fast ferries in late 1994. This framework will form the basis for ongoing monitoring and will be amended as may be appropriate over time. The monitoring framework includes:</p> <ul style="list-style-type: none"> • Near shore benthic and shoreline biological monitoring; • Shoreline monitoring of beach profiles; • Ongoing monitoring of land slip activity along the National Transportation Route; and • Periodic assessment of the community's views of the effects of ship generated wave activity in the Sounds. <p>Ship generated waves will also be measured and monitored from time to time.</p> <p>Monitoring of the effects of the impacts of waves generated by individual ships may also be a requirement imposed as conditions of resource consent for discretionary activity shipping activity.</p> <p>In addition, the Council will support Te Atiawa initiatives to monitor cultural, and ecological effects from the wake of ships eg; the effects on access to waahi tapu and other sites of significance, the passing of tikanga Maori to future generations and the effects on the gathering of kaimoana.</p> <p>The results of the monitoring may be used to assist in the review the overall framework for managing the effects of shipping activity, or where there is a need to review the conditions of resource consents.</p> <p>The results of monitoring will be made available for consideration of the Advisory Group.</p>
<p>Advisory Group</p>	<p>An advisory group will be established by the Council whose functions shall be to:</p> <ul style="list-style-type: none"> • Review available monitoring information from shipping operators and the Council and any other expert reports lodged with the Council with respect to the effects of shipping (including research carried out as part of the Council's state of the environment reporting).

	<ul style="list-style-type: none"> • Assist the Council in determining the optimal course of action for the future management of shipping in the Sounds. • Facilitate voluntary action to avoid, remedy or mitigate any unforeseen effects of shipping activity. • Seek input from another person (or persons), should the group consider it necessary, to provide advice relating to the above issues. Prior to seeking advice from such a person, the group must obtain approval from the Council if funding is needed. • Provide a manawhenua iwi perspective, in particular that of Te Atiawa, in managing the effects of shipping activity. <p>Members will be appointed by the Council and will include representatives from community groups, the shipping industry, iwi and the Council.</p>
Te Atiawa Partnership	<p>The Council will work in partnership with Te Atiawa on matters relating to:</p> <ul style="list-style-type: none"> • Emerging issues; • Environmental enhancement and protection projects; and • Monitoring <p>with regard to the operation of ships in Queen Charlotte Sound and Tory Channel.</p>

The methods enable ships to travel in the National Transportation Route and Queen Charlotte Sound subject to controls on speed and ship-generated wave energy. The methods do not restrict the use of surface water by ships elsewhere in the Sounds or smaller boats. Ships are able to exceed the permitted activity speed limit provided a resource consent is obtained for either controlled activity or discretionary activity depending on whether or not the vessel's wave energy exceeds the maximum wave energy standard. Existing conventional ships that were in operation at the time Variation 3 was included in the Plan (being 14 November 2002) are permitted to continue to travel in the National Transportation Route up to 20 knots maximum speed.

Monitoring will be important in the ongoing management of the effects of shipping activity. The Council intends to continue with and enhance its current monitoring as necessary. The type and extent of monitoring will be reviewed as the types of ships and level of shipping activity changes over time.

The Plan encourages all of the key stakeholders to assist in ultimately determining an appropriate approach to managing the effects of shipping in the future. The Advisory Group is intended to bring the key stakeholders together in the management of shipping issues.

9.6 Anticipated Environmental Results

Implementation of the policies and methods relating to the coastal marine issues will result in:

- Appropriate activities able to be undertaken within the coastal marine area;
- Efficient use being made of the coastal marine area;
- The recreational values of the coastal marine area maintained and enhanced;
- The adverse effects of occupation of coastal space avoided, remedied or mitigated to the fullest extent practicable;
- Conflicts between different activities in the coastal marine area being minimised to the fullest extent practicable;
- Only appropriate structures which are sensitive to the coastal environment being constructed;
- The avoidance of a proliferation of structures;
- A progressive improvement in water quality in areas which are presently degraded;
- The maintenance of water quality in the coastal marine area at a level which enables the gathering or cultivating of shellfish for human consumption;
- The adverse effects of alterations to the foreshore and seabed being avoided, remedied or mitigated; and
- The continuation of activities which do not significantly or adversely alter the foreshore or seabed.

10.0 Urban Environments

10.1 Introduction and Issue

The need to recognise the extent and nature of the established urban resource and the associated pressure on infrastructure, natural resources and visual amenity including open space values resulting from urban development.

In order to understand the nature of this issue it is first necessary to understand the theory which surrounds urban environments and patterns of human settlement.

The development of urban environments, and reasons for this development, relate closely to the reasons which explain why people work and live in close proximity to other people. People choosing to 'live together' creates and is created by these urban environments.

People choose to live together in close proximity in urban environments for the following reasons:

- Humans are inter-dependent. An individual person is not generally able to look after all of their needs by themselves. People specialise and are thus dependent on one another for goods and services;
- Humans are social animals and tend to want to live in close proximity to others. This satisfies cultural needs;
- Economics of scale - it lessens the cost of services essential for human habitation such as sewage disposal and roading; and
- It lessens the effects created by people on the environment. The population is concentrated and is able to deal with the adverse effects they create, collectively.

Urban environments can maximise the economic, social and cultural opportunities available to people

The towns of Picton (including Waikawa Bay) Havelock and Rai Valley are the recognised urban environments of the Marlborough Sounds. It is in these locations that most of the Sounds' residents choose to live, work or at least use in some form.

Picton has built up around the South Island terminus of the inter-island ferry service after originally developing as a fishing and whaling village. Picton is a 'terminus' and travel corridor for north and south bound travellers and freight traffic. Located central to the wider Marlborough Sounds, Picton is also a visitor destination itself and a 'gateway' to the Sounds. Picton is also the service town for the rural Sounds communities of Queen Charlotte Sound, Tory Channel, and Port Underwood.

Waikawa Bay has developed as a residential settlement in its own right associated with a sheltered bay and recreational boat launching and mooring area. Waikawa Bay has also, more recently, developed as a suburban extension of Picton.

Havelock has developed as the port and service town for the wider Pelorus Sound and for the fishing and marine farming industry developing in the Sound. Havelock is located on State Highway 6 between Picton and Nelson. The harbour

provides a mooring, launching and marine servicing function for the growing numbers of recreational boats entering and leaving Havelock by road and by water.

The township of Rai Valley has developed as a small rural service settlement providing housing, provisioning and some primary production based industry.

Just as people have chosen to live in urban environments in the past, their importance will continue in the future. Urban environments serve a very important function by concentrating and organising urban services. Urban services include such features as sewage disposal, transport linkages, retail services, community facilities and information transfer.

Each of the towns is a resource in its own right, requiring sustainable management. The definition of natural and physical resources includes land, water, soil, minerals, energy, plants, animals and all structures. Urban environments are clearly the host for many of these resources in particular, structures.

The Need to Sustainably Manage the Urban Resource

In broad management terms it can be seen that the urban environment is the host of many different activities with varying effects. Some of the effects of urban activities are often only felt by other parts of the urban environment. Some effects are more widespread and are in fact effects on the wider environment.

In order to sustainably manage the urban environment, some control over the effects of activities is necessary. This will ensure that the urban environment is a pleasant place for people to live in, thereby ensuring its continued viability and sustainability.

Some control over the external effects will also be necessary in order to sustainably manage the urban resource. That is, control over the effects of the urban environment or, the environment as a whole, and the effects of other activities on the urban environment. Urban activities which extend into other environments such as rural environments or transport corridors can give rise to conflicts between activities. Urban activities such as residential activities are sensitive to some effects of transport activities such as noise or safety.

While there is no requirement in the Act to zone land, the concept of zoning is available as a basic technique of land use control. An important and useful planning tool, it recognises geographical differences in levels of acceptable effect. The advantage of zoning is that it enables areas with different sensitivities to effects to be differentiated. Activities with similar effects are able to be grouped together. Any adverse effects can be confined and limited to a defined area. Zoning provides certainty to land users. A variety of techniques can be employed to avoid such conflicts arising. In some situations buffer areas may be appropriate. In other situations, it may be appropriate to require that more sensitive activities which seek to establish in zones with lower standards of amenity or adjacent to transport corridors be protected by requiring, for example, double glazing or noise baffling.

Zoning is a mechanism by which statements of objectives, policies and anticipated environmental results can be formulated for different kinds of areas. It also provides a framework of specific measures to implement those objectives and policies. Zoning is a means of recognising and managing the cumulative

effects of activities over time in an integrated manner. If zoning was abandoned and activities were allowed to locate irrespective of their effects, the character of different areas would gradually be eroded, thus threatening the sustainability of the urban environment.

For this reason, zoning has been retained as a basic technique in this Resource Management Plan. Three separate zones in the urban environment have been identified, comprising areas with different characteristics and amenity levels. These are labelled residential, town centre and industrial zones after the predominant land use types that currently exist in them. Within that pattern of zoning there is flexibility for activities to locate, provided that they are compatible with that part of the urban environment through meeting the performance standards of that zone.

10.1.1 Objectives and Policies

Objective 1	To enable the continued existence of activities that are established or can establish in any area by avoiding, remedying or mitigating adverse effects of other activities that are sensitive to lower standards of amenity.
Policy 1.1	To recognise that some urban activities are more sensitive to effects such as noise than others.
Policy 1.2	To ensure that activities which are sensitive to the effects of established activities which require lower amenity standards avoid remedy or mitigate those effects.

Activities within urban areas are not homogeneous in their sensitivities to effects.

The objective and policies recognise that reverse sensitivities can and should be avoided where practicable in order that the urban environment is sustainably managed.

10.1.2 Methods of Implementation

Zoning	The identification of activity area zones within urban areas and between other areas will avoid, remedy or mitigate effects.
Rules	The use of rules to avoid, remedy or mitigate the effects of activities within urban environments and at the periphery or urban areas developing reverse sensitivities. The implementation of a roading hierarchy.

Controls within the Plan are considered to be the most efficient and effective method of avoiding sensitive land use activities developing reverse sensitivities.

10.2 Residential Environments

Council must enable people and communities to provide for their residential needs within the Marlborough Sounds under the Act. However, this can only be done while addressing the needs of future generations, the life-supporting capacity of air, water, soil and ecosystems, and the adverse environmental

effects of activities. Council must also have regard to a number of other matters contained within Part II of the Act, including:

- The efficient use and development of natural and physical resources;
- The maintenance and enhancement of amenity values; and
- The maintenance and enhancement of the quality of the environment.

The residential area is the urban environment's largest land use. There is a need to enable people to provide for their economic, social and cultural wellbeing through ensuring a level of amenity in the residential area that is compatible with quality living.

Five sub-issues have been identified in relation to the residential environment. These issues are:

1. *Threats to the existing residential character of Picton Waikawa, Havelock and the Rai Valley through inappropriate land use and development within the residential area;*
2. *Allowing for activities to take place within residential areas;*
3. *Protecting the residential character and amenities of residential environments;*
4. *Water supply and sewage disposal in residential areas; and*
5. *The need to encourage energy efficiency in the residential environment.*

These issues will be discussed in turn with objectives, policies and methods of implementation incorporated to address them.

10.2.1 Issue

Threats to the existing residential character of Picton, Waikawa, Havelock and Rai Valley through inappropriate land use and development within the residential area.

The main residential areas of the Marlborough Sounds are located in the Picton/Waikawa Bay and Havelock urban areas. There are also smaller rural townships (Rai Valley) and small groups of residential dwellings throughout the Sounds.

The population has declined in Picton over the period of 1986 to 1991 but in Havelock and Waikawa there was a significant population increase over that time. In briefly looking at statistics from the 1991 census, a number of main points are evident:

- Waikawa has experienced significant growth in population and number of occupied dwellings since 1981;
- There is very high proportion of population in the over 60 years age group; and
- Predominant areas of employment are in manufacturing, hospitality, transport/communication, and community/personal services.

It is noted that Picton experienced a large population increase from 1981 to 1986 but a decline of population in the period of 1986 to 1991. A flat growth rate is now predicted for Picton with no substantial increase or decrease in population predicted for the next census period.

Picton

The residential requirements for Picton relate closely to the role and the 'gateway' tradition of the town. In addition, the trends outlined above and the future vision for the town, by its residents, will impact greatly on any future residential requirements.

The supply of suitably serviced land for residential development in Picton and Waikawa is severely limited by natural hazards of flooding and land instability. There is limited scope for expansion of the settled urban area because it is physically contained by steep hills. Any significant expansion onto these hills would also detract from the important scenic backdrop to the towns. For this reason it is intended to recognise the extent of the existing development and future infill development within Picton and Waikawa by appropriate zoning in the Plan. For reasons of service capacity, landscape protection, and natural hazard constraints, urban expansion will not be provided for in the Plan. The geographical constraints of Picton and Waikawa, form a natural urban fence.

Havelock

Residential activity in Havelock stems from the historical roles of the township. Located at the head of the Pelorus Sound, Havelock serves a significant role as the port and service town for the fishing and marine farming industries of this part of the Sounds. The recent population growth for Havelock, identified by the 1986 census, may in part be attributable to the success and continuing growth of the marine farming industry in the Pelorus Sounds area.

Havelock is by no means merely a fishing town. It serves as a farming service centre for the rural area which surrounds the town. The significant forestry development in the Marlborough Sounds and Pelorus and Kaituna catchments no doubt impacts on the Havelock township. Furthermore, the Havelock harbour is an important resource for the growing numbers of recreational boat users in the area. It provides a launching ramp, a marina, and marine services for boaties.

Located on State Highway 6, the main road between Picton/Blenheim and Nelson, Havelock is a popular rest stop for passing motorists.

These roles, and the many others which Havelock fills, encouraged the residents of Havelock to live there. A number of people simply choose to live, and often retire, in Havelock because it is a sunny, peaceful spot by the sea.

This is expected to continue in the future with a gradual increase in the residential requirements for Havelock envisaged. In recognising this it is important to recognise any possible limits to future urban residential growth which might exist in Havelock.

The extent of urban residential growth in Havelock is largely constrained by the capacity of its reticulated sewage treatment system and the limited availability of flood-free flat land. There is some capacity for infill residential development within the urban area of Havelock (which would absorb the capacity of the sewage treatment system). It is intended to recognise the historically zoned area as suitable for infill development and moderate expansion at Havelock.

The zoning pattern adopted (refer to Volume Three - Planning Maps), reflects these limits to and opportunities for future growth.

Rai Valley

Rai Valley is a small rural township with a mixed use centre (commercial and industrial type use) and urban residential use incorporated into the township as well. It also performs an important service centre function for the surrounding rural area, part of the Pelorus Sound and French Pass.

Sounds Residential - Marlborough Sounds

Although outside of the urban environment, the residential development along the coastal margin of many areas of the Marlborough Sounds, can be addressed here. A number of the concerns are similar to those associated with residential development in the urban environment.

Some further issues can be identified and need to be addressed for residential activities in the Sounds areas. For example, the effect of residential development on identified areas of outstanding landscape value and potential conflicts with other activities in the Sounds such as marine farming.

10.2.1.1 Objectives and Policies

Objective 1	An environment within the established residential areas of Picton, Waikawa, Havelock and Rai Valley that is principally residential in character.
Policy 1.1	Avoid, remedy and mitigate adverse effects of residential activity by delineating the extent of Urban Residential activity by appropriate zoning.
Policy 1.2	Ensure that residential development takes place at a rate which enables the sustainable management of the capacity of reticulated services (water supply and sewerage) and other urban services (roading).
Policy 1.3	Recognise constraints to development including natural hazards.

The objective and policies above establish the Urban Residential Zone and allow for any future development within this area. The area of land zoned for urban residential use must be able to be efficiently served with the necessary urban services. This must be done in a sustainable manner.

The Urban Residential Zone is identified and defined on the Planning Maps, (Volume Three). The objectives and policies which follow will ensure that the residential resource is sustainably managed.

Objective 2	Enable residential activity along the coastal margin of the Sounds to the extent that this avoids or mitigates adverse effects on the environment.
Policy 2.1	Delineate the extent of residential activity along the coastal margin of the Sounds.

Policy 2.2	Preserve the natural character of the coastal environment of the Sounds by enabling appropriate residential use and development in areas where the natural character has already been compromised.
Policy 2.3	Ensure that activities along the coastal margin of the Sounds avoid, remedy or mitigate adverse effects on the natural environment, areas of significance to tangata whenua and to amenity values.

The areas identified for Sounds Residential development are shown on the Planning Maps (Volume Three of the Plan). These areas are based on previous plans, namely the Marlborough Division Section of the Transitional Marlborough District Plan. Land previously zoned as Residential B, Deferred Residential B; and Residential C has been recognised as being suitable for this zone.

The advantage of using these previously recognised areas is that a number of the issues and constraints may have already been resolved, for example, any conflicts with non residential activities and sewage disposal.

10.2.1.2 Methods of Implementation

Zoning	The Urban Residential Zone is identified on the planning maps within the following areas: <ul style="list-style-type: none"> • Picton; • Waikawa; • Havelock; and • Rai Valley. The Sounds Residential Zone is identified on the planning maps.
Designation	Within residential zone areas floodways are identified and activities affecting or affected by flooding are specifically controlled.
Rules	Plan rules permit residential activity within those identified areas subject to performance standards.
Annual Plan	Through the Annual Plan process, progressively undertake improvements to local roading, sewerage, water supply and stormwater services, and flood control works.
Research	The Council will continue to monitor and research the requirements and limitations to residential growth in the urban environment and the Marlborough Sounds areas.

Plan controls are considered to be the only effective method of controlling residential development within sustainable limits. Urban residential use must be able to be sustainably served with the necessary services.

The development of properties for residential activities in the Sounds gives rise to different issues and effects compared to the urban residential situation. It is considered appropriate to establish independent zoning and effects management regimes for the Urban Residential and the Sounds Residential areas.

The further methods indicated above will ensure that the extent of the residential zones are appropriate to the needs and restraints of residential development.

10.2.2 Issue

The character and scale of existing residential areas can be threatened by some non residential activities.

Urban Residential Areas

The residential areas at Picton, Waikawa, Havelock, and Rai Valley provide accommodation for permanent residents as well as for visitors. Types of accommodation vary greatly and include, for example, single dwellings for families, dwellings for elderly residents, retirement complexes, time share apartments, motel complexes. A number of associated services and facilities (for example restaurants) also benefit from location close to visitor accommodation. There are also several non-residential activities, such as dairies, which serve the day-to-day needs of residents.

Sounds Residential Areas - Marlborough Sounds

The existing development areas scattered throughout the Marlborough Sounds provide a considerable diversity of residential opportunities. Occasional-use holiday homes predominate but a considerable number of people choose to live permanently in these areas. Permanent residents can be retired but many are engaged in Sounds-based occupations such as fishing, marine farming, tourist ventures and home-based occupations. Accommodation for visitors to the Sounds is provided by the many accommodation hotels, tourist lodges and a growing number of homestay operations.

Residential Activities

It is intended to apply similar performance standards to all development proposals within the urban residential areas so as to manage the effects of activities in a consistent way and to maintain residential character, scale and local landscape quality. Where the nature, character, and effects of non-residential facilities and activities are compatible with the character of residential areas there is no reason to prevent them establishing there.

Changes in employment practices and advances in communications technology have combined to result in growing numbers of people seeking to conduct businesses based at their residence. Traditional examples of such home occupations include offices for professional services eg; architecture; medical practitioners and health services; hairdressers; telephone sales.

Technological change may, in the future, make a much broader range of activities possible. Where these activities are able to be accommodated within the residential area without causing adverse effects or nuisance to surrounding residential activities there is no reason to prevent their establishment. Home occupations should not be permitted to develop to such a scale or intensity as would cause detriment to local residential character by giving rise to:

- excessive or unusual traffic volumes;

- excessive noise;
- inappropriate location or appearance of advertising signs;
- inappropriate (out of character or large scale) altering of buildings; and
- storage of goods, equipment, or vehicles within the site or on the street.

Community Facilities

The development of residential activities generally causes a demand for associated community facilities. These facilities include places of worship, educational establishments and places of assembly. Such facilities while being of benefit to the community, can cause localised effects on neighbouring properties. For this reason such facilities should be considered on their merits, subject to resource consent applications within residential areas.

10.2.2.1 Objectives and Policies

Objective 1	Maintain and enhance the amenity of the residential environment while enabling the establishment of activities in a manner which is compatible with the residential environment.
Policy 1.1	Enable a range of activities within residential areas provided these are compatible with residential amenity values.
Policy 1.2	Avoid, remedy, and mitigate the adverse effects of agrichemicals and encourage their use in a safe and sustainable way within the urban environment.
Policy 1.3	Recognise and provide for transport networks in the urban environment.

The Plan needs to enable people to provide for their needs through delineating areas with residential amenities. It seeks to enable the establishment of activities in these areas that have the same, or similar and compatible effects as residential use.

10.2.2.2 Methods of Implementation

Rules - Urban Residential Zone	<p>Plan rules permit residential activities subject to performance standards. Proposals for non-residential activities will generally be considered on their individual merits as through applications for resource consent.</p> <p>Home occupations which are compatible with the existing character of residential areas will be considered as Permitted Activities.</p> <p>Plan rules provide for the establishment of community facilities as Discretionary Activities.</p> <p>Small scale visitor accommodation in established buildings will be permitted subject to performance standards. Other proposals for tourist accommodation will be considered on their merits as Discretionary Activities.</p>
--------------------------------	---

	<p>Marae and marae-based activities will also be considered as Permitted Activities on specifically identified sites in the Urban Residential Zone.</p> <p>All activities within residential areas will be subject to similar performance standards designed to maintain and enhance local residential character.</p>
Rules - Sounds Residential Zone	<p>Plan rules permit residential activities subject to performance standards.</p> <p>In particular performance standards will address matters such as effluent disposal, land stability, water supply and landscape impact.</p> <p>A limited range of other activities will be allowed for, generally as a Discretionary Activity.</p>
Co-ordination	<p>Implementation of Council’s Land Transport Strategy in conjunction with the land transport requirements of this Plan will address compatibility of the residential area with the transport network.</p>
Information	<p>Promote and encourage the safe and sustainable use of agrichemicals.</p>

Plan rules are considered to be necessary to ensure that the effects of activities undertaken within urban residential areas are compatible with the character and amenities of those areas. Rules allow residential activities as Permitted Activities subject to performance conditions to protect amenity. Non-residential activities will be considered on their merits and in terms of the objectives, policies and standards relating to residential amenity and character.

The Plan acknowledges that it is appropriate for community facilities to be located within residential areas. However, rather than prescribe a set of performance conditions anticipating all effects of community facilities, these will be assessed as applications for resource consents on their individual merits and in terms of their effects within the residential environment.

10.2.3 Issue

Protecting residential character and amenities.

Urban Residential Areas

The residential character that has developed within the residential areas of Picton, Waikawa, Havelock, and Rai Valley is predominantly one of low density with single dwellings on individual sites; low building height; attractive buildings; open garden landscape; and wide streetscape.

Consultation with the communities confirms that this overall character, density, and the overall quality of the local environment are important to residents.

These qualities are the principal reason for the attractiveness of the residential areas. Particular amenities which contribute to that character and which the community seeks to protect include:

- Relatively quiet background noise levels (day and night);
- Privacy between individual residential properties;
- Ample sunlight to buildings, private open space areas;
- Views to the sea and surrounding hills;
- Low building height; and
- Open streetscape.

The Plan seeks to maintain these residential amenities by requiring the management of adverse effects on these amenities arising from activities within and adjoining residential areas. The Plan seeks to maximise opportunities for views through and across residential properties to the sea and other landscape features by maintaining a generally low building height and low-to-medium building coverage although the Plan will not guarantee views from individual properties.

New sites created by subdivision have, historically, been required to comply with minimum area, frontage, and access standards. The creation of sites by cross-lease has involved a different legal mechanism and in some areas different site area standards have applied. New sites, whether created by title subdivision or cross lease or any other legal mechanism, should all meet the same standards. Those standards should provide sufficient area, shape, and access to enable reasonable future development for residential purposes and will maintain a low-to-medium urban density throughout the settlements.

The Plan also recognises that at Picton, the port areas have played and will continue to play an integral part in the development of the town. This historic close association between place of work and living has led to the current land use pattern where residential properties are often very close to port areas. Port areas are vital for the economic wellbeing of the community. Accordingly, the amenity values of the residential areas in Picton need to be balanced against the need to provide for the efficient and effective functioning of the port and rail operations. Residential activities adjoining the port zone may have their amenity compromised by noise levels arising from existing port and rail activities.

Sounds Residential Areas - Marlborough Sounds

The character of the Sounds Residential Areas within the Marlborough Sounds varies greatly. This is also very different to the character and amenities found in the urban residential areas.

The character of particular Sounds Residential areas depends to a large extent on location factors. These include such things as the general locality, access, vegetation on and around the sites, view and proximity to the water. The consultation process revealed that prospective purchasers of 'Sounds Residential' properties place the most value on the following factors:

- Foreshore Frontage;
- Road Access;
- Privacy;
- Location;
- Anchorage; and

- Physical and Landscape Characteristics.

It is important that the character enjoyed by these Sounds Residential areas is maintained or enhanced by all activities that take place within the area. The character referred to extends well beyond the 'Sounds Residential' areas to all the elements in the landscape surrounding them.

10.2.3.1 Objectives and Policies

Objective 1	Maintenance and enhancement of the amenities and landscape character of residential environments.
Policy 1.1	Protect the predominantly existing density and residential character of Urban Residential and Sounds Residential areas while avoiding, remedying and mitigating adverse effects within and beyond those areas.
Policy 1.2	Enable new developments and activities within established Urban Residential and Sounds Residential areas provided their effects are not incompatible with the landscape character and local amenity qualities including: <ul style="list-style-type: none"> • Noise conditions; • Privacy; • Overall volumes of traffic movements; • Building bulk and density; and • Access to sunlight.
Policy 1.3	Control the heights of buildings in Urban Residential and Sounds Residential areas in order to minimise shading of adjoining properties and to maximise opportunities for views to the sea and other important landscape features.
Policy 1.4	Enable buildings within the Urban Residential Zone to be located within individual allotments at the discretion of the property developer; whilst ensuring that buildings located close to property boundaries do not shade adjoining properties or have intrusive height in relation to the property boundary.
Policy 1.5	Seek to maintain a low-to-medium density of building coverage on sites and ensure opportunities for space for domestic storage and service areas and private outside space within individual sites in the Urban Residential Zone.
Policy 1.6	Avoid, remedy and mitigate adverse effects of noise emissions in the residential environment.
Policy 1.7	Seek to maximise opportunities for views from residential properties to the sea and other important landscape features.
Policy 1.8	Require all proposed Urban Residential and Sounds Residential allotments to have sufficient area, shape, and access from a public road (where applicable) to accommodate a range of residential activities, including possible future uses.

Policy 1.9	Recognise the site -specific nature of construction constraints on sites within Sounds Residential areas.
Policy 1.10	Recognise that residential activity adjoining existing port and rail facilities can be subject to higher noise levels than would normally be experienced, and that resulting effects may be justified in certain circumstances.
Policy 1.11	At Picton, recognise that the residential settlement is built up around existing port and rail facilities, whose effective and efficient operations need to be provided for.

The Act requires that, in relation to the use, development and protection of natural and physical resources, particular regard be given to the maintenance and enhancement of amenity values, [section 7(c)]. This issue is further clarified by Policy 7.1.7 of the Marlborough Regional Policy Statement, “promote the enhancement of the amenity values provided by the unique character of Marlborough settlements and locations”.

The objective and policies above address amenity values for the residential environment.

10.2.3.2 Methods of Implementation

Rules	<p>Plan rules permit activities within residential areas subject to performance standards to control the following effects on amenity values:</p> <ul style="list-style-type: none"> • Sunlight and outlook for neighbours; • Noise; • Building coverage; and • Building height. <p>Plan rules control the characteristics of new residential allotments in order to maintain the character of existing residential areas. For example, controls are included on lot size, residential site density, open space requirements and building platform requirements.</p> <p>Plan rules will be flexible enough to allow for the site-specific nature of construction constraints on sites within Sounds Residential areas.</p> <p>Proposals which fail to comply with the stated performance standards will be considered as discretionary activities. Where the extent of non-compliance (or variance from standard) is minor, applications will be considered as ‘limited discretionary’ activities with their assessment confined to a consideration of the effects of the non-compliance.</p>
Reserves	<p>Through the Reserves Management Strategy, the Council will manage the parks and reserves which are an important contribution to the amenity of the urban area.</p> <p>The taking of esplanade reserves and strips on subdivision,</p>

	particularly along the coastal margin, will indirectly improve the amenity found in the Sounds Residential areas.
Guidelines	<p>Landscape guidelines for subdivision and residential development in the Sounds areas will be developed by the Council. These will address matters such as:</p> <ul style="list-style-type: none"> • The location of buildings; • The appropriateness of a structure; • The material used and its ability to blend into the landscape; • The ability of the structure to blend into the environment; • Form and design; and • Landscaping options.
Community	The Council will encourage any community initiated amenity improvement programmes to improve residential amenity standards.

Plan rules set performance conditions controlling building height, potential shading of adjoining properties, and maximum building coverage. It is considered that rules are necessary because they provide maximum certainty for residents and developers of sites in residential areas where maintenance of amenities is important to people's wellbeing and to the security of property investment.

The further methods outlined above are matters which Council are either required to address or are intending to address for various reasons. They all offer progress in terms of the maintenance and enhancement of amenity values.

10.2.4 Issue

The health and safety of people and communities can be adversely affected if adequate provision is not made for potable water supplies and the disposal of waste.

The settlements of Picton, Waikawa and Havelock each have reticulated water supply and reticulated sewage collection and treatment systems.

Residential developments outside the settlements are, in most cases, individually self-contained for water supply, sewage disposal and rubbish disposal.

The Plan seeks to ensure that residential developments are served with potable water supplies, and waste treatment and disposal systems which do not contaminate the environment or compromise community health.

10.2.4.1 Objectives and Policies

Objective 1	Ensure that development in residential areas does not have adverse impacts on community health standards.
Policy 1.1	<p>Ensure that all proposed allotments and buildings intended for temporary or permanent human occupation make adequate provisions for:</p> <ul style="list-style-type: none"> • Disposal of human sewage effluent and other wastes; and • A potable water supply.
Policy 1.2	Ensure that all development in the Sounds be within the capacity of the land for on site sewage disposal if a community sewage disposal system is not available.

The objective and policies are designed to ensure that community health issues are taken care of, prior to undertaking any residential development. Refer also to Chapter 14: Discharges of Waste to Land.

10.2.4.2 Methods of Implementation

Rules	<p>Plan rules require all subdivisions and developments for residential purposes to provide water supply and waste treatment and disposal which meets specified standards.</p> <p>Plan rules require all subdivisions in the Rai Valley Urban Residential and Sounds Residential areas to make satisfactory provision for on-site water supply and effluent and stormwater disposal (where a community sewage disposal system is not available).</p>
Other Legislation	Buildings intended for human occupation will be required, in terms of the Building Act 1991, to comply with standards to provide adequate supply of potable water and means of disposal of sewage effluent.
Guidelines	<p>The Council will make available its Code of Practice for Subdivision and Land Development which sets out a means of compliance with the Plan's requirements for water supply and wastes disposal services. Compliance with the Code will be deemed to be compliance with the Plan.</p> <p>The Council will develop guidelines or Codes of Practice to assist residents select, install and operate alternative supply and disposal systems.</p>

Plan rules are considered to be the minimum necessary to ensure that the installation and operation of water supply and wastes treatment and disposal systems meet desired community health and environmental standards. The Plan does not prescribe the specific methods that must be used for on-site water supply or waste disposal but specifies the standards to be met.

10.2.5 Issue

The need to encourage energy efficiency in the residential environment.

The design and layout of residential subdivisions together with the location and design of individual buildings can influence energy use. Residential settlements which extend new roads long distances beyond central community services can give rise to unnecessarily lengthy journeys by vehicle to and from those services.

The orientation of buildings on individual sites so as to receive maximum sun is an accepted rule of thumb in the New Zealand building industry. Building location, in the first instance, will strongly influence the success of design features intended to maximise solar energy use (for example solar water heating and window placement for passive solar space heating). It is therefore important that the design of subdivisions enables the future siting of buildings to maximise orientation to the sun.

10.2.5.1 Objectives and Policies

Objective 1	Energy efficiency in the design and construction of residential subdivisions and residential dwellings.
Policy 1.1	Encourage incorporation of principles of energy efficiency in the design and construction of residential subdivisions.
Policy 1.2	Enable the siting of buildings on residential lots so as to maximise opportunities for the incorporation of principles of energy efficiency in the design and construction of individual residential dwellings.

The objective and policies above follow on from Policy 7.5.3(a) of the Marlborough Regional Policy Statement which is an overall policy for energy efficiency in Marlborough.

10.2.5.2 Methods of Implementation

Rules	Zoning is utilised as a land management tool which recognises infrastructural resources and the associated capacities to accommodate sustainable urban resource management.
Guidelines	The Council has developed a set of guidelines to assist the design of residential subdivisions (in Urban Residential areas) and residential buildings (in all residential areas) to maximise energy efficiency. The Council will promote the use of energy efficiency and solar energy use by providing a brochure summarising the guidelines.

The Plan establishes an ‘urban fence’ around existing settlements and Sounds Residential areas and will enable infill developments within that ‘fence’.

Guidelines will assist in the community’s understanding of and support for energy efficiency in relation to urban form and residential development.

10.3 Town Centres

Picton’s commercial centre is closely related to the foreshore and marina areas nearby. Integration of the areas is important in terms of enhancing landscape values and providing an attractive gateway to the town. Integration is also important to the safety and attractiveness of the centre for pedestrians. The range of activities within the commercial centre reflects the function of the town in serving the resident communities of Picton, the Sounds and a considerable visitor population. Activities related to tourism and visitor accommodation are a feature of the town centre.

Havelock’s town centre is located on either side of State Highway 6 and provides commercial goods and services for the local community as well as the communities of the Sounds and outer islands and to travellers on the highway. Tourist-related activities are a feature of Havelock’s town centre.

There is considerable public and private investment in the town centres in the form of roading, carparking, street lighting and other infrastructure which is

important in providing commercial services and shopping facilities for the community. Consolidation of commercial activity within the centres can help to maximise efficiency of use of existing facilities and services and minimise the distances that people must travel to conduct business and to shop.

There are small areas and individual sites of commercial activity located throughout the residential areas. Although they are not part of the town centre they complement the facilities available in the centres in providing for the day-to-day needs of residents.

The town centres of both Picton and Havelock include buildings which have historic merit or contribute to the overall heritage character of the centre. Maintenance and enhancement of these heritage assets and qualities is considered to be a strength which can contribute to the vitality and tourist and retail attractiveness of the centres. Protection and enhancement of heritage buildings and features will be promoted in the centres. Refer to the Heritage chapter of the Plan for detail on this (Section 6.2). Public and private developments within the centres will be encouraged to be compatible with the heritage character of the centres and to integrate with existing and planned foreshore development.

Two main sub-issues of the main urban environment issue (Section 10.1) have been identified for the commercial sector of the urban environment, or for town centres.

These are:

1. *Inadequate provision of land with “commercial” amenities in appropriate areas can result in lack of opportunity for business development, loss of accessibility to business areas and adverse effects on the environment of surrounding areas; and*
2. *The need to maintain and enhance the visual character of town centres.*

Commercial activity is a significant component of the urban environment. Just as the urban environment as a whole is a resource requiring sustainable management, the ‘commercial environment’ or town centre is a resource in itself which needs this care.

10.3.1 Issue

Inadequate provisions of land with “commercial” amenities in appropriate areas can result in lack of opportunity for business development, loss of accessibility to business areas and adverse effects on the environment of surrounding areas.

Commercial activities such as retail outlets, offices, banks, restaurants, tourist accommodation and other services are an important contribution to the urban environment. The success and viability of an urban environment depends to a very large extent on the vibrancy and vitality of its commercial centre.

It is therefore necessary to provide adequate areas for commercial activity by zoning areas which are suitable for this. The effects of commercial activity can then be managed within these areas.

10.3.1.1 Objectives and Policies

Objective 1	Maintaining a standard of amenity that is compatible with business activity within the established town centre areas of Picton and Havelock while avoiding, remedying and mitigating adverse effects resulting from this activity on neighbouring areas.
Policy 1.1	Avoid, remedy and mitigate adverse effects of commercial activities on the amenities of adjoining areas.
Policy 1.2	Enhance the town centres of Havelock and Picton by minimising adverse effects created by activities as a result of street appearance, noise, glare, dust and car-parking.
Policy 1.3	Enable the establishment of a variety of activities within town centres provided these do not detract from the levels of amenity of the town centres.

The objectives and policies above establish the Town Commercial Zone and allow for any future development within this area.

Zoning land with levels of amenity suitable for commercial activities provides some certainty of location and a cost effective basis for environmental controls. By doing this it is possible to differentiate between controls whose effect is internal to the zone and those which are designed to protect the residential interface or the wider environment.

Attractive and compact town centres which are able to provide a range of goods and services, will ensure that the needs of the local community, the Sounds communities and visitors to the centres can be met.

Objective 2	Safe and convenient town centres.
Policy 2.1	To provide and manage roads, carparking, street lighting, traffic and pedestrian facilities within town centres to ensure a safe environment and efficient movement of people and goods.
Policy 2.2	Ensure that commercial activity is compatible with the transport network.
Policy 2.3	Ensure that adequate safe parking is provided in town centres.
Policy 2.4	To promote pedestrian safety in town centres.
Policy 2.5	Ensure the adequate provision of verandahs or other forms of shelter for pedestrians, on buildings in town centres.
Policy 2.6	Permit advertising signs which enable public identification of town centre premises but which do not dominate the local landscape or detract from the amenity and visual harmony of the foreshore area.
Policy 2.7	Enable the provision of residential accommodation, that is associated with commercial activity, in town centres.

Safe and convenient town centres are essential for the sustainable management of the urban environment.

10.3.1.2 Methods of Implementation

Zoning	The Town Commercial Zone is identified on the planning maps within the following areas: <ul style="list-style-type: none"> • Picton; and • Havelock.
Rules	Plan rules permit commercial activity, visitor accommodation, entertainment facilities and community facilities subject to performance standards.
Standards	Performance standards address matters such as effluent disposal, building height, vehicle access and loading, car-parking, the provision of verandahs for pedestrian shelter. These standards will be particularly addressing those policies identified under Objective 2, the safety and convenience of town centres.
Rules	Other activity classes will be considered as Discretionary Activities within town centres.
Rules	Plan rules control advertising signs with conditions to manage any potentially adverse landscape, amenity or traffic distraction effects.
Transport	Implementation of the Council's Land Transport Strategy in conjunction with the land transport requirements of the Plan (Chapter 18) will address compatibility of the commercial area with the transport network.
Other	The Council will implement traffic and parking management controls in terms of the Local Government Act 1974 that are appropriate to the season and traffic volumes in order to minimise conflicts between users and ensure efficient movement of vehicles.

Performance conditions are considered to be important to ensure the integrated management of the centre and to assure convenience and attraction for users of the centres. Performance conditions therefore include requirements relating to vehicle circulation, parking, loading, pedestrian shelter and height. The integrated design and function of the Picton and Havelock commercial centres is considered to be sufficiently important to require controls on new developments.

10.3.2 Issue

The visual character of the urban environment may be affected by use and development of resources.

Picton and Havelock are visually attractive towns. A lot of this appeal stems from the visual character provided by the commercial area of the town. The way in which the town centre is integrated with the rest of the town is also important.

For Picton, integration with the foreshore area is important. Picton's visual character derives from the physical setting of the bush-clad hills and the harbour, the public spaces and the historic and aesthetic value of much of the town's centre.

Integration with the port and marina area is important for the commercial area of Havelock. The visual character of Havelock relates to the surrounding natural environment and the town’s history of fishing.

10.3.2.1 Objectives and Policies

Objective 1	The enhancement of the visual character of town centres.
Policy 1.1	Encourage the development of buildings and structures within town centres that reinforce the scale, style and design of that town.
Policy 1.2	Promote visual integration of the town centre with the wider townscape (Havelock and Picton) and the environment as a whole.
Policy 1.3	Promote development within town centres which does not dominate important views to and from the sea.
Policy 1.4	Promote landscape planting and the use of street furniture which is consistent with the visual character of the town centre.
Policy 1.5	To acknowledge the contribution that heritage resources make to visual character and encourage the preservation and enhancement of such resources.

Visual character and the maintenance and enhancement of this is a significant issue for the town centres of Havelock and Picton. Looking after the visual character will contribute to the continued successful existence of the urban environment.

The Marlborough Regional Policy Statement recognises the significance of visual features and visual character in Objective 8.1.2 seeks ‘the maintenance and enhancement of the visual character of indigenous, working and built landscapes’. The urban environment and town centres in particular, are a significant contribution to the built landscape.

10.3.2.2 Methods of Implementation

Rules	Rules restrict the height of new buildings in town centres to a level which is compatible with those which presently exist. Rules restrict what can be done to scheduled heritage resources to ensure these are conserved for future generations. A number of other methods also relate to heritage resources, refer to Section section 6.2: Heritage.
Guidelines	The Council will assist in the preparation of community initiated guidelines to assist the design of buildings and structures within town centres. For example in the case of Picton, the Council will recognise the work of the Picton Sounds Paradise organisation. The guidelines in the Picton Town Centre Urban Design Concept Plan are intended to assist property owners in designing alterations to buildings or new buildings.

Council Works	The Council will seek to use materials and street furniture of a consistent style, compatible with heritage objectives and any relevant design guidelines for the town centres, in altering or reconstructing any roads, footpaths, or structures on public land within town centres. This theme will be extended to Council's landscaping and gardening works as well.
Other	The Council will co-operate with the port company to enhance the physical connection and integration between the ferry terminal, the foreshore area and the town centre.

Guidelines provide the appropriate means of implementing most of the aims for visual character in town centres. They are flexible enough to allow for the many variations which exist when trying to address the maintenance and enhancement of visual character. The further methods are simple matters for the Council to act on, in its capacity as a service delivery organisation.

10.4 Industrial Activity

Industry is a significant part of human activity. Not only does industry supply the community with the goods and services it has come to depend upon, it provides a significant proportion of the population with employment.

It is generally desirable for industry to locate within the urban environment. This ensures that the services needed to support industrial activity are available to this sector. These include, access to main transport routes, ports, employees and activities which service the needs of employees, and so on.

It is therefore necessary for there to be areas set aside for industrial activity in the urban area. It may also be necessary to allow for industrial activity in more rural type areas, for those industries which serve this sector. This is the first 'sub-issue' for industrial activity.

The other side of industrial activity in the urban environment is the need to manage the effects of industrial activity.

The issues are:

1. *Inadequate provision of land with industrial amenities in appropriate areas can result in lack of opportunity for industry, loss of accessibility to industrial areas and adverse effects on the environment of surrounding areas; and*
2. *Managing the effects of industrial activity.*

These two issues will be discussed in turn with objectives, policies and implementation methods incorporated to address them.

10.4.1 Issue

Inadequate provisions of land with industrial amenities in appropriate areas can result in lack of opportunity for industry development, loss of accessibility to industrial areas and adverse effects on the environment of surrounding areas.

Promoting the sustainable management of the urban environment involves providing adequate areas with levels of amenity suitable for industrial activity. Through zoning, any effects of industrial activity can be managed within a confined area. This includes, effects of industrial activity on the environment, and effects of other activity on industrial activity.

There has historically been significant investment in infrastructure to create and service land suitable for industrial purposes within Picton and Havelock. Industrial areas have developed in locations close to arterial transport routes and ports in order to make optimum use of transport infrastructure. Their grouping together at these sites creates efficiencies and has the effect of containing any potentially adverse effects of noise, heavy traffic movements, aesthetic or amenity impacts.

10.4.1.1 Objectives and Policies

Objective 1	Maintaining a standard of amenity within the established industrial areas of Picton and Havelock that is compatible with industrial activity while avoiding, remedying and mitigating adverse effects resulting from this activity on neighbouring areas.
Policy 1.1	Avoid, remedy and mitigate adverse effects of industrial activities on the amenities of adjoining areas.
Policy 1.2	Enable the establishment of a variety of industrial and other activities within the established industrial areas of Picton and Havelock provided these are compatible with industrial amenity.
Policy 1.3	Avoid, remedy and mitigate adverse effects on the use of the industrial land resource by activities not suited to or reliant upon this type of environment.

Allocating areas with standards of amenity suitable for industry enables people to provide for their industrial needs. It is necessary to closely protect industrial areas for industry. If a range of incompatible activities (for example housing) were to establish in an area set aside for industry, future conflicts would be inevitable. Usually this conflict would be at the expense of the industrial activity for which the area was initially designed. The Plan seeks to avoid this conflict by implementing the policies above, that is, confining industry and restricting other uses from establishing in the same area.

10.4.2 Issue

Managing the effects of industrial activity.

Due to the nature of industrial activity, a number of varied and often significant effects are possible as a result of this activity. These effects can be considerable and if not managed properly, can adversely impact on the immediate and surrounding environment. Allocating areas for industry and confining industrial development to such areas as Section 10.4.1.1 establishes, does not address adverse effects on the environment.

Managing industrial activity and avoiding, remedying or mitigating (as appropriate) adverse effects of industry on the environment is a requirement under the Act. Industry is a significant and important contributor to the urban environment and community wellbeing. However, it also has the potential to seriously degrade that same resource. This potential degradation arises from the many and varied effects of industry. Many industries in Marlborough involve processes which require management in order to avoid, remedy or mitigate adverse effects on the environment. Those effects can include noise, vibration, dust, glare, vehicle movements and discharges of wastes to air, land and water. The industrial areas in the Marlborough Sounds are both located close to major transport corridors or entrances to the townships from road and from the sea. The areas are sensitive landscape gateways and corridors. The bulk and scale of development and the landscape treatment of on-site development and the attractiveness of the town is an important contributor to the success and viability of the urban environment which in turn, leads to the sustainability of the urban environment.

10.4.2.1 Objectives and Policies

Objective 1	Management of industrial activity so as to ensure it does not cause significant adverse effects on the environment.
Policy 1.1	Promote a high standard of environmental design and maintenance in industrial areas and require contributions to landscape planting in key landscape corridors and entrances to townships.
Policy 1.2	Ensure that the size, height and bulk of industrial buildings and structures is compatible with the townscape and characteristics of individual sites.
Policy 1.3	Set noise limits which allow industrial activities to function effectively and which minimise noise nuisance for surrounding residents.
Policy 1.4	Ensure that vehicle parking, access and loading do not adversely affect the operation and function of the road system or safe pedestrian movement.
Policy 1.5	Ensure that advertising signs enable public identification of industrial activities while minimising any adverse effects on amenity values and avoiding unnecessary distraction to motorists on arterial and distributor roads.
Policy 1.6	Protect access to sunlight for properties adjoining Urban Industrial Zones and minimise shading of those properties by industrial buildings.
Policy 1.7	Require any discharges of waste to air to meet (specified) standards
Policy 1.8	Require the collection and disposal of any wastes to land or water to meet specified standards.
Policy 1.9	Promote energy efficiency in industry as a means to minimise adverse environmental effects.

These policies seek to avoid, remedy or mitigate adverse effects on the immediate and surrounding environment created by industrial activity. Of particular importance are those effects that industrial activities may have on lowering the quality of adjoining residential, open space or town centre environments.

10.4.2.2 Methods of Implementation

Zoning	The Urban Industrial Zone is identified on the planning maps within the following areas: <ul style="list-style-type: none"> • Picton; and • Havelock.
Rules	Plan rules permit activities within industrial areas subject to compliance with performance standards. Proposals which fail to comply with stated performance standards will be considered as Discretionary Activities. Non-industrial activities within the industrial areas will be considered as Non-Complying Activities. To address amenity values, rules will require contributions of funds or landscaping works from industrial developments for the purpose of acquiring and developing landscaped areas for Urban Industrial Zones at the entrances to towns. Where industrial zoned land adjoins non-industrial land rules will require that buildings comply with the maximum height and building location requirements, of the adjoining zone in respect of the common boundary.
Standards	Performance standards address matters such as noise, vehicle access and loading, parking, building height and location, landscape enhancement, and size and location of advertising signs, effluent disposal and discharges to air (including smell and dust).
Other	Council will promote ongoing landscape improvement of the main transport corridors within industrial areas.

In recognition of the considerable public and private investment in developing and servicing industrial land, the Plan identifies Urban Industrial Zones at Picton and Havelock. Land which has historically been zoned Industrial at Havelock, and some at Picton is closely integrated with port operations. Therefore some land has been included in a Port Zone which recognises the nature of port activities.

The provision of specifically zoned industrial land means that the adverse effects of industrial activities can be geographically contained. It is considered that plan rules are necessary to control the expected adverse effects of industrial activities. Plan rules establish performance conditions and standards to avoid, remedy and mitigate adverse effects. The standards are set at levels appropriate to enable industrial activities to operate effectively within the zone and seek to minimise nuisance and hazard for neighbouring residents and activities. Standards for some effects are therefore higher at the zone boundary.

The Urban Industrial Zones are located close to major transport corridors and at main entrances to the towns. Council seeks to enhance the landscape at these entrances. Rules require a contribution from industrial development towards the enhancement of the landscape and amenity of key entrance points within industrial zones.

10.5 Rural Townships

Small rural townships are typified by their small scale and low intensity development. The townships usually comprise a varied mixture of rural service activity, commercial activity, industry (often primary based) and community/recreation activities often scattered amongst residential activity. The main geographic distinction which can be made in the rural township is between residential areas and the mixed use centre.

For the Marlborough Sounds area, Rai Valley is a rural township. A number of other rural townships are located in the remainder of the Marlborough District.

Rai Valley township has both rural and urban elements as well as a low intensity of development, informal appearance and large section sizes. This is typical of the amenity of a small township like Rai Valley. The amenity of a township may also be influenced by local resources or specific activities.

Sources of employment are crucial to the economic wellbeing, of residents of the township and surrounding rural areas. Minor adverse environmental effects that arise from commercial and industrial activities are therefore generally accepted or tolerated in these areas. Commercial and industrial activities in townships may however impinge upon environmental qualities by:

- The visual intrusion of large buildings;
- Air and water borne effluent and noise pollution;
- Increased traffic on local roads;
- Increased pressure on services; and
- Incompatibility with areas of cultural significance to iwi.

To maintain a pleasant environment in townships and to ensure nuisances or health risks do not arise, there is a need to control adverse effects arising from commercial/industrial use.

Residential use in Rai Valley is described further, in the Residential Environments section (10.2).

10.5.1 Issue

The need to manage the adverse effects of diverse activities in Rural Townships.

The following objective, policies and methods, in conjunction with those in the Urban Residential section, have been incorporated to address this issue.

10.5.1.1 Objectives and Policies

Objective 1	Enable the mixed use of rural township centres while avoiding, remedying and mitigating adverse effects on the environment.
Policy 1.1	Avoid, remedy and mitigate adverse effects of rural township activity on neighbouring areas.
Policy 1.2	Enable the establishment of a wide range of activities within rural townships, subject to standards and conditions to avoid, remedy or mitigate any adverse effects on the environment.

The objective and policies recognise the mixed nature of activities occurring in small rural townships. Townships provide an important resource to people and communities. In recognition of their value, the Council considers it appropriate to make provision for their continued existence and development.

10.5.1.2 Methods of Implementation

Zoning	The Plan identifies on the planning maps a Rural Township Zone at Rai Valley.
Rules	Plan rules provide for commercial, industrial and other activities subject to performance standards. Plan rules control advertising signs with conditions to manage any potentially adverse landscape, amenity or traffic distraction effects.
Standards	Performance standards are incorporated to address such matters as local amenity values (ie; controlling design and siting of development with building height, coverage, noise standards, car parking requirements), discharges and traffic safety.
Other	Council will promote ongoing landscape improvements of the main transport corridors within rural township areas.

Zoning and rules including performance standards are considered to be the most effective method of ensuring the provision and protection of rural township environments. All activities will be subject to performance standards to ensure people are not subject to adverse effects from neighbouring activities.

Those activities unable to meet specified standards are required to go through the consent process so that any adverse effects on the township may be assessed.

10.6 Port and Harbour Activities

With the nature and function, and their location within the Sounds, the urban areas of Picton and Havelock serve an important port role in addition to those roles normally found in an urban area. This role needs to be recognised and provided for in the Plan. By distinguishing this particular role, it can be examined, issues can be identified and objectives and policies can be offered to address these issues.

Port of Picton

The port of Picton is the terminus for inter-island passenger and freight traffic. The passage of vehicles and people through the port is closely related to the economic activity of the town's commercial and accommodation activities and is important to the town's economy. The port also provides the base for large numbers of commercial water transport vessels serving the Sounds and outer islands and for commercial tourist transport vessels.

The port is also the base for a significant fleet of commercial fishing vessels and fishing activities as well as being Marlborough's export/import port for the following products: logs, sawn timber, coal, meat, cement, tallow, salt, general cargo and agricultural produce.

The port is visually close to the town centre and is a significant component of the landscape of Picton's foreshore area. The maintenance and enhancement of this gateway area is a matter of importance to the town's attractiveness as a tourist destination. Development of the port in Picton must be pursued with sensitivity towards the wider landscape implications and should incorporate landscape enhancement measures which integrate the port with the Picton foreshore area.

An expansion of existing port facilities into Shakespeare Bay will involve some eight hectares of reclamation, two wharves, construction of a land based road and rail connection with Picton and will be primarily used for the storage and export of logs and coal. Development and operation of these new facilities are subject to a wide range of conditions to ensure that the effects on the environment are avoided, remedied or mitigated. Ongoing monitoring of port operations will ensure any adverse effects are minimised.

Port of Havelock

Havelock's port is the base for a significant fishing and marine farming industry. Processing industries involving fish and shellfish are located at the port and consequently are able to minimise overall transportation movements in the processing and distribution of fish products. The port of Havelock is also the base for large numbers of commercial water transport vessels serving the Sounds and outer islands and for commercial tourist transport vessels.

10.6.1 Issue

Inadequate provision of land with amenities compatible with port activity can result in lack of opportunity for port development and adverse effects on the environment of surrounding areas; and,

The need to avoid, remedy or mitigate any adverse effects of port activities on the environment.

The effects of port and harbour activities can be simplified by allocating specific areas for this activity. The areas suited to this activity are those established port areas in the two towns, and the area identified as being suitable for port expansion for the port of Picton (Shakespeare Bay). These areas are coastal margins in the urban area and both land and water is included (including the Coastal Marine Area). This enables integrated management for the land/water interface.

Each of the ports has the potential to cause significant environmental effects including noise, traffic generation, air and water discharges, foreshore and seabed disturbance and landscape impacts. Most effects are able to be avoided or mitigated by careful management of operations. Performance standards will be applied to all activities within port areas to avoid, remedy, or mitigate adverse effects.

Any expansion of the ports has the potential to cause significant effects on the environment, many of which would be adverse. In each of the ports, the area of available land is limited. Any expansion of a port area would be likely to require additional reclamation of sea bed. Given the limited availability of port land it is considered necessary to restrict activities to those which are associated with the primary port activities and which rely on a location close to water transport. The Council wishes to avoid a situation where port expansion, involving sea bed reclamation, is necessitated because available land has been absorbed by activities or industries which do not rely on such a close proximity to ports or water transport.

Further development of port facilities on the western side of Shakespeare Bay needs to recognise the sensitivity of the shoreline and associated bush and reserve land. Picton and Shakespeare Bay are the appropriate locations for further district port development but development proposals need to take account of the environmental values of the western shoreline.

Changing commodities or methods of transportation may require changes in the current port facilities provided. This may involve proposals for expansion of existing facilities within zoned port areas or for the development of facilities in new locations. Such proposals will be considered as either resource consents or plan changes and will be assessed in terms of the relevant objectives, policies and standards of the Plan.

Further activities which take place in a port or harbour area are the maintenance of boats and disposal of waste from ships. The New Zealand Coastal Policy Statement requires that the Plan address the adverse environmental effects of these activities. However, regulations introduced pursuant to sections 15A, 15B and 15C of the Act control discharges and dumping from ships and the Council is responsible for administering and enforcing those regulations. Rules regarding discharges from boat maintenance not covered by the Regulations, are included in the Plan.

As a part of managing the effects of port and harbour activity, the effects of this activity on landscape value and the visual character of the town needs to be taken into account.

10.6.1.1 Objectives and Policies

Objective 1	Maintain a standard of amenity in the ports of Picton and Havelock and in Shakespeare Bay which is compatible with port activities while avoiding, remedying and mitigating adverse effects resulting from this activity on neighbouring areas
Policy 1.1	Provide for port and harbour activity by zoning specific areas suitable for port activities and activities associated with port and water transport in:

	<ul style="list-style-type: none"> • Picton (including Shakespeare Bay); and • Havelock.
Policy 1.2	Enable the establishment of a variety of port related activities including marine industrial activities, water transport services and facilities for passenger and freight movements.
Policy 1.3	To promote the efficient use of the land available within port areas.
Policy 1.4	Restrict the use of land, within port areas, by activities which do not rely on location close to ports or water transport.

The policies above establish and provide for the ports of Picton and Havelock. They ensure that areas are used for activities that a port or harbour area is necessary for, and those activities which make up a port.

The Marlborough Regional Policy Statement Policy 7.1.20(b) recognises the particularly important role of the port of Picton as the main export/import port for Marlborough and the need to enable its operation and appropriate expansion.

The importance of enabling the operation and expansion of Marlborough's passenger and freight link is also recognised in the Marlborough Regional Policy Statement, Policy 7.1.20(a).

Objective 2	Management of activities within port areas which avoids, remedies or mitigates (as appropriate) any significant adverse effects on the environment.
Policy 2.1	Ensure that activities occurring within the ports do not adversely affect water quality in the waters within or beyond the zone.
Policy 2.2	Ensure that development of port facilities at Shakespeare Bay recognises the natural and visual sensitivity of the shoreline and adjacent bush and reserve areas, and development proposals avoid, remedy or mitigate adverse effects.
Policy 2.3	Set noise limits for activities within the port areas which allow the ports to function effectively but which also minimise noise nuisance for surrounding residents.
Policy 2.4	Ensure that activities occurring within the ports do not adversely affect air quality.
Policy 2.5	Ensure that vehicle parking, access, and loading do not adversely affect the operation of the port, the road system, or safe pedestrian movement.
Policy 2.6	Ensure that advertising enables public identification of port activities but does not dominate the landscape.

These policies seek to manage the effects of port and harbour activity and to avoid, remedy or mitigate any adverse effects of this activity on the environment.

A number of activities with potentially significant adverse effects (with equally significant benefits to the community) are provided for as Controlled or Discretionary Activities in the port areas. These activities include stormwater discharge, sewage discharge, activities which disturb the foreshore and seabed, reclamation and exclusive occupation of the coastal marine area.

By including these types of activities as controlled or discretionary activities, the Council can retain close control over what occurs in the ports and manage the effects of such activities. Adverse effects of all activities shall be avoided, remedied or mitigated.

Objective 3	Maintenance, and where practicable, enhancement of the visual character of ports.
Policy 3.1	Development of port areas which promotes landscape design and enhancement measures compatible with adjoining town centre and foreshore development character.
Policy 3.2	Promote the landscape enhancement of port areas.

The port areas of Havelock and Picton are significant contributors to the make-up of those towns. This significance is in terms of physical size and importance for direct and indirect employment and general community wellbeing. However, it is important that the visual character of the towns is considered when port development occurs.

10.6.1.2 Methods of Implementation

Zoning	The Port Zone is identified on the planning maps within the following areas: <ul style="list-style-type: none"> • Picton; and • Havelock.
Rules	Plan rules provide for activities within the identified Port Zones which rely on location close to the port or to water transport, subject to performance standards. Activities which are not so reliant on the port or water transport will be considered on their merits. Plan rules require the assessment of development proposals within Picton and Havelock ports in terms of standards and criteria relating to landscape impact and integration with adjacent town centres. Plan rules may require, as conditions of consent to develop or alter structures, the payment of financial contributions towards landscape enhancement works in foreshore areas.
Standards	Performance standards relating to noise, vehicle parking, access, loading, and advertising signs will be applied.
Other	The Council will co-operate with port operators in enhancing the landscape quality and integration of foreshore areas and town centres with port areas.
Financial Contributions	The Council may take financial contributions for developments, to provide for landscaping and integration of foreshore areas, town centres and port areas.

Provision for ports, by way of zoning them in the Plan, recognises the importance of their contribution to the infrastructure and economy of Marlborough. The Port Zone includes integrated provisions for both the land and water activities at ports. The creation of port zones limits the effects of port and harbour activities to specified and established areas of the coastal marine area, which are suited to this type of activity.

It is important to ensure that land within the Port Zone is not occupied by activities which do not rely on location at a port or close to water transport. For this reason activities which rely on a location at a port will be provided for as permitted activities. Those which do not will be considered as non-complying activities.

The land and water activities at ports give rise to a number of effects, some of these effects are potentially adverse (including noise, discharges to water and air, disturbance of the foreshore, impacts on vehicle and pedestrian circulation, and landscape impacts). Performance conditions and standards in the Plan are considered to be necessary to ensure that any adverse effects are appropriately managed.

The port of Havelock is a significant 'front door' to the town. It is considered that new development or redevelopment of buildings and other structures at the port should integrate closely with the mixed commercial activity centred on the highway. This integration of vehicle and pedestrian connections, parking facilities, and townscape and built landscape terms should be functional.

Landscape treatment of port areas is important to enhancing the overall landscape character of the towns. The Council proposes to require, as a condition of development proposals within the Port Zone, the contribution of either works or money towards overall landscape improvement of port areas as significant entrances to Marlborough.

10.7 Marina Activity

The enclosed waterways of the Marlborough Sounds offer many recreational boating opportunities to both residents of Marlborough and visitors to the area. Commercial use of boats and other craft is also a significant feature of the district's tourism, marine farming and fishing industries. Many of the smaller recreational craft are stored on dry land and have no need for mooring or berthage. However, there are many vessels that need some form of mooring or berthage and the preference is often for a marina berth. Marinas provide increased safety, security and a range of support facilities such as sewage and rubbish disposal, freshwater, fuel supplies and repair and maintenance services. They also make efficient use of water space in providing for longer term vessel storage.

Currently, there are marinas at Picton, Waikawa, Portage and Havelock accommodating a variety of vessels supported by a range of boating industry activities. The marinas at Picton, Havelock and Waikawa are substantial complexes, with extensive land based back-up facilities. These marinas are important bases providing landing, storage, and loading facilities for residents of the Sounds as well as providing an important access point to the Sounds for many vessel owners who are not Sounds residents. The Portage marina is comparatively small with limited land based facilities. All of the marinas are important features contributing to the amenity and attraction of the Marlborough Sounds as well as generating significant economic activity.

There is an ongoing demand for marina berths within the Sounds, which generally exceeds the existing supply, consequently resulting in large waiting lists for berths. Where such demand is long term, additional marina capacity is likely to be needed, and new facilities may be required. Generally, the provision of additional marina capacity focuses on enhancing existing facilities, which are already well serviced and strategically located to urban areas, the transport network and to the principal areas of recreation and boating within the Sounds. Demand for marina berths should be provided within or by extension of existing marinas in preference to establishing new marina facilities in areas that have not yet been subjected to such development.

10.7.1 Issue

Inadequate provision of land with amenities compatible with marina activity can result in lack of recreational opportunities and adverse effects on the environment of surrounding areas; and,

The need to manage the effects of marinas, and

Managing on-going demand for new marina berths.

The Sounds offer extensive opportunities for both commercial and recreational boating. With their strategic positioning in the Marlborough Sounds, both Picton and Havelock represent significant marine centres.

Marina activity is an integral part of the urban environment. In addition, marinas offer a rationalisation of coastal marine space by concentrating moorings. Marinas provide the most efficient method of water based berthage currently available. Marinas also concentrate adverse effects (such as antifouling and sewage discharges) to a single part of the coastal marine area, avoiding the need for such activity and effects throughout the coastal marine area. Good design and equipment, combined with appropriate controls can minimise the adverse effects within the marina itself.

10.7.1.1 Objectives and Policies

Objective 1	Maintaining a standard of amenity in existing marinas which is compatible with marina activities while avoiding, remedying and mitigating adverse effects resulting from this activity on the environment.
Policy 1.1	Avoid, as much as practicable, adverse effects on the natural character of the coast by enabling marina activity in existing marinas or in areas where natural character has been compromised.

Interaction between the water based activities which take place in the Sounds, and those which take place in the urban environment, is recognised by the marina. The marina links the urban environment with the significant recreational and commercial boating activity which takes place in the Marlborough Sounds.

Marinas serve additional purposes to simple boat mooring, largely as a result of their placement in the urban environment. Often there is a demand for a variety of activities to be located in close proximity to a marina. These activities may include boat brokering, charter boat hire, chandlery, sail making, parking, boat building, vessel maintenance, club facilities and restaurants.

Objective 2	Avoidance and, where necessary, remediation and mitigation of adverse effects resulting from marina operations and associated land-based activities.
Policy 2.1	Avoid the adverse effects of discharges from land within marina waters.
Policy 2.2	Ensure that there is no discharge of untreated sewage from associated land-based activities to the waters within the marinas.
Policy 2.3	Require the provision within marinas of facilities for the disposal of rubbish, sewage effluent, oil and other wastes from boats.
Policy 2.4	Avoid, remedy and mitigate the adverse effects associated with boat maintenance (including sanding and blasting effects).
Policy 2.5	Avoid contamination of water from the application and removal of antifouling paints.
Policy 2.6	Ensure that any advertising enables public identification of sites or services but minimises adverse effects on the amenities of prominent foreshore areas.
Policy 2.7	To ensure the adequate provision of parking within marina areas.
Policy 2.8	To promote landscaping of marina areas in a way that contributes to the overall visual character of the urban environment and coastal environment.
Policy 2.9	Avoid, remedy or mitigate the adverse effects associated with long term accommodation aboard vessels.
Policy 2.10	Set noise limits for activities within the marina areas which allow the marinas to function effectively but which also minimise noise nuisance for surrounding residents.

Marinas offer an excellent opportunity for the rationalisation of coastal marine space. However, careful management of the effects created by both marina activity and the nearby land-based activity is necessary in order to prevent this area of concentrated development causing environmental problems.

Adverse effects from marina development and operation may include a lowering of water quality, generation of noise, loss of natural character of the coastal environment, alienation of public space and loss of habitat. Activities which commonly take place while a boat is moored such as boat maintenance, also have the potential to cause adverse environmental effects. The significance of these effects or others, is dependent on the site chosen and its particular characteristics. The design of the marina also determines some of the possible effects. For example, reclamation and the use of breakwaters have an irreversible effect on the environment, while a floating marina structure could theoretically be removed and leave no lasting impacts on the surrounding environment.

It is important to provide adequate and convenient waste disposal facilities in marinas, including facilities for the collection and appropriate disposal of

residues from vessel maintenance. Provision in all marinas should also be made to adequately and conveniently collect sewage from boats. However, it should be noted that while consideration of these activities is needed under the Plan, the Marine Pollution Regulations 1998 introduced pursuant to sections 15A, 15B and 15C of the Act control discharges and dumping from ships. The Council is responsible for administering and enforcing those regulations.

Objective 3	Enable the sustainable development and operation of marinas and associated infrastructure within the Marina Zone.
Policy 3.1	Avoid the proliferation of marina development within the coastal marine area by focusing such development within the Marina Zone.
Policy 3.2	Enable the construction, maintenance and operation of marina activities within Marina Zones, whilst ensuring any adverse effects on the environment are avoided, remedied or mitigated. In considering effects, particular regard will be given to any adverse effects on areas regularly used for the gathering of kaimoana and sites of cultural significance.
Policy 3.3	Ensure marinas incorporate and retain public access to the foreshore, coastal environment and coastal marine areas where such access does not interfere with the safe and efficient operation of the marina.
Policy 3.4	Avoid locating swing moorings in the Marina Zone unless the moorings have been specifically identified in Appendix J, Schedule 4.1.
Policy 3.5	Where a new consent is sought for a swing mooring specifically identified in Appendix J, Schedule 4.1, decision makers need to have regard to: <ul style="list-style-type: none"> a) Where the swing mooring is to be located within that part of the Marina Zone specifically identified in Appendix J, Schedule 4 and the availability of space within that area; b) The type and specification of the swing mooring including the swing arc; c) Whether there is space available within the Mooring Management Areas in Waikawa Bay that could accommodate the Appendix J, Schedule 4.1 swing moorings; d) Whether a new consent would unduly hinder the development of a marina in that part of the Marina Zone specifically identified in Appendix J, Schedule 4; and e) The need for conditions to limit the duration of consent to enable marina development to proceed.

The development of marina facilities should be managed in a way that avoids significant adverse effects on the urban environment, and on the quality of the coastal environment, such as restricted use of public space and

loss of habitat. The Marina Zone provides suitable locations for marina activities and establishing such facilities in the zone is preferred over proliferation of marina development elsewhere in the coastal marine area.

Space is zoned within Waikawa Bay to provide opportunities for the provision of additional berthage capacity in a manner that enables consideration of effects, and responds to demand. However, expansion of the Waikawa Marina into the area specifically identified in Appendix J, Schedule 4 is potentially constrained by the existence of a number of consented swing moorings at the same location. The consented swing moorings are identified in Appendix J, Schedule 4.1. Policy has been included to allow these swing moorings to continue to be present within the Marina Zone but where a new consent is sought for these moorings regard is to be had to whether the development of a marina in this area would be hindered and whether consents may need to be limited as to duration to enable a marina to be constructed.

Further consolidation of marinas at Waikawa, within the Marina Zone, assists in the avoidance of development sprawl into other, as yet undeveloped, bays within the Sounds. Marina development also gives rise to efficiencies in the use of the coastal marine area and can assist in avoiding the sprawl of coastal occupation demand.

10.7.1.2 Methods of Implementation

Zoning	The Marina Zone is identified on the planning maps within the following areas: <ul style="list-style-type: none"> • Picton; • Waikawa; and • Havelock.
Rules	Plan rules provide for marina activity and activities which rely on close location to a marina, as well as marina management, subject to performance standards which avoid, mitigate or remedy adverse effects. Activities which are not necessary to support the marina operation will be considered on their merits. Plan rules may require, as conditions of consent to develop or alter structures, the payment of financial contributions towards landscape enhancement works in foreshore areas.
Standards	Performance standards relating to discharges, noise, vehicle parking, public access, and advertising signs will be applied.
Other	The Council will liaise with marina operators in the provision of facilities for the disposal of sewage from boats.
Other	The Council will liaise with marina operators to ensure that antifouling activity is undertaken on land in a confined manner, and that any effects from marina discharges are pro-actively monitored and any breaches of conditions of consent are consistently enforced.

Information	The Council will provide information on facilities available for the collection and disposal of waste from boats.
Education	The Council will provide information and education on the best environmental practices with respect to boat maintenance.
National/Other	The Council will implement the Marine Pollution Regulations 1998 in relation to discharges from ships and offshore installations.

Recognised under Policy 7.1.20(c) of the Marlborough Regional Policy Statement, is the need to "...enable the safe and efficient use of marinas...". The Plan achieves this by zoning areas for marina activity at certain locations including for further marina development.

Both the land and water areas of the existing marinas at Picton, Waikawa and Havelock are included in a Marina Zone. 'Coastal Marine Area' is included in this zone. Provision is made for the activities usually associated with marinas, boat storage and servicing, and boat launching.

The floating marina at Portage is of a much smaller scale than the other three marinas and has no comparable facilities. It is considered unnecessary to include the Portage marina in the Marina Zone. It will be managed using the resource consent provisions of the Act.

The Marina Zone incorporates land or structures, including those developed within the coastal marine area. It is of limited size. Given the limited size it is important that the land and water surface be dedicated to activities which rely on a marina location. These activities are therefore permitted activities. It would be an unsustainable use of the land and water space within the marinas to allow activities to locate there which do not rely on such a location to operate. Such activities will therefore be considered as discretionary or non-complying activities.

The Plan does not identify any specific sites for further marina zones. The scale and complexity of the Marlborough Sounds together with the changing demands and design of marinas makes it impracticable to determine, in advance, appropriate locations for future marinas. Any such proposals will be considered either as applications for resource consent or as plan changes and will be assessed in terms of the relevant objectives, policies and standards of the Plan and the requirements of the Act.

The Plan is able to integrate the land and sea interface within marinas. The Marina Zone will encompass activities within the coastal marine area and on adjoining land. Marinas are important 'front doors' to the Sounds and it is important that their development is compatible with the overall townscape of the surrounding urban area and with the character of the coastal margin. Performance standards are included to address this relationship.

The Council as provider of reticulated sewage disposal facilities in the Plan area will seek to achieve a co-ordinated approach to the disposal of sewage waste from marina operations. The Council will liaise with marina operators, particularly in relation to developing and providing disposal facilities. Information and education will complement this to improve environmental practice in relation to waste disposal and boat maintenance.

10.8 Anticipated Environmental Results

Implementation of the policies and methods relating to the urban environment will result in:

- A compact and coherent urban form;
- Retention of the character of the residential environments in the Marlborough Sounds;
- Town centres that contribute to the visual character of the urban environment;
- Attractive, safe and pleasant industrial areas;
- A mixture of low intensity land uses and development in small rural townships; and
- Ports and marinas which are integrated with the urban environment.

11.0 Rural Environments

11.1 Introduction

This discussion seeks to establish the circumstances surrounding the sustainable use of rural resources and how the effects of those uses contribute to the environment.

The rural environment is composed of landforms and settlement patterns dominated by land use. These landscapes have a distinctive character which largely reflects the use of resources.

The Plan seeks to make the possibility of changes in activities that promote sustainable management of rural resources easier than has been the case in the past. The resources of the rural environment result from the interaction of climate, topography and soil type, and the effects of their use and development: soil is the result of interaction between similar physical conditions. These conditions collectively impose long-term limitations on sustainability of rural resources.

The structure and land use pattern reflects the multitude of individual decisions made by resource users. These decisions have led to an increase in the variety of enterprises. This has, in turn, led to increased diversity in the rural environment. It is not the role of the Council or the Plan to direct the use of resources and equally neither should they unduly restrict activities which promote the sustainable management of rural resources.

Resource use in the rural environment may result in:

- Removal of indigenous vegetation resulting in the destruction of habitats;
- Development of roading to accommodate increased traffic;
- Shading of frost susceptible roads;
- Use of agrichemical inputs, including pesticides and fertilisers;
- Creation of smell, dust, noise, health or other nuisance;
- Discharge of wastes; and
- Land disturbance, including cultivation, tracking and fire breaking;
- Changes to surface, ground, and coastal water quality, and wetlands.

As well as primary production, rural activities include:

- Provision for tourism and recreation activities based on rural resources and the lives and settlements of rural dwellers involved in primary production;
- Intensive farming; and
- Industrial activities ancillary to primary production.

Rural amenity values include: landscape and scenic values, individual privacy, open rural outlook, spaciousness, ease of access, clean air, unique odours, overall quietness, water availability, and wellbeing of resident people and communities.

The rural environment has a great variety of landforms, encompassing mountains, hills, valleys and coastal cliffs that support a wide range of soils, vegetation

and water resources. The rural character is both physical and visual. The distinct rural character is reflected by a mosaic of areas, being:

- Native shrublands;
- Native grasslands;
- Exotic grasslands;
- Exotic forests and woodlots;
- Exotic shrublands; and
- Remnant indigenous forest mainly on steeper, privately owned land.

Rural activities are a mix of:

- Pastoral farming in the outer Sounds and hinterland valleys based mainly on sheep, cattle, and deer;
- Dairy farming on the fertile valley soils;
- Exotic forestry in the Sounds and hinterland areas;
- Mineral extraction, especially aggregate for road construction and maintenance, although some extraction of precious metals continues; and
- Service facilities for rural activities.

Tourism and recreation based on rural resources and the lifestyles of rural based dwellers is becoming increasingly significant. There is a continuing demand for rural land for rural tourism and recreation use.

The present trend towards diversification of rural land use patterns leads to an overall landscape which reflects the decisions of individuals. These changes occur to the physical development of rural areas, the social fabric of rural communities and demand for services in them.

As well as direct forms of planning controls Council is able to influence rural resource users by providing advice designed to:

- Increase their use of new, innovative technologies; and
- Provide access to results of research.

Factors restricting appropriate use and development may include risk from natural hazards, presence of areas of high ecological value, landscape or recreational values.

11.2 Issue

The adverse effects on resources from activities in the rural environment.

The rural environment in the Marlborough Sounds is intimately linked with settlements and protected open spaces and ecosystems that combine to produce a unique environment. The rural environment is typified by close economic, social and physical links between the rural resources and the people who live and work within them.

Despite the active utilisation of rural resources, people living in the rural environment should not be subjected to loss of character and amenity value, and unreasonable noise, odours or risks from hazardous substances.

Dairy farming has the potential to have significant adverse effects on the quality of surface, ground, and coastal water resources, and wetlands. These effects can be avoided, remedied or mitigated by using environmentally sound farming practices that include strategies to manage the effects of dairy farming on water quality.

Some industrial and commercial activities choose to locate in the rural environment because of the need to be in close proximity to resources. Other activities locate in rural areas because they serve activities based in the coastal marine area and need to be in close proximity to the water. These activities can affect rural amenities and water and air quality. Intensive farming may also adversely affect the rural environment. However, these effects can be avoided or mitigated by:

- The siting and design of buildings and enclosures; and
- Management practices and waste disposal methods.

Urban styles of development can adversely affect the rural environment through the visual effect of large scale buildings and ancillary structures, increased traffic generation, and loss of amenity including privacy, rural outlook, spaciousness, and quietness.

The Rural One zone has been identified as a high risk area for particular potentially adverse effects of forestry operations. The characteristics of the Rural One zone that can contribute to its higher risk are:

- A large number of waahi tapu sites;
- A particularly long coastal/land boundary;
- Slopes that generally drop steeply and directly into the sea;
- Large areas of public land set aside for conservation purposes;
- Areas of pastoral land that are reverting to scrub and bush;
- Areas of commercial and woodlot forestry;
- A unique "drowned valley" topography;
- A public road network that is not designed for high intensity, heavy vehicle traffic;
- The Marlborough Sounds is characterised by a large Rural One Zone, as well as a widespread scattering of residential properties, most of which are within the Sounds Residential Zone.

The potentially adverse effects of forestry operations that require particular assessment through the resource consent process and that are not adequately addressed by rules, permitted activity criteria and guidelines mentioned above are:

- Planting of areas that may not be acceptable to Maori and which Maori may not wish to publicly identify;
- The effects of land use change on legal water supplies;

- Exotic wilding tree spread to reverting shrublands that are susceptible to wildling establishment;
- An industry that can involve high intensity, heavy vehicle transport use of the public road infrastructure at harvest time.

11.3 Objectives and Policies

Objective 1	Sustainable management of rural resources and integrated resource use to protect the character and amenity of rural areas and avoid, remedy or mitigate adverse effects of activities.
Policy 1.1	Promote the sustainable management of air, water and soil resources in the rural environment.
Policy 1.2	Avoid, remedy, and mitigate adverse environmental effects of activities on the natural character and amenity values of the rural environment by: avoiding unnecessary visual intrusions into the rural landscape by limiting the height and controlling the siting of buildings and ancillary structures; and avoiding erection of structures and other developments on headlands, skylines, and areas between roads and water where significant views occur.
Policy 1.4	Resolve conflicts between rural activities and non rural uses and users of rural resources by avoiding an indiscriminate mixture of activities with incompatible effects.
Policy 1.5	Provide for subdivision of rural land to enable sustainable management of rural resources.
Policy 1.6	Maintain and enhance the amenity values and environmental qualities of open space and quietness that contribute to the distinctive character of the rural environment.
Policy 1.7	Enable the establishment of rural based industrial and commercial activities that avoid, remedy and mitigate adverse effects.
Policy 1.8	Avoid, remedy, and mitigate the effects of unreasonable noise in the rural environment.
Policy 1.9	Avoid, remedy, and mitigate the adverse effects of agrichemicals and encourage their use in a safe and sustainable way.
Policy 1.10	Require land use consent for the establishment and operation of any new dairy farm.
	<p>Approve land use consent applications for new dairy farms where the proposed farming would have no more than minor adverse effects on ground, surface, or coastal water quality, and wetlands. A land use consent application must identify the risks of new dairy farming and provide measures to address those risks, including as a minimum:</p> <p>(a) Measures, including fences, bridges, culverts, to prevent stock entering onto, or passing across, the bed of any river, stream, creek, lake, wetland, significant</p>

Policy 1.11	<p>ephemeral stream, and any drain;</p> <p>(b) Provision of an appropriate, non-grazed, buffer along the margins of any water body, including a river, stream, creek, lake, wetland, significant ephemeral stream, and any drain, to intercept the runoff of contaminants from grazed pasture, with reference to Appendices H and I of the Plan;</p> <p>(c) Provision for storage of dairy effluent, with all storage ponds sufficiently sized to enable deferral of application to land until soil conditions are such that surface runoff and/or drainage do not occur;</p> <p>(d) Demonstration of appropriate separation distances between effluent storage ponds and any surface waterbodies to ensure contamination of water does not occur (including during flood events);</p> <p>(e) A nutrient management plan that includes nutrient inputs from dairy effluent, animal discharges, fertiliser, and any other nutrient input.</p>
Policy 1.12	<p>To recognise that activities permitted or provided for in rural areas may result in effects such as noise, dust, smell and traffic generation but that these will require mitigation where they have a significant adverse effect on the rural environment.</p>

Protection of the rural environment includes the maintenance of vegetation cover to provide a significant visual, and soil and water conservation function by protecting the land from erosion. The rural character and amenity is especially sensitive to development that removes the vegetative cover, alters existing landforms, and introduces extensive impervious surfaces.

The quality and quantity of the District's water resources are essential to the prosperity and pleasantness of the Marlborough Sounds, in terms of their life supporting capacity and availability for domestic and productive use.

The aim of these policies is achieving the best rural environment for dwellers, users and visitors that maintains existing, and encourages new activities and sources of employment; allows sustainable distribution of utilities and services; and protects rural resources.

The benefits of these policies are not directly quantifiable. They are intangible, and include improvement in rural environmental quality, saved rural land, and rationalisation of settlements and transport patterns within rural areas.

The long term adverse effects of extractive industries need to be remedied by appropriate site rehabilitation that allows later establishment of alternative rural activities.

Restrictions on subdivision seek to ensure that subdivision does not lead to loss of rural amenity or character, or increase the potential for conflict between adjoining activities.

Significant ecological values should be protected from fragmentation through subdivision into small land holdings.

11.4 Methods of Implementation

<p>Rules</p>	<p>Plan rules provide for activities which:</p> <ul style="list-style-type: none"> a) Avoid, remedy or mitigate adverse effects on the character and amenity values of the rural environment; b) Control subdivision to protect the rural environment; c) Establish performance standards to protect the rural environment from the adverse effects of activities; and d) Set establishment and operational standards for specific activities including factory farms.
<p>Guidelines</p>	<p>Provision of information indicating how buildings, structures, works and plantings can harmonise with the rural character.</p> <p>Provision of guidelines to encourage wise planning for land development to mitigate adverse effects.</p>
<p>Education</p>	<p>Assist resource users to understand and implement the results of research into the effects of land use patterns and land management practices on the sustainable management of rural resources.</p> <p>On land adjacent to water courses not identified for regulatory methods of riparian management, Council will work with a riparian management working group comprising of relevant organisations and individuals. The aims of the group will be to review and prioritise waterbodies for non-regulatory methods of riparian management and determine appropriate methods of management. This may for example, include provision of information relating to the adverse effects of stock grazing, especially cattle and deer, in riparian areas and means to avoid, remedy and mitigate those effects. This working group will complete the initial prioritisation of water bodies by the end of the year 2000.</p>
<p>Management Plans</p>	<p>Water Quality Management Plans will be required as a means of demonstrating on an ongoing basis that any adverse effects on water quality resulting from dairy farming will be avoided, remedied, or sufficiently mitigated. They provide the ability to consider all farm management practices that have the potential to adversely affect surface water and groundwater and manage these risks in an integrated way. This also enables the dairy farmer to progressively plan farm upgrades based on priority or, in the case of new farms, at the time of establishment. Water Quality Management Plans can be used to support applications for land use consent to convert the use of land to dairying.</p> <p>Nutrient Management Plans will be required as a means to demonstrate how nutrient inputs associated with dairy farming are to be managed to ensure any adverse effects on water quality will be avoided, remedied, or mitigated. Nutrient Management Plans should be written documents that</p>

incorporating a nutrient budget developed by an accredited nutrient adviser using OVERSEER® or similar, that describes how the major plant nutrients (nitrogen, phosphorus, sulphur and potassium, and any other of importance to specialist crops) will be managed, including all sources of nutrient, for example discharges from farm dairy effluent systems, animal discharges, atmospheric nitrogen fixation.

Rules to control subdivision are essential to ensure lot sizes remain large enough to enable sustainable management of rural land that results in the productive use of the land, allows for a range of future potential productive uses of the soil resource, retains the character and amenity values of the rural environment, and minimises conflict between activities in rural areas.

Management Plans as part of resource consents for new dairy farm conversions will enable rural land to be used in such a way as to avoid adverse effects on water quality, while providing farmers the flexibility to manage their activity in a manner best suited to achieving the outcomes they are seeking.

Guidelines and education allow flexibility of approach to accommodate new information, changes in community perceptions, and take account of management systems and the needs of crop rotations.

Rules limit the use of rural resources to include those activities that are rural land based activities in nature, require a rural setting or are necessary to enable rural communities to provide for their social, cultural and economic wellbeing.

11.5 Anticipated Environmental Results

Implementation of the policies and methods for the management of the rural environment will result in:

- Evolution of a rural environment that exhibits harmony and balance between retention of its character and amenity, and provision for the wellbeing of people and communities dependent on the utilisation of rural resources;
- Enhancement of the character and amenity values of rural areas;
- Protection of the life-supporting capacity of air, water, soil and ecosystems;
- Subdivision of land which promotes the sustainable management of rural resources, and makes provision for tourism and recreation based on rural activities and lifestyles while avoiding the undesirable fragmentation of existing larger rural lots;
- Promotion of sustainable resource management practices through encouragement of different lifestyle opportunities;
- Retention of amenity and character in the rural environment by maintenance of low density development, residential development compatible with the rural character and supportive of rural communities, and establishment of small scale community facilities which directly serve the needs of the rural community; and
- Maintenance of rural contribution to regional social and economic wellbeing.

12.0 Open Space

12.1 Introduction

This section of the Plan is concerned with the sustainable management of resources insofar as they relate to open space or the reserve areas of the Marlborough Sounds. Approximately 60% of the land area covered by the Plan is in public ownership. Generally, this land is protected under the Reserves Act 1977 and a large proportion of it is administered by the Department of Conservation. The Council also has responsibilities for reserve management.

Open space is important for recreation activities, conservation values and landscape or visual reasons. In addition open space areas often exhibit high levels of natural character, this being identified as a matter of national importance under section 6 of the Act. The substantial open space resource which exists in the Marlborough Sounds is a significant contributor to the wellbeing of both Marlburians and visitors to the area. It also provides protection for important habitats and ecosystems.

Many localities within the Marlborough Sounds planning area are important for a vast range of recreation activities. Areas are numerous but some of the widely recognisable ones are the Queen Charlotte Track and the Queen Charlotte Sound area as a whole, outer Sounds, reserve areas in the Pelorus Sound such as Tennyson Inlet and the walkway through to Nydia Bay, Pelorus Bridge in the hinterland and the Mt_Richmond State Forest Park. Important also, are the smaller reserve areas located in the urban areas such as the Picton Foreshore Reserve and local parks.

12.2 Issue

The need to provide sufficient and suitable open space to meet the present and future recreational, conservation and landscape needs of the community to enable their wellbeing; and

The need to ensure that open space is used, developed and protected in accordance with sustainable management principles.

Provision of open space is covered in Chapter 23 Subdivision and Development, relating closely to Council's Reserves Management Strategy. The means to ensure that adequate provision of open space is obtained include: reserve contributions on subdivision; financial contributions for developments; and through Council works and acquisitions in the form of Annual Plan commitments. New open space requirements include conservation reserves, coastal or esplanade reserves, neighbourhood parks, sports facility parks, linkage or access reserves and utility areas for Council or other public works.

The management of reserve land in terms of the Act requirements (ie; sustainable management) is the subject of this chapter of the Plan. Integrated management of the resources contained within reserve land comes under the control of the Conservation Act 1987 and the Reserves Act 1977. The general intent of the Plan is not to repeat management processes but to only pick up those matters requiring control under the Act which are not covered under other legislation.

Generally, the types of activities and consequently the acceptable effects within a reserve are those indicated by management plans under appropriate legislation (identified above), for example, in the case of Department of Conservation land, the Conservation Management Strategy and Reserve Plans for the Nelson/Marlborough Conservancy. The Plan seeks to provide for these activities and only looks at the management of any off-site effects. The Plan must also enable activities restricted under the Act such as minor discharges, where there are none or only minor adverse effects.

Three different types of open space have been identified for the purposes of the Plan. These have been distinguished by the use of zoning. They are:

- Conservation Reserves;
- District Recreation Reserves; and
- Local Recreation Reserves.

The Conservation Reserve areas are of particular importance. This zone includes the Conservation Estate, administered by the Department of Conservation. The Conservation Estate is a very substantial and important resource of the Marlborough Sounds. The Estate covers a very large land area and is intimately connected with some very important water resources in the area (eg, Queen Charlotte Sound and the Pelorus River). Marlborough contains extremely important pieces of New Zealand's conservation heritage, including the greatest diversity of natural values among any of New Zealand's 14 conservancies (Department of Conservation administrative areas). A number of the areas are of national importance both in terms of their particular ecological value and for the tourism and recreation opportunities they provide. Some areas are of international importance. The importance and the conservation values present within the Conservation Estate is described in detail in the Conservation Management Strategy for the Nelson/Marlborough Conservancy. Rather than repeating the Conservation Management Strategy, the Plan seeks to recognise the presence of important conservation resources and the values which they form. Management of these areas is detailed in specific management plans prepared by either the Department of Conservation or Council. In doing this it is important that the Plan acknowledges and addresses the various issues which this resource faces. This acknowledgment occurs throughout the Plan.

The issues arising in respect of the Conservation Estate (Conservation Zone) are extensive and differ for each different type of area or particular ecosystem. Some of the more common or well known issues include: problems with pests such as possums; invasion by wilding pines in the Sounds; and, pressure from tourism and recreation as visitor numbers continue to increase bringing with them greater demand for recreation facilities and commercial development. The Plan therefore supports the Conservation Management Strategy and reserve management plans as the relevant management documents for these reserves and the methods which they offer for managing them. It is recognised that these documents are formulated through a public process.

12.3 Objectives and Policies

Objective 1	Appropriate management of open space and reserves to ensure conservation and enhancement of the natural environment.
Policy 1.1	Recognise areas of conservation value by incorporating them into a Conservation Zone.
Policy 1.2	Recognise the land in the Conservation Zone as an open space resource in which priority is given to the conservation and protection of natural areas, landscape features and scenic, botanical, ecological and habitat values.
Policy 1.3	Restrict the range of activities and associated development to a type and nature which, while allowing enjoyment of the qualities of the open space, has least impact on its conservation values.
Policy 1.4	Provide for appropriate public access to and along the coastal marine area, lakes and rivers within the Conservation Zone.

Objective 2	The provision of open space for a wide range of organised sports, recreation and community activities.
Policy 2.1	Recognise those areas important for organised recreational pursuits by incorporating them into a District Recreation Zone.
Policy 2.2	Recognise the land in the District Recreation Zone as a resource for organised sport, recreation and community activities and for their associated buildings and structures.
Policy 2.3	To encourage sustainable multiple use of recreation and community buildings and facilities.
Policy 2.4	Control the scale, design and location of buildings and structures to protect the open space character of the reserve.
Policy 2.5	Ensure that district recreation activities do not adversely impact on the amenity of surrounding areas

Objective 3	The provision of open spaces throughout the residential areas of the Sounds which serve the local needs for recreation and community activities, and which contribute to visual amenity.
Policy 3.1	Recognise those areas important for local amenity, recreation and community usage by incorporating them into a Local Recreation Zone.
Policy 3.2	Recognise the land in the Local Recreation Zone as a resource for low key, every day recreation and community activities.

Policy 3.3	Restrict the range of activities and associated development to a type and nature which allows recreational and community use of the open space, while retaining its visual amenity and compatibility with adjacent residential activity.
------------	--

The Open Space Zones recognise and provide for the three levels of open space requirements made by the community (including visitors to the Sounds).

The first zone, Conservation, applies to open space which is intended to be retained largely in its natural state. Included in this zone are areas of native vegetation, natural ecosystems and important habitats, water margins and areas of outstanding landscape value. An important aim for this zone is the promotion of public access to and along the coast, lakes and rivers. Public access within this zone will only be restricted in accordance with Policy 8.3.1.7 (Public Access). The zone largely follows the extensive Conservation Estate in the Sounds which is administered by the Department of Conservation. The policies are in accord with the overall intent of the Conservation Management Strategy which applies to the Sounds Plan area (and which the rules for this zone are based on).

The District Recreation Zone applies to those areas of open space which cater for active recreation including sports fields, tennis courts, indoor recreation/leisure pursuits and a number of other recreation and community activities. Such activities have the potential to attract large numbers of people resulting in high levels of traffic, noise and other adverse effects. Policies 12.3.2.4 and 12.3.2.5 control any adverse effects of district recreation, and any buildings or structures used for this, on the surrounding areas.

The Local Recreation Zone applies to open space which provides for the amenity of residential and town centre areas. Such areas provide for amenity because of their natural, open character and the local recreation and community activity which they accommodate. Provision is made for informal children's play areas and the like.

12.4 Methods of Implementation

Zoning	The Plan identifies on the planning maps the following open space zones: <ul style="list-style-type: none"> • Conservation; • District Recreation; and • Local Recreation.
Rules	Plan rules permit appropriate activities based on the conservation, amenity, recreation, or landscape value associated with the particular reserve or type of reserve, subject to performance standards where these are necessary.
Performance Standards	Performance standards address matters which ensure that open space is used and developed in a manner which is compatible with the amenities of adjoining residential areas. Matters include noise, car parking, building setback and discharge standards.

Other Legislation	<p>Management plans prepared under the Conservation or Reserves Acts have been used as the basis for Permitted Activities in the three open space zones.</p> <p>Council (Regulatory Department) will participate in the preparation and planning of relevant reserve management plans under the Reserves and Conservation Acts, in pursuit of achieving the objectives of this and other relevant chapters of this plan.</p>
Advocacy	Encourage initiatives to improve the representivity of reserve lands within the Plan area.

The methods provide for the policies above and enable relevant authorities to administer open space activities as set out in management plans.

12.5 Anticipated Environmental Results

Implementation of the policies and methods in relation to open space will result in:

- Maintenance of the characteristics which ensure that these open spaces remain highly valued by the community in terms of ecological, conservation, recreation, and landscape values.

13.0 Soil Conservation

13.1 Introduction

The land ecosystems of Marlborough are composed of mountains, hills, valleys and plains and the life systems contained within them. They include the plants, animals and organisms which inhabit and form part of those ecosystems. The land ecosystems are intimately linked with the fresh and coastal water ecosystems of the Marlborough Sounds area.

Under the Act the Marlborough District Council, amongst other things, has statutory responsibility to control the use of land for the purposes of soil conservation.

The Act provides that no person may use any land in a manner that contravenes a rule in the Plan unless a resource consent is obtained. The corollary to this is that land uses are permitted unless controlled by the rules in the Plan.

In the context of the Marlborough Sounds Resource Management Plan the Council seeks to:

- Protect land resources from the adverse effects of land uses and activities (for example, maintain the life-supporting capacity of soil by minimising erosion resulting from land-based activities); and
- Enable people and communities, including future generations, to use land resources provided their activities do not prevent the sustainable management of land and water resources.

13.2 Issue

Effects from land use activities that cause a reduced life-supporting capacity of soils, reduction to the natural and cultural values of the land, or increased likelihood of erosion, flooding or material in water.

Soil retention is the first step to maintaining the life-supporting capacity of the land, and maintaining the quality of fresh water within the Pelorus, Rai and Kaituna Rivers, and coastal water within Pelorus and Queen Charlotte Sounds.

Soil that has been cleared of vegetation can become exposed to the erosive forces of rain, wind and frost. If at the same time the soil has been loosened by cultivation or excavation it is more easily eroded. Eroded soil moves downhill or is blown by the wind and will eventually find its way into the rivers or Sounds, causing sedimentation.

There are, however, situations where land disturbance is an essential component of the sustainable management of a resource, for example the clearance of existing drainage systems. The effects of this form of land disturbance are minor and the benefits significant provided that care is taken to ensure that the likelihood of erosion, flooding or material in water is minimised.

Sedimentation can cause damage to marine and freshwater ecosystems, and may reduce the water quality. Excavation can destabilise hill slopes, particularly on steep hills. When combined with high rainfall, excavation can cause erosion.

Slips can damage the land surface, block waterways and deposit soil in flood channels and damage property. The life-supporting capacity of soil is dependent on soil quality that results from the physical, chemical and organic condition of the soil. Soil quality is often referred to in terms of structure, drainage and fertility. Hill soils are at risk from burning practices which can strip nutrients from the land, and mechanical damage which can reduce slope stability and increase soil compaction.

The Marlborough Sounds are formed by drowned river valleys. The beds of Pelorus and Queen Charlotte Sounds are generally mud bottomed, which indicates extreme levels of sedimentation in the past. Some of this sedimentation will be attributable to land use practices in the past. The majority of the sediment relates to the Sounds origins and the effects of natural events, including storms and earthquakes.

Soil erosion and land disturbance also puts archaeological, cultural and historical artifacts and sites at risk. For example, excavation may disturb waahi tapu or damage pa sites.

13.3 Objectives and Policies

Objective 1	The avoidance or mitigation of the adverse effects of inappropriate land use practices, including those which reduce the life-supporting capacity of soil, increase sedimentation of surface and coastal waters, and increase the risk of erosion and damage to natural and iwi values.
Policy 1.1	Avoid or mitigate contaminated run-off arising from land disturbance activities entering the marine ecosystem.
Policy 1.2	Avoid or mitigate contaminated run-off arising from land disturbance activities entering wetlands, lakes and rivers.
Policy 1.3	Avoid or mitigate the reduction of soil fertility resulting from land disturbance or vegetation removal.
Policy 1.4	Require that any known land stability hazard be identified and addressed before beginning any land disturbance activity.
Policy 1.5	Within areas of known natural hazard, require resource consent for activities likely to increase the risk, or be affected by that hazard so as to avoid or mitigate land stability, flood and navigational hazards.
Policy 1.6	Ensure the availability of a public register of areas of known natural hazard.
Policy 1.7	Encourage resource users to check the NZ Historic Places Trust Register for cultural, historical and archaeological sites on the land that they are proposing to disturb. Council will make information from the register available to resource users.

Policy 1.8	Require resource users to stop work and report to Council if historical, cultural or archaeological artefacts or waahi tapu are unearthed during land disturbance or land excavation.
Policy 1.9	Ensure consultation with relevant iwi on land disturbance activities requiring a resource consent.
Policy 1.10	Ensure consultation with the New Zealand Historic Places Trust on land disturbance requiring a resource consent.
Policy 1.11	Recognise that some activities which involve disturbance of the land surface are an essential part of the sustainable management of other physical resources.

The Council has a responsibility under section 30 of the Act to control the use of land for the purpose of soil conservation. Unsound land management practices may lead to an unsustainable land use regime.

In the past uncontrolled land disturbance has given rise to significant adverse effects in the Marlborough Sounds area. Control over the effects are necessary to achieve a sustainable land management regime.

The policies will apply to all resource use which involves disturbance to the land surface. Prior to commencing land disturbance work and particularly upon application for a resource consent for this activity the Council will need to be satisfied that adequate consultation has taken place.

13.4 Methods of Implementation

Rules	<p>Land disturbance having a minor effect will be permitted subject to compliance with specified performance criteria which seek to reduce sedimentation, maintain soil quality, reduce the risk of damage from natural hazards, and protect ecological, cultural, and economic values.</p> <p>Consents with conditions will be required for land disturbance activities which fall outside that which is permitted. Conditions will be imposed to avoid, remedy or mitigate the adverse effects of land disturbance on the potential and life-supporting capacity of the soil and water resources of the Marlborough Sounds area.</p> <p>Rules are also included to avoid or mitigate the effects of land use on water bodies by such means as specification of appropriate riparian management criteria according to a schedule of significant water courses that have been identified on the basis of natural hazard management, provision of public access and recreation, riparian habitat diversity, in-stream habitat and water quality.</p>
Education	Information and education programmes will be prepared to address land disturbance issues and the effects of land disturbance, in particular on water bodies, with reference

	<p>to natural hazard management, provision of public access and recreation, riparian habitat diversity, in-stream habitat and water quality.</p> <p>A guide for land disturbance activity will be produced containing information relating to the effects of land disturbance on the soil resource, surrounding environment, and wetlands, rivers, lakes and the sea. Information relating to less disruptive techniques for disturbing land and means to minimise the effects of land disturbance will also be included. The Council will make this available to farmers, foresters, site developers and other resource users.</p>
Maps	<p>Volume Three of the Plan contains a series of indicative maps which record areas of known natural hazard to assist in the identification of such areas. Refer also to Chapter 16: Natural Hazards.</p>

An element of land disturbance must be provided for to enable utilisation of the land resource. The rules will provide certainty as to what is and is not acceptable.

Land disturbance is undertaken by farmers, foresters, roading constructors and developers of residential, and other urban sites. Those people who undertake land disturbance may have little knowledge of the effects of their activities on the soil resource being disturbed or the surrounding environment. This includes the effects on the fresh water draining the area, and wetlands, lakes and rivers and the sea receiving that drainage water.

Often people who understand the effects of their activities will respond to new information by altering their activity to avoid or reduce adverse effects which could prevent sustainable management of the land and water resources of the Marlborough Sounds area.

13.5 Anticipated Environmental Results

Implementation of the policies and methods in relation to soil conservation will result in:

- Maintenance and enhancement, of the life-supporting capacity of soil and ecosystems;
- The natural clarity of any permanently flowing river, lake, wetland or sea not being significantly reduced due to sediment laden runoff water originating from the site of a land disturbance operation; and
- Historical, cultural or archaeological artifacts, sites or values protected from land disturbance.

14.0 Discharges of Waste to Land

14.1 Introduction

This chapter of the Plan addresses the management of all adverse environmental effects that may arise from discharging solid or liquid waste to land. These effects include water and soil contamination, disruption to land ecosystems and reduction of amenity values.

14.2 Issue

The discharge of solid and liquid waste into or onto land that affects the potential or life-supporting capacity of land or has adverse effects on the environment.

Whenever waste is discharged to land there is the potential that contaminants from that waste will leach into groundwater or be carried by run-off into surface water. In the Marlborough Sounds area surface and groundwater act as individual or community sources of water. Therefore, it is vital that water is not contaminated by waste so that it continues to meet the water quality standard set. The Marlborough Regional Policy Statement sets water quality at the level necessary for the sustainable management of freshwater and coastal ecosystems.

Rural activities may result in chemical contaminants entering freshwater and being carried to the Marlborough Sounds marine environment. Run-off carrying nutrients and chemicals could have significant adverse effects on freshwater or marine environments.

A discharge of waste to land can contaminate the soil which can have a significant adverse effect on soil quality with a consequent adverse effect on land productivity. Contamination of soil reduces opportunities for land use and places the costs of restoration on future generations.

The discharge of waste to land may disrupt land ecosystems. Land ecosystems rely on interactions between the physical, chemical and organic components of the soil to create a system which is able to sustain the use, development and protection of the land. In Marlborough, the community relies on the use, development and protection of the land for cultural, social and economic wellbeing.

The discharge of solid or liquid waste to land may adversely affect amenity values if it causes windblown rubbish, dust, odour, reduced air quality, or attracts vermin or has adverse visual impacts. The management of waste disposal must seek to avoid, remedy or mitigate all adverse effects where they affect the sustainable management of the resources of the Marlborough Sounds.

The Marlborough Regional Policy Statement seeks to avoid, remedy or mitigate the effects of waste through reducing waste production, reusing the constituents of waste, recycling waste products, and recovering components from waste products.

14.2.1 Objectives and Policies

Objective 1	The disposal or burial of solid waste in such a way that water and soil quality, land and water ecosystems, and amenity values are not adversely affected.
Policy 1.1	Encourage reduction in the amount of waste produced and disposed of in order to reduce the adverse effects of disposal or burying of waste.
Policy 1.2	Mitigate the adverse effects of burying solid waste by rationalising the District's landfills to a single site capable of avoiding the contamination of surface and groundwater.
Policy 1.3	Avoid adverse effects on the amenity of the Sounds area caused by the disposal of solid waste onto private and public land.

The first priority for waste management is to reduce the amount of waste created in order to reduce the adverse effects of waste disposal.

In the Picton and Whatamango areas the Council currently provides a weekly kerbside refuse collection from all residential households. The Port Company provides and services bins in the port and marina facilities at Picton, Waikawa and Havelock for visitor use. Over the summer the Council expands the network of skips located throughout the Sounds to cater for increased numbers of people visiting the area.

Rubbish is collected at refuse transfer stations located at Picton, Rai Valley and Havelock and transported to Marlborough's Regional Landfill.

The dumping of solid waste in areas not specifically managed for waste disposal can contaminate water, create dust and odour, and damage landscape and amenity values. The illegal dumping of household waste is an issue in the Marlborough Sounds, particularly over summer when resident and visitor numbers increase.

14.2.2 Methods of Implementation

Rules	Rules make provision for the burial and disposal of solid waste to land subject to performance standards.
Education	<p>Promote waste reduction techniques, including reuse and recycling of materials; and benefits of waste reduction to the receiving environment and waste producers.</p> <p>Promote appropriate siting, size and management of offal pits for farm organic waste disposal.</p> <p>Education will encourage residents and businesses not to choose inappropriate methods of waste disposal.</p>
Incentives	<p>The Council will develop an 'Environmental Management Challenge' Programme to encourage industry to adopt waste minimisation techniques.</p> <p>The Council will continue to charge waste disposers for the collection of waste and recyclable materials, to encourage waste minimisation.</p>

	The Council will establish and maintain a waste exchange network to encourage the reuse of materials.
Enforcement	The Council will issue abatement notices and enforcement orders for the illegal dumping of solid waste on any land.
Advocate	The Council will advocate to the Minister for the Environment for development of national systems to address: <ul style="list-style-type: none"> • Waste minimisation; and • Full environmental accounting of resources disposed of as waste.
Investigation	The Council will continue to investigate the effects of solid waste disposal to land, air and water to support education programmes, justify regulation, and define the need to expand regular waste collection service.
Works	The Council will implement its programme to rationalise the District's landfills. Transfer stations will replace all existing landfills in the Plan area by the year 2000.

Plan rules ensure that the adverse environmental effects of waste disposal are avoided where convenient alternative waste management options exist.

Education is required to inform the community of the adverse effects on water quality arising from the burial and disposal of waste and to promote practices involving waste minimisation.

Inappropriate disposal of solid waste in the Marlborough Sounds area is unacceptable. Abatement notices for inappropriate dumping on land will be issued to ensure that dumping does not cause land or water contamination or reduce amenity values. The Council also has the power to control litter under the Litter Act 1979, the Litter Infringement Notices Order 1987 and Bylaws under the Local Government Act 1974. These powers to control and take action on littering complement Council's powers under the Act.

Investigation is essential to define the adverse environmental effects apparent from disposal practices, including the burning and burying of waste. Information means that the Council works and activities and the Plan rules can be reviewed for their appropriateness.

14.2.3 Objectives and Policies

Objective 1	The treatment and disposal of human, rural and industrial liquid waste, including sewage sludge, in such a way that water and soil quality, land and water ecosystems and amenity values are not adversely affected.
Policy 1.1	Ensure that the receiving environment is not adversely affected by the treatment or disposal of human, rural and industrial liquid waste.
Policy 1.2	Encourage attainment of higher standards of waste treatment to reduce the discharge of contaminants and avoid, remedy or mitigate the adverse effects of waste disposal.

Effluent can be discharged to land by way of any approved system including transpiration fields, spray irrigation, oxidation ponds, activated sewage sludge plants or a combination of these. The discharge to land of effluent and waste from some activities may cause offensive odours, contaminate the soil and groundwater, and smother pasture leading to a significant reduction in the life-supporting capacity of the land. However, with appropriate management some intensive farming effluent can have a positive effect on the life-supporting capacity of land.

Effluent from reticulated sewage treatment systems can be discharged either to land or to water. Given the character of the Marlborough Sounds area, its relationship with the water of the Sounds, and the significant use of coastal water for marine farming, land disposal of sewage effluent is preferable to disposal to water. However, the steep slope of the land within the Sounds area and predominance of heavy clays may prevent effective local land disposal.

Sewage sludge is a by-product of the sewage treatment process. It is usually disposed of to land. Special attention must be given to the disposal of sewage sludge as it contains high levels of pathogens and is therefore a human health risk. Septic tank cleaning and the disposal of sewage sludge is listed as an offensive trade under the Health Act 1956 and requires a licence from the Public Health Service and the Council. Sewage sludge from septic tanks and sewage treatment plants must be disposed of in an approved manner.

There are a number of industrial and trade premises located at Picton, Havelock and Rai Valley. The waste produced at these premises is disposed of to sewer systems via the trade waste system or through on-site waste disposal systems. Irrespective of where waste is disposed to waste producers should seek to discharge the minimum amount of waste and understand the adverse effects of their discharge on the health and functioning of the receiving environment.

14.2.4 Methods of Implementation

Rules	Rules make provision for the treatment and disposal of liquid waste subject to standards and terms.
Education/ Guidelines	Promote strategies for minimising adverse effects associated with the treatment and disposal of liquid waste.
Monitoring	Assess the adverse effects of existing treatment and disposal systems on land and water ecosystems. In particular, the Council will monitor surface and coastal water adjacent to permitted and existing treatment systems.
Investigation	Council will investigate the availability and practicality of alternative treatment and liquid waste disposal systems for use in the Marlborough Sounds.

Regulation allows the disposal of human and rural effluent based on an approach which permits the discharge of on-site effluent within a specified volume where there will be minimal adverse effects on the environment.

The Plan allows the discharge of treated waste subject to performance standards which seek to avoid soil and water contamination.

14.2.5 Objectives and Policies

Objective 1	Recycling of waste materials or reuse on-site (including the storage of silage and composting of organic and green waste) in such a way that water and soil quality, land and water ecosystems and amenity values are not adversely affected.
Policy 1.1	Encourage the recycling of waste materials and their reuse on site (domestic and horticultural composting and the making of silage).
Policy 1.2	Mitigate odour, dust and contaminants arising from large scale composting and silage operations that discharge to land.

Composting is a means of reducing the quantity of solid waste disposed of in landfills. It is estimated that approximately 40% to 60% of the Marlborough waste stream is compostable (eg; green material, fish waste and untreated sawdust). In addition to reducing the disposable component of the waste stream, composting creates a valuable resource that can be used for fertiliser or soil enhancer for home gardens, parks, forestry, agriculture, horticulture and viticulture. The Council recognises that composting will extend the life of the landfills, reduce contamination of water and the emission of landfill gases.

Silage is a common practice for storage of animal feed and may create adverse effects similar to composting which need to be avoided, remedied or mitigated to prevent discharge of contaminants into land or water.

14.2.6 Methods of Implementation

Rules	Rules make provision for the composting of organic materials, subject to performance standards.
Advice	The Council will advise farmers on ways to avoid, remedy or mitigate the adverse effects of their activities, including location and management of silage pits.
Education	The Council will, through the Waste Education Program, continue to promote the benefits of composting, composting methods and ways to avoid, remedy or mitigate adverse effects from composting.
Incentives	The Council will provide compost bins and discounted landfill charges for the separation of green waste prior to disposal.

Allowing composting and silage making enables materials to be reused on site and is a sustainable use of resources. By specifying performance standards, any potential adverse environmental effects can be avoided or mitigated. Regulation separates those operations unable to meet performance standards that could create a significant adverse effect. Large-scale composting and silage operations will require resource consent for the discharge of leachates because there is greater potential for significant adverse effects on soil and water resources and ecosystems.

14.2.7 Objectives and Policies

Objective 1	The storage and transfer of solid and liquid waste materials in such a way that water and soil quality, land and water ecosystems and amenity values are not adversely affected.
Policy 1.1	Avoid, remedy and mitigate adverse effects associated with the transfer and storage of waste materials.

The importance of the coastal and land resources in the Marlborough Sounds area for communities' cultural, social and economic wellbeing demands the effects of storage or transfer of solid wastes are avoided so that there is no adverse effect on the potential or life-supporting capacity of those resources.

14.2.8 Methods of Implementation

Rules	Rules make provision for the storage and transfer of materials, including wastes, subject to performance standards.
Education	Promote methods for the safe transfer of solid and liquid materials, including wastes, that avoids adverse environmental effects. Education would include techniques to adequately secure loads and prevent leakages.
Enforcement	The Council will issue abatement notices and enforcement orders where the storage of solid and liquid wastes creates any significant adverse effect.

Education is the key means of changing people's attitudes and behaviour. If most of the community is attempting to achieve desired outcomes then regulation is only needed to ensure complete community achievement of outcomes.

14.3 On-site Management of Domestic Wastewater in the Marlborough Sounds

Almost all houses, holiday homes and buildings used for visitor accommodation, outside of Picton, Waikawa and Havelock, rely on on-site systems to manage domestic wastewater. This means that domestic wastewater generated in the building(s) receives initial treatment in some form of treatment unit, such as a septic tank, and is then discharged into or onto a land application area on the property. Contaminants present in the wastewater, such as bacteria and nutrients, are then further treated or absorbed as the wastewater passes through the soil.

In the Marlborough Sounds, domestic wastewater is discharged into soils of low permeability, into thin soils with limited ability to treat contaminants, or into extremely permeable alluvial soils. In all cases, there is the potential for contaminants to travel beyond the land application area, and into the surrounding environment, through runoff or infiltration.

Most buildings used for residential or accommodation purposes in the Sounds are located in close proximity to streams, creeks, underlying groundwater or coastal water. This means that, if the on-site wastewater management system servicing the building performs poorly, there is a risk that the subsequent discharge will contaminate water. The Council's monitoring has already established that there are elevated levels of bacteria in some coastal waters over the summer months.

The Marlborough Sounds support significant marine farming and tourism industries that rely upon a high standard of water quality. The coastal waters are also an important recreational resource and have spiritual and cultural significance to local iwi. For these reasons, objectives contained elsewhere in this Plan create an expectation that water quality is to be maintained at or enhanced to an SG standard (see Chapter 9 for further details). It is therefore clear that the risk of contamination needs to be managed. This involves two key steps.

Firstly, it is important to improve the performance of existing on-site systems over time. It is estimated that there are in excess of 3000 existing systems in the Marlborough Sounds, the performance of which is extremely variable. This is because:

- (a) The systems are not necessarily compatible with the site conditions or current occupancy of the building, and were often based on dated standards. For example, many septic tanks in the Sounds discharge wastewater into soak pits or short trenches, which have a tendency to eventually fail when installed in soils of low permeability. The older the system, the greater the potential for failure;
- (b) The age of the on-site system can mean that the various components are no longer watertight and may therefore leak;
- (c) Not all systems are maintained in an efficient operating condition. A lack of maintenance can contribute to the potential for failure identified in (a).

This situation is made worse by the fact that many on-site systems are inaccessible for servicing;

- (d) Stormwater is entering the treatment unit or land application area, increasing the hydraulic loading on the site soils; and
- (e) Given the age of some systems, and the rate of property ownership change in the Sounds, present owners may know little about the on-site wastewater management system on their property.

The Council's ability to respond to poorly performing or failing systems under the Resource Management Act is limited to instances of non-compliance with permitted activity rules and resource consents. It is considered that a more proactive and integrated programme is required to resolve the issues.

Secondly, it is important that the existing situation is not made worse by future residential subdivision and development. There is still undeveloped land zoned for residential purposes by this Plan, and many of the sites are more difficult to develop and service than those already built upon. It is important that any on-site wastewater management system installed is appropriate to the site, given the nature of the discharge and the site conditions.

A demand for further residential properties throughout the Sounds is reflected in resource consent applications to subdivide land. It is important that the density of future properties does not exceed the ability of the surrounding environment to assimilate domestic wastewater. This may mean that existing and future subdivisions are better serviced by off-site systems.

It will be important to continue monitoring the performance of on-site systems, and their potential effects on the surrounding environment, to determine whether the various initiatives identified in this Plan are effective.

14.4 Issue

The use of inappropriate on-site wastewater management systems to service buildings producing domestic wastewater, and/or the poor management and maintenance of on-site wastewater management systems, can result in adverse effects on the surrounding environment.

If the discharge of domestic wastewater to land exceeds the capacity of the soil to assimilate it, then the wastewater will not be contained within the land application area (commonly referred to as "failure") and will adversely affect the surrounding environment. Such effects may include the contamination of water, particularly given the proximity of many on-site systems to streams, to coastal water or, in some cases, to underlying aquifers. Amenity values enjoyed on neighbouring properties can also be adversely affected by the runoff of mismanaged domestic wastewater or from odour associated with the operation of the on-site system. By increasing the hydraulic load on the site soils, the discharge of domestic wastewater may result in the degradation of the soils, or may initiate instability or make existing instability worse.

The Marlborough Sounds present unique constraints for the successful on-site management of domestic wastewater, including poorly drained soils, thin soils, steep slopes, unstable geology, periods of heavy rainfall and the potential for low evapo-transpiration. If the method of treating the wastewater and/or the nature of the land application area does not take into account and reflect the site conditions, system failure, and adverse effects on the surrounding environment, are more likely.

A high proportion of existing residential buildings are serviced by conventional on-site systems, comprising a septic tank and some form of a land application area (usually a soak pit or trenches). However, advanced on-site systems are increasingly being used to treat the wastewater to a secondary standard before it is discharged into or onto land within the land application area. The operational and maintenance requirements of each system vary, from the pumping out of septic tanks at approximately five year intervals, through to the regular inspections (undertaken by trained technicians) required for some advanced on-site systems. Whichever system is used, it will not perform in an efficient operating condition unless appropriate maintenance is undertaken regularly. A lack of maintenance increases the risk of system failure and creates the potential for adverse effects on the surrounding environment.

The extent to which existing discharges of domestic wastewater from on-site systems are adversely affecting the Marlborough Sounds environment is not certain. It is difficult to monitor such effects, due to a lack of knowledge about existing on-site systems, the intermittent nature of occupancy, the isolated nature of much of the Marlborough Sounds, variable weather and tides, "natural" sources of contaminants and the extent of coastal waters.

14.4.1 Objective and Policies

Objective 1	To ensure that new on-site wastewater management systems are designed, located and installed to effectively treat and contain all domestic wastewater on-site.
Policy 1.1	To require discharge permits for all new on-site domestic wastewater discharges.
Policy 1.2	To approve discharge permit applications for new on-site domestic wastewater discharges where: <ul style="list-style-type: none"> (a) There is no public sewer located within 30 metres of the lot boundary or within 60 metres of the closest building on the lot; (b) The on-site wastewater management system will effectively service the building(s) to which it is connected; (c) The land application area is located as far as practical from any surface waterbody or coastal water; (d) The discharge will not contaminate surface water, coastal water or groundwater; (e) The discharge will not initiate instability, or make existing instability worse; (f) The discharge will not create offensive or objectionable odour or adversely affect the amenity values enjoyed on adjoining properties.
Policy 1.3	All design flows (the volume of domestic wastewater to be discharged into or onto land) shall reflect the potential occupancy of the building(s) that the on-site wastewater management system serves.

Policy 1.4	Land application areas shall be sized to accommodate the volume of domestic wastewater to be discharged, taking into account the characteristics of the site.
Policy 1.5	All domestic wastewater shall be discharged evenly over the land application area at a rate that does not exceed the ability of the land to assimilate the wastewater.
Policy 1.6	All treatment units shall be located so as to be accessible for maintenance purposes.
Policy 1.7	To avoid the use of conventional on-site wastewater management systems where it is proposed to discharge domestic wastewater into or onto poorly draining soils (such as clays) or porous soils (such as gravel, coarse sand or fractured rock).
Policy 1.8	To avoid the use of soak pits.
Policy 1.9	<p>When considering discharge permit applications to discharge domestic wastewater into or onto land, to have regard to:</p> <ul style="list-style-type: none"> (a) The soil characteristics of the site and surrounding area, including hydraulic capacity and ability to treat contaminants present within the domestic wastewater; (b) Site constraints including geology, topography, slope, lot size and shape, climate, and existing structures; (c) Alternative options for managing the domestic wastewater, including discharge to an alternative location on the same site; (d) The need for a reserve field; (e) The way in which stormwater is managed on the site and the potential for stormwater to impair the performance of the on-site wastewater management system; (f) Relevant guidelines and standards; and (g) Potential cumulative effects.
Policy 1.10	<p>To provide guidance on:</p> <ul style="list-style-type: none"> (a) Appropriate procedures for the investigation and evaluation of a site for the on-site management of domestic wastewater; and (b) The range of on-site wastewater management systems available.
Policy 1.11	To require the designers of new on-site wastewater management systems to certify the installation of the system.
Policy 1.12	To enable the use of alternative technologies for managing domestic wastewater.

An implication of living, holidaying or providing visitor accommodation in the Marlborough Sounds is the need to appropriately manage the domestic wastewater generated as a result of these activities. In areas not serviced by a reticulated sewerage system, this is achieved by installing and operating an on-site wastewater management system.

It is important that the design, location and installation of the on-site system take into account and reflect the site characteristics, as this will ultimately determine whether the domestic wastewater can be treated and contained on-site. To ensure that this is the case, the Council must be able to consider all proposed on-site systems and retain discretion over whether the discharge from the system can commence. As identified in Policy 14.4.1.1.1, a discharge permit is required to authorise the discharge of contaminants from all new on-site systems. A new on-site system includes extensions to, or replacements of, existing land application areas.

Any applicant for a discharge permit will need to demonstrate that the design of the proposed on-site system satisfies all of the requirements of Policy 14.4.1.1.2. Policies 14.4.1.1.3 to 14.4.1.1.9 establish principles or identify matters that are relevant to, and will assist, this assessment process. Designers and Council staff alike can therefore use these policies to ensure that proposed on-site systems are appropriate, given the nature of the discharge and the site conditions.

A variety of standards exist for the on-site management of domestic wastewater, including AS/NZS 1546.1:1998, AS/NZS 1546.2:2001, AS/NZS 1546.3:2001, AS/NZS 1547:2000. These standards can also be used to assist the assessment of new on-site systems. However, as the Marlborough Sounds presents unique constraints to on-site servicing, there is also the need to interpret these standards in the context of local conditions. The policies therefore also signal the need to provide greater guidance to designers given these unique constraints. This guidance will reflect the Council's experience with different types of on-site systems in the Marlborough Sounds.

The Council is already aware that conventional on-site systems do not perform in certain soil types in the Marlborough Sounds or where soak pits are used. It would therefore be inappropriate to continue to allow such on-site systems to be installed.

Historically, conventional on-site systems were the only option for managing domestic wastewater, but many alternative technologies are now available. The appropriateness of alternative on-site systems to the types of environment that exist in the Marlborough Sounds will be investigated by the Council on an ongoing basis. The results of these investigations will be provided to homeowners through educational resources.

To ensure that the on-site system is installed according to design, the designer will be required to certify the installation of the system and provide that certification to the Council.

By ensuring that the design, location and installation of the on-site system takes into account and reflects the site characteristics, adverse effects on water quality, soil quality and stability, and amenity values can be avoided. The use of these policies will therefore assist in maintaining the very qualities that attract people to live and holiday in the Marlborough Sounds.

14.4.2 Methods of Implementation

Rules	Rules identify circumstances in which resource consents will be required to commence or continue discharging domestic wastewater to land. All new on-site domestic wastewater discharges will require discharge permits. Policies 14.4.1.1.2 to 14.4.1.1.9 will assist the Council to determine the significance of the effects that the discharge could potentially create and therefore whether the discharge permit should be granted.
Monitoring/ Enforcement	Compliance with the conditions of resource consents will be monitored and enforcement action taken where necessary.
Guidelines	The Council has prepared guidelines to assist industry practitioners to assess the characteristics and constraints of any particular site relevant to the on-site management of domestic wastewater.
Training	The Council will establish an accreditation system for the design of on-site wastewater management systems, and practitioners will be required to hold such accreditation to submit on-site system designs to the Council. A pre-cursor to accreditation will be the completion of appropriate training courses in site and soil evaluation.
Liaison	The Council will establish a working group of industry practitioners in order to provide a forum to discuss issues associated with site investigation, and the design and installation of on-site wastewater management systems. This working group can consider particular issues and provide advice on ways in which current management can be improved.
Investigations	The Council will investigate the availability and practicality of alternative technologies for the management of on-site wastewater management systems and the potential to use these technologies in the Marlborough Sounds.
Information Sharing	There are a range of on-site wastewater management systems available. Some on-site systems are more suited to certain conditions than others, and the maintenance requirements also vary. The Council will share this information with homeowners.
Standards	The Council will use current standards to help assess the appropriateness of new on-site wastewater management systems through the resource consent process

Plan rules allow the appropriateness of any new on-site wastewater management system to be assessed. This assessment is necessary to ensure that the domestic wastewater can be effectively contained and treated on-site, and adverse effects on the surrounding environment thereby avoided. Standards, such as AS/NZS 1546.1:1998, AS/NZS 1546.2:2001, AS/NZS 1546.3:2001 and AS/NZS 1547:2000, will assist this assessment process.

The methods also seek to improve the standard of design through the use of local guidelines. These guidelines will provide practitioners with greater certainty in terms of the procedures to be followed for site investigation and assessment. This, in turn, will assist to ensure that the subsequent design of any on-site system reflects the site characteristics prior to applying for a discharge permit. The use and continual improvement of the guidelines will be facilitated through liaison with practitioners and the provision of appropriate training.

The installation and commissioning of on-site systems is to be monitored to ensure that each system is constructed according to the approved design. Enforcement action may be necessary to remedy any instances of non-compliance.

The process of continuous improvement will also require the investigation of alternative technologies, as such technologies may allow for improved on-site management of domestic wastewater in the Marlborough Sounds. In the meantime, the Council will provide information on all available on-site wastewater management systems to homeowners to enable them to make informed choices.

14.4.3 Objective and Policies

Objective 1	To ensure that all on-site wastewater management systems perform in an efficient operating condition on an ongoing basis, while avoiding adverse effects on the surrounding environment.
Policy 1.1	Existing on-site domestic wastewater discharges, which were lawfully established without resource consent prior to 21 April 2005, will continue to be permitted activities providing: The on-site wastewater management system is maintained in an efficient operating condition at all times; and The discharge is contained on-site and is not adversely affecting surface water, coastal water or groundwater quality.
Policy 1.2	To monitor the operational performance of all on-site wastewater management systems and to require poorly performing systems to be upgraded to, or be replaced with, systems that effectively treat and contain all domestic wastewater on-site.
Policy 1.3	To require all on-site wastewater management systems to be maintained in an efficient operating condition at all times.
Policy 1.4	To identify and define the impact of factors that influence the performance of on-site wastewater management systems.
Policy 1.5	To promote good practice in the use of on-site wastewater management systems.

Policy 1.6	To improve the community's understanding of the impact of on-site discharges on the surrounding environment.
Policy 1.7	To establish a register to record the details of all on-site wastewater management systems.
Policy 1.8	When considering building consent applications to extend or alter residential or commercial buildings serviced by on-site wastewater management systems, an assessment will be made of the wastewater loading that would result from changes in the occupancy of the building. If there is to be an increase in the loading, then a discharge permit will be required to continue discharging domestic wastewater to land.

The day-to-day management and ongoing maintenance of on-site wastewater management systems play vital roles in ensuring that domestic wastewater is appropriately treated and contained on-site in the long term. This is because inappropriate use and/or a lack of maintenance can affect the performance of the on-site system. The responsibility for management and maintenance of on-site systems is that of the property owner. The above policies therefore target the important role that property owners play in avoiding the adverse effects of domestic wastewater discharges on the surrounding environment.

Given the large number of holiday homes and properties providing visitor accommodation in the Marlborough Sounds, property owners and visitors alike may not be aware of the appropriate methods of using and managing on-site systems. The Council will therefore inform property owners of practical measures they can take to improve the performance of their on-site systems. A good example is the installation of effluent filters into existing conventional on-site systems. These measures may be identified as a result of investigations undertaken by the Council, other councils, the wastewater industry or independent researchers.

To reduce the potential for this same situation occurring with any future on-site system, the designer will be required to prepare and submit operation and maintenance guidelines when applying for a discharge permit. Property owners installing proprietary advanced on-site systems are usually required to enter into a maintenance contract by the supplier or installer. The Council will make this a requirement for all such on-site systems through the resource consent process.

A lack of maintenance increases the risk of system failure and creates the potential for adverse effects on the surrounding environment. However, property owners may not be aware of the need to desludge septic tanks, others may forget or, given the isolated nature of many parts of the Marlborough Sounds, desludging may be problematic.

Even where the on-site system is properly used and well maintained, it could still be performing in an inappropriate manner. This could be as a result of a lack of maintenance by previous owners, an increase in domestic wastewater loadings, or may reflect that the original on-site system was inappropriate given the site characteristics. Examples of poor performance include the land treatment area failing, resulting in the ponding and/or runoff of domestic wastewater, owners modifying the on-site system to discharge directly to a waterbody, offensive or objectionable odour and the leakage of domestic wastewater from the septic tank.

It is therefore necessary to monitor the operational performance of all on-site systems in the Marlborough Sounds and require remedial action where the systems are poorly performing.

Many buildings in the Marlborough Sounds started as simple baches serviced by conventional on-site systems that reflected the scale and occupancy of the building. There is an increasing tendency to modernise and/or extend these structures. If more people can be accommodated in the buildings(s) following these changes, even if only for a short period, then the wastewater loading and rate of discharge will also increase. A discharge permit will be required to continue discharging domestic wastewater to land in such circumstances. This will allow the Council to determine whether the existing on-site system is capable of managing the increased loading and, if it is not, will ensure that the system is either upgraded or replaced with an appropriate system. Policies 14.4.1.1.2 to 14.4.1.1.9 can be used to assist this determination.

14.4.4 Methods of Implementation

Rules	Rules identify circumstances in which resource consents will be required to commence or continue discharging domestic wastewater to land. Conditions of permitted activity rules (for existing discharges) and resource consents will require all on-site wastewater management systems to be maintained in an efficient operating condition.
Operation and Maintenance Guidelines	The Council will require (through the resource consent process) designers to prepare operation and maintenance guidelines for all new on-site wastewater management systems. These guidelines should then be submitted to the Council and, more importantly, to property owners.
Service Contracts	The Council will require (through the resource consent process) property owners installing proprietary advanced on-site wastewater management systems to enter into service contracts with the manufacturer.
Monitoring	<p>The performance of on-site wastewater management systems will be monitored to ensure compliance with the minimum standards established by the Plan and/or resource consents. When determining whether an existing on-site wastewater management system is poorly performing, regard will be had to:</p> <ul style="list-style-type: none"> (a) The age and type of system; (b) The structural integrity of the treatment unit and the water-tightness of all components of the system; (c) Whether domestic wastewater is saturating soil or ponding within, or in the vicinity of, the land application area; (d) The proximity of the land application area to any waterbody; (e) Whether the discharge from the system is initiating instability or making existing instability worse; (f) Any offensive or objectionable odour;

	<p>(g) The past maintenance of the system; and</p> <p>(h) The conditions of any relevant permitted activity or resource consent.</p>
Enforcement	Where an on-site wastewater management system is failing to treat and/or contain domestic wastewater on the subject property, action can be taken under the Building Act 2004 and/or the Resource Management Act 1991. The action will require the discharge to cease or remedial measures to be taken to rectify the problem.
Septic Tank Pump-out	The Council will investigate options for co-ordinating the pump-out of septic tanks throughout the Marlborough Sounds, including the appropriate disposal of septic tank sludge.
Investigations	The Council will review existing technical information and undertake research, where necessary, to determine the factors that influence the performance of on-site wastewater management systems.
Information Collection	The Council will collect information on existing on-site wastewater management systems in the Marlborough Sounds. This information will be stored on a database, which can then be used as the basis of implementing a number of the other methods identified in this chapter. The database will also store information on new on-site systems authorised through resource consent processes.
Information sharing	Education is a vital tool in improving the performance of existing on-site wastewater management systems and ensuring new on-site wastewater management systems are managed effectively. The Council will provide property owners and servicing agents with details on the factors that affect the performance of on-site systems and outline appropriate operation, maintenance and monitoring procedures for all on-site systems.
Liaison	The Council will establish a working group of industry practitioners and other relevant parties in order to provide a forum to discuss issues associated with the ongoing performance of on-site wastewater management systems. This working group can consider particular issues and provide advice on ways in which performance can be improved.

The methods focus on means of improving the performance of existing on-site wastewater management systems and ensuring that future on-site systems perform according to design.

The Plan recognises that the day-to-day use and ongoing maintenance influence the performance of on-site systems in the long term. From this perspective, the Council will require the designers of new on-site systems to specify, and provide to the property owner, the appropriate procedures for operating the system. The Council will also provide relevant information to property owners, so that they can act to appropriately manage and maintain their on-site systems where no

such procedures exist. This information will be provided to the community on an ongoing basis, to ensure that it reflects the current knowledge of factors that influence the effectiveness of on-site systems.

However, it is also recognised that the provision of information and voluntary actions alone will not ensure that property owners appropriately manage and maintain their on-site systems. For example, there is a low rate of septic tank pump-out in the Marlborough Sounds despite the fact that the performance of the septic tank relies upon the periodic removal of the accumulated solids. The isolation of some properties, the inability of contractors to access the septic tank by road or barge, the variable rates of accumulation caused by intermittent use of the dwelling and the cost all act to inhibit appropriate septic tank maintenance. For this reason, the Council will investigate options for co-ordinating the pump-out of septic tanks throughout the Marlborough Sounds, in consultation with the community. Monitoring results may identify priority areas for the implementation of any such programme.

If a programme of co-ordinated septic tank pump-out is implemented it must also address the subsequent disposal of the sludge that is removed. Given the isolation of many properties in the Marlborough Sounds and the fact that the Council does not accept septic tank sludge at the Picton Sewage Treatment Plant, a strategy needs to be developed to address this issue. The successful implementation of this regime will also require the details of all on-site systems to be recorded. Liaison with property owners may be necessary to determine the nature and location of any on-site system.

There will also be situations where the existing on-site system is not performing at optimal levels despite appropriate use and recent maintenance. Such a situation may result in adverse effects on the surrounding environment and remedial action will be required if this is the case. Any alleged instance of poor performance, as indicated by complaint or state of the environment monitoring, will be followed up with a site inspection.

14.5(a) Issue

Several communities in the Marlborough Sounds suffer from a degraded environment and a potential risk to public health due to their reliance on the on-site management of domestic wastewater.

Residential activity in the Marlborough Sounds, outside of urban areas, is usually concentrated along the coastal fringe. The resultant density of development is lower than that which exists in urban environments. However, there are areas in the Marlborough Sounds where this is not the case, and communities have developed that are almost urban in character. These communities include, but are not limited to:

- Okiwi Bay
- Ngakuta Bay
- Double Cove
- Anakiwa/Tirimoana
- Moenui

The residential properties in these areas are the result of historic subdivision practices. These communities are not serviced by reticulated sewerage systems and the process used to approve the subdivision of land often did not take into account the land area required for the effective on-site management of domestic wastewater. As a result, many of the on-site wastewater management systems installed to service residential buildings were inappropriate given the site conditions. For example, soak pits were commonly installed (in soils of low permeability) to service older residential developments.

Many of the on-site systems initially installed in these communities have either subsequently failed, and have had to be upgraded or replaced, or continue to perform in a less than satisfactory manner. This is reflected in the results of water quality and shellfish monitoring, which show contamination of coastal waters. Additionally, complaints have been made about offensive and objectionable odour and the runoff of domestic wastewater onto neighbouring properties. Given the residential character of these communities, there may also be an increased risk of people coming into contact with untreated or partially treated sewage.

The nature and extent of the effects on the surrounding environment and on public health need to be accurately assessed. It may be established that these communities are unsustainable in the absence of a community sewerage system.

14.5(b) Issue

The subdivision of unsewered land for residential use can create a development density that exceeds the capacity of individual allotments to assimilate domestic wastewater in a manner that protects the surrounding environment.

There is a demand for further residential properties in the Marlborough Sounds, and the Council continually receives applications for resource consent to subdivide land, currently zoned either Sounds Residential or Rural One, for residential purposes. In the absence of reticulated sewerage, all of the newly created allotments are serviced by on-site wastewater management systems.

However, on-site systems may not necessarily be the most appropriate means of servicing the subdivision due to the site conditions, and even where they are, if the development does not take into account the land area required for the effective on-site management of domestic wastewater, the resultant properties could be too small for this purpose. Where the density of development is such that multiple residential buildings are unable to treat and contain the domestic wastewater on-site, the adverse effects identified in Issue 14.5(a) can result. In this manner, additional subdivision and development can exacerbate existing problems or can create further communities that are unsustainable in terms of on-site management of domestic wastewater.

14.5.1 Objective and Policies

Objective 1	To ensure that the management of domestic wastewater, associated with residential subdivision and development, does not adversely affect the surrounding environment.
Policy 1.1	For the subdivision of land zoned Rural or Sounds Residential, where the allotments to be created are to be used for residential purposes, the option of on-site domestic wastewater management shall be evaluated against off-site alternatives and the best practicable option shall be adopted.
Policy 1.2	To ensure that, where on-site management of domestic wastewater is proposed, subdivision layout, allotment size and dimensions make adequate provision for land treatment areas and reserve areas.
Policy 1.3	To provide guidance on appropriate procedures for the investigation and evaluation of land for the on-site management of domestic wastewater.
Policy 1.4	To avoid any further residential subdivision that would create allotments of less than 4000 square metres in those areas of Okiwi Bay and Ngakuta Bay zoned Sounds Residential, until a community sewerage scheme is established.
Policy 1.5	To establish the performance of on-site wastewater management systems on individual allotments, and to assess the environmental effects of the on-site management of domestic wastewater at key localities, including: <ul style="list-style-type: none"> (a) Okiwi Bay (b) Ngakuta Bay (c) Double Cove (d) Anakiwa/Tirimoana (e) Moenui

The subdivision of land is a process of identifying and setting aside, legally and physically, parcels of land for specific development, including residential development. It is important that all proposed residential allotments can be serviced in a sustainable manner, including the management of domestic wastewater. If this is not achieved, the community expectations reflected in objectives elsewhere in this Plan, in terms of water and soil quality, natural hazards and residential amenity values, will not be achieved.

It is therefore important that the best method for avoiding or mitigating the adverse effects of domestic wastewater discharges is selected. Developers need to consider and assess all available alternatives for managing domestic wastewater. On-site management is the obvious option where there is no sewerage system available, but shared or offsite options may also exist and should be evaluated. These include:

- *On-site cluster systems (applying on-site technology to service two or more dwellings);*
- *Cluster systems (also serving two or more dwellings, but where the subsequent discharge is to an off-site environment); and*
- *Full community sewerage schemes.*

The best practicable option can then be determined having regard to:

- *The sensitivity of the receiving environment;*
- *The financial implications, and the effects on the environment, of each option when compared with the other options; and*
- *The current state of technical knowledge and the likelihood that each option can be successfully applied.*

(Policies 14.4.1.1.3 to 14.4.1.1.9 are also all relevant to such an assessment.)

If the best practicable option is an on-site option, it is still important that the actual size and configuration of the allotments allows for effective land treatment areas to be developed. This must include reserve areas to safeguard against unanticipated problems or future failure of the land application area. Soil and other site conditions can also vary across each of the proposed allotments, so the land treatment area and reserve area must be located on the most suitable soils and topography for on-site management of domestic wastewater. The Council will provide guidance on how these areas can be determined. In this manner, Policies 14.5.1.1 to 14.5.1.3 will assist to achieve a density of development that is consistent with the capacity of the surrounding environment to assimilate domestic wastewater.

In most cases it will not be possible to apply for the discharge permits required for each of the allotments at the same stage as the subdivision consent. This is because the nature of the dwellings to be built upon the allotment, the resultant wastewater loading and therefore the size of the land treatment area are not known. None-the-less, the applicant will still need to demonstrate that a dwelling is capable of being serviced on each of the proposed allotments.

In some cases, past subdivision of land has already created a development density that is not sustainable in the absence of some kind of community sewerage system. This is considered to have occurred in Okiwi Bay and Ngakuta Bay, where allotment sizes are typically between 800 and 1000 square metres. Water quality and shellfish monitoring has demonstrated that domestic wastewater discharges are probably not being contained within these allotments. There is still a substantial area of land zoned Sounds Residential that is yet to be subdivided into residential allotments in these two bays. It is considered to be inappropriate to allow for further residential allotments of a similar character to those that already exist, when the existing level of development is already adversely affecting the surrounding environment.

The Council also needs to establish whether past residential subdivision and development is now adversely affecting coastal water quality, soil quality, land stability or residential amenity values elsewhere in the Marlborough Sounds.

14.5.2 Methods of Implementation

Rules	<p>The subdivision of land is regulated through rules in Volume Two of this Plan. The rules establish minimum lot sizes that provide sufficient area to provide for effective land application areas.</p> <p>Applications for subdivision consent involving on-site management of domestic wastewater are to be supported by detailed assessments of the capacity of the land to provide land treatment areas and reserve areas within the proposed lot size, configuration and dimensions. This information shall be supported by confirmation that on-site management is the best practicable option, compared to the alternatives of on-site cluster, cluster and community sewerage schemes.</p>
Guidelines	<p>The Council has prepared guidelines to assist industry practitioners to assess the characteristics and constraints of sites subject to the proposed subdivision of land relevant to the on-site management of domestic wastewater.</p>
Other legislation	<p>The Council is required to periodically assess wastewater services, including risks to the community where there is an absence of a community sewerage system, under the Local Government Act 2002.</p>
Investigations	<p>Monitoring already undertaken has identified areas in the Marlborough Sounds where on-site domestic wastewater discharges are potentially degrading coastal water quality. These areas include:</p> <ul style="list-style-type: none"> • Okiwi Bay • Ngakuta Bay • Double Cove • Anakiwa/Tirimoana • Moenui <p>The Council will undertake investigations to identify and establish the scale and severity of these adverse effects. These investigations will include sanitary surveys. Expansion of investigations may occur where monitoring indicates the need.</p>
Monitoring	<p>The Council will continue to monitor water and shellfish quality in the Marlborough Sounds, but will expand its programme to include areas adjacent to established residential (including bach) activity that have not been monitored previously.</p>

All subdivision of land zoned Sounds Residential, Rural One or Rural Two for residential purposes requires resource consent. The rules in Volume Two of the Plan set minimum allotment sizes that, in most cases, will provide sufficient land area for the on-site management of domestic wastewater.

The requirement for resource consent will allow an assessment of the appropriateness of the proposed method of servicing each of the allotments and, where the proposal does not comply with minimum allotment sizes, whether each of the allotments is an appropriate size and configuration for effective on-site management of domestic wastewater.

The methods also seek to improve the standard of subdivision servicing through the use of local guidelines. These guidelines will provide practitioners with certainty in terms of the procedures to be followed to investigate the suitability of land for the on-site management of domestic wastewater.

The Council already monitors recreational waters for bacterial contamination on an annual basis. However, the sampling is restricted to beaches used for recreational purposes and although the results generally indicate the suitability of the monitored waters for contact recreation, they do not necessarily provide an indication of the impact of on-site discharges on coastal water quality. For this reason, the monitoring programme will be extended to include sampling of coastal waters adjacent to areas of established residential activity. Shellfish will also be sampled as, being filter feeders, bacteria tend to accumulate in the flesh (shellfish can therefore provide a better indicator of bacterial contamination than water samples).

The Council has to consider the risk to the community of not providing wastewater services under the Local Government Act 2002. This may require investigations to be conducted to evaluate the current level of risk to community health as well as the surrounding environment. Where those risks are found to be significant, the construction and operation of community sewerage systems may need to be considered in order to ensure sustainable outcomes. The Council could also utilise other methods identified in this chapter, such as requiring systems to be upgraded or replaced.

14.6 Anticipated Environmental Results

Implementation of the policies and methods for managing discharges to land will result in:

- Surfacewater and groundwater quality improved in those areas where it is currently being adversely affected by the burial of solid waste;
- The waste stream being reduced and poorly managed landfills closed. Waste from transfer stations carried to the engineered and appropriately managed site in Blenheim;
- Soil contamination reduced and land ecosystems protected through the control of the burial of solid waste, discharge of treated and untreated liquid waste and agricultural effluent;
- Amenity values being protected through the control of dumping of solid waste;
- The reuse of valuable resources being encouraged and the waste stream being reduced;

- Amenity values being protected through improved control of the storage and transfer of materials, including waste;
- Surfacewater quality improved through control of the storage and transfer of materials, including waste;
- Groundwater quality improved through control of the storage and transfer of materials, including waste; and
- Soil contamination reduced and land ecosystems protected through control of the storage and transfer of materials, including waste.

15.0 Undesirable Plants and Animals

15.1 Introduction

Undesirable plants and animals invade and damage natural resources and their spread can result in adverse effects on other resources and people. Plant pests adversely affect both indigenous and production land ecosystems. Plant pests invade indigenous ecosystems often harming native habitats and altering whole landscapes.

The uncontrolled spread of plant pests can seriously undermine the production base of land used for productive purposes.

Animal pests likewise have an adverse effect by competing with livestock for pastoral habitat, contributing to soil erosion and destroying indigenous fauna and flora. While it is impractical to eradicate all undesirable plants and animals, their adverse effects can be mitigated through control measures and land management practices.

15.2 Issue

Undesirable plants and animals invading or damaging land and water ecosystems.

The Marlborough Sounds has a wide variety of ecological communities and species present. A large variety of sensitive indigenous species, and productive exotic species occur within these ecosystems.

Undesirable plants and animals can damage the characteristics which give value to ecosystems, or directly affect the survival or health of important species. For example, exotic species invade indigenous forests, possums browse indigenous trees, pigs forage for native snails and spartina blocks estuarine areas. These examples all relate to the maintenance of indigenous ecosystems.

Undesirable plants and animals also affect primary production ecosystems. For example, possums spread diseases in cattle and deer herds, gorse and broom invade forest lands, and unpalatable species invade pastures.

15.3 Objectives and Policies

Objective 1	The protection of land and water ecosystems from the adverse effects of plant and animal pests.
Policy 1.1	Prepare and maintain Regional Pest Management Strategies in accordance with the provisions of the Biosecurity Act 1993.
Policy 1.2	Provide for agreed methods of pest control by enabling the implementation of National and Regional Pest Management Strategies.

The spread of undesirable plants and animals has the potential to seriously reduce the intrinsic, conservation, cultural, and economic values placed on the natural and physical resources of the Marlborough Sounds area.

The enactment of the Biosecurity Act in 1993 requires that pest management be carried out in accordance with either a National or Regional Pest Management Strategy. The development of these strategies is subject to public consultation and submission procedures. Thus, it forms the basis for the provisions relating to undesirable plants and animals in the Plan.

15.4 Methods of Implementation

Rules	Permit the deposition, application or administration of such chemicals, poisons and hazardous substances necessary for the control of plant and animal pests as provided for within an approved National or Regional Pest Management Strategies.
Education	Refer to education provisions of Regional Pest Management Strategies.
Monitoring	Refer to monitoring provisions of the Regional Pest Management Strategies.

The formulation of Regional Pest Management Strategies will allow for adequate public debate on control methods.

15.5 Anticipated Environmental Results

Implementation of the policies and methods relating to undesirable plants and animals will result in:

- A reduction in the adverse effects caused by the spread of plant and animal pests and promotion of the sustainable management of the land and water resources of the Marlborough Sounds area.

16.0 Natural Hazards

16.1 Introduction

The Marlborough Sounds landform reflects the results of global influences on its formation. The Pelorus-Rai catchment drains into Pelorus Sound. The Sounds are a partly drowned valley system resulting from successive erosional and depositional phases. It is a geologically dynamic, natural system.

Generally, the topography is very steep with some areas mountainous. There are some areas of rolling and flat land. Coastal cliffs are precipitous.

The valley ridge system tends NE - SW and this influences local climate, weathering of rocks, soil formation and vegetation.

16.2 Issue

The variability of natural hazards location, frequency, severity, and potential to reduce the safety of the community or cause damage to property, infrastructure or the environment.

The natural hazards which occur in the Marlborough Sounds area include:

- Seismic/earthquake;
- Slope instability;
- Coastal inundation, tsunami and potential sea level rise;
- Flooding;
- Fire; and
- Climatic.

The Marlborough Sounds lie within the most seismically active part of the country near the southern limit of the Pacific plate, with the Wairau (alpine) fault to the south and the Waimea-Whangamoia fault to the west.

The area is subject to frequent deep earthquakes and numerous shallow earthquakes. Earthquake events causing serious structural damage (Modified Mercalli Intensity of VIII) can be expected every 55 - 60 years. Earthquakes cause ground deformation and shaking resulting in structural damage, weakening of foundation materials, and social disruption.

Climate, topography and geology all influence the occurrence of slope instability. In the Marlborough Sounds there are numerous fault zones and rock types that are inherently unstable. Unstable rock types include:

- Patuki Melange;
- Croisilles Melange and
- Grade IIIB and IV schists.

The most significant effects of slope instability are slope failures and ground subsidence.

Coastal processes range from oceanic to enclosed waters, with low wave energy and strong tidal currents. These processes include erosion of beaches, cliff and shoreline retreat, changes to river mouths and inundation of estuarine areas.

Global warming may cause sea levels to rise significantly. Increased sea level could alter coastal processes and increase inundation of low lying coastal and estuarine areas.

Activities which affect coastal processes include:

- Extraction of sediments as aggregates;
- Dredging and dumping;
- Reclamation of tidal areas; and
- Erection of coastal protection structures.

Sustainable coastal management avoids hazards and adopts practices which are sympathetic to the functioning of coastal processes.

Floodable areas include the lowland areas adjacent to the Pelorus and Kaituna Rivers, and within the urban areas of Picton and Waikawa, adjacent to Waitohi Stream and Waikawa Stream respectively. Flooding causes damage to property and can remove land or deposit new material burying existing soils.

Fire hazard relates to fuel type, drought and proximity to settlements. Fire destroys property and severely interrupts ecosystems.

Climatic hazards include windstorms, thunderstorms, intense rainfalls, and major droughts. These events can directly damage property or trigger other forms of natural hazard.

16.3 Objectives and Policies

Objective 1	Management of areas prone to natural hazards to avoid loss of life, and avoid, remedy or mitigate damage to property and infrastructure as a result of the occurrence of natural hazards.
Policy 1.1	Locate new works and structures to avoid their damage from the effects of natural hazards.
Policy 1.2	Establish and maintain protection works designed to avoid, or mitigate the effects of natural hazards including adverse environmental effects, where the benefits outweigh the costs.
Policy 1.3	Define areas at risk from natural hazards, including sea level rise, within a Natural Hazards Register to assist future sustainable management of resources.
Policy 1.4	Consult iwi to identify areas of waahi tapu, and taonga needing protection from the effects of natural hazards, including sea level rise.
Policy 1.5	Provide warnings and emergency response procedures for areas at risk from or affected by natural hazards.
Policy 1.6	Assess potential protection measures for mitigating natural hazards to ensure that in themselves they do not cause adverse environment effects.

Objective 2	Management of activities which could increase the frequency, severity or potential of natural hazards to cause loss of life or damage to property and infrastructure and other aspects of the environment.
Policy 2.1	Locate new works and structures to avoid effects which increase the adverse effects of natural hazards.
Policy 2.2	Avoid activities, including earthworks and vegetation clearance, increasing the risk of occurrence, or potential to cause damage, of natural hazards.

The major concern relating to natural hazards is the loss of life. Other concerns relate to damage or destruction of property and infrastructure, loss of amenity values, restriction of public access, and interruption to land and water ecosystems.

In determining whether protection works will be established, Council will consider: risk to human life; value of resources including value to tangata whenua; landscape and heritage values; and costs and benefits, effectiveness and value of such works.

Sustainable management of resources requires consideration of the avoidance of the adverse effects of natural hazards. Where effects cannot be avoided then they should be remedied or mitigated to provide for community health, safety and wellbeing.

16.4 Methods of Implementation

Rules	<p>Planning maps define known natural hazard prone areas.</p> <ul style="list-style-type: none"> a) require assessment of the effects of the location and design of activities and structures on the occurrence of natural hazards in defined natural hazards prone areas; b) facilitate the maintenance of existing protection works and structures designed to avoid the effects of natural hazards; and c) require assessment of non-structural means of avoiding the effects of natural hazards or mitigating them when considering applications for protection works and structures.
Designation	Floodways will be designated to enable control of activities that may adversely affect the hydraulic efficiency of floodways.
Research	<p>Monitor scientific findings to assess restrictions on activities relative to the occurrence of natural hazards, including sea level rise.</p> <p>Council will re-assess the information contained in the Natural Hazard maps within five years of the Plan becoming operative and will amend the maps if required.</p>
Information	Maintain a Natural Hazard Register to co-ordinate all data relating to the occurrence of natural hazards.

Council Activities	Maintain emergency response procedures in association with Civil Defence. Maintain protection works and structures, including amenity improvements to existing structures.
Education	Promote community understanding of the effects of natural hazards and means to avoid, remedy or mitigate those effects.

The location of structures and activities in areas where they will be damaged by or increase the effect of natural hazards is not sustainable. Future structures and activities should recognise the likely occurrence of the processes causing natural hazards and have a reduced reliance on protection works. Rules seek to avoid the future demand for protection works and to avoid the effects of known natural hazards.

Information describing the frequency and extent of potential natural hazards is an essential precursor to the community taking appropriate measures to minimise the threat of danger or damage. Information will help the community to become more aware of the effects of their activities on the occurrence of natural hazards. The information on which the hazard areas have been defined in the Plan is contained in a report on 'Natural Processes and Environmental Hazards in the Marlborough Sounds' (Sutherland, Kirk and Bell - October 1992). This report contains reviews of the major hazard areas including diagrams and maps showing known problem areas. Council will continue to build on this knowledge and the Natural Hazards Register will provide an information base detailing the risk of natural hazard occurrence.

A co-ordinated emergency response process will ensure that the community is warned about and is prepared for any known hazard occurrence.

16.5 Anticipated Environmental Results

Implementation of the policies and methods for management relating to natural hazards will result in:

- Future use and development of the resources of the Marlborough Sounds that occurs in sympathy with the natural processes operating in the area and risk from natural hazards is minimised;
- Provision of information defining the risk to all sites from known natural hazards;
- Implementation of emergency response procedures prior to events which avoids loss of life and mitigates damage to property and infrastructure; and
- Protection of identified coastal waahi tapu and taonga.

17.0 Hazardous Substances and Facilities

17.1 Introduction

Hazardous substances are a part of our everyday lives. Activities that use, store or transport a hazardous substance, or which generate hazardous waste include:

- Manufacturing or processing industries (eg; timber treatment, drycleaning, spraypainting, engineering, boat building and repair);
- Rural industries (eg; pest control);
- Domestic activities (eg; household cleaning, house construction, maintenance and repair); and
- Transport related activities (eg; storage, handling and movement of hazardous substances).

Common examples of hazardous substances are: petroleum products such as petrol, diesel, LPG, oils and solvents; household chemicals such as bleaches, pesticides, paints, adhesives and fuels; and chemical products such as acids, alkalis, pesticides and herbicides.

Control of hazardous substances is necessary to manage the risk of adverse effects arising from their inappropriate storage, use, or disposal. Transport of hazardous substances is adequately covered by transport legislation.

The Environmental Risk Management Authority, under the Hazardous Substances and New Organisms Act 1996 is responsible for managing hazardous substances, and their importation and manufacture.

17.2 Issue

Adverse effects on the environment arising from the storage, use, transport and disposal of hazardous substances.

Under the Act the Council has the functions of controlling land use to prevent or mitigate the adverse effects from hazardous substances and controlling discharges of contaminants to land, water or air. This includes planning for disposal sites that receive hazardous wastes and issuing resource consents for discharges to the environment.

In the Plan, the management of hazardous substances focuses on those facilities and activities that use, store or dispose of hazardous substances rather than on the substances themselves. In other words the Plan is concerned with the risks posed by the circumstances surrounding hazardous substances and their use rather than the substances in isolation.

Hazardous substance management depends on the immediate environment being protected, the hazardous substance, and the risks involved. Where the risk and potential consequences are low and cumulative effects are unlikely, then storage, use, transport and disposal is a permitted activity. Where the risks from hazardous substances are greater the activity is managed as either discretionary or prohibited activities.

Activities involving the use of hazardous substances and facilities can contaminate and reduce water quality. Topography, soil type and vegetation can affect the amount of contamination that occurs. Runoff from land can carry contaminants into streams, rivers, aquifers and coastal water. The extensive coastal area of the Marlborough Sounds is particularly vulnerable to contamination from hazardous substances. Groundwater is also at risk of contamination. If not controlled, hazardous substances could cause significant damage to the district's waters.

Many industrial operations and the majority of residential developments are close to coastal water. Many industrial activities are close to residential areas. The quality of the environment and health and safety of the community are at risk from hazardous facilities. Adequate controls for hazardous facilities are needed to ensure community health and safety.

The Plan establishes a management regime that minimises the risk of hazardous substances to the community and the environment.

17.2.1 Objectives and Policies

Objective 1	Avoidance or mitigation of adverse effects on the environment and community health caused by facilities and activities involving the use, and storage of hazardous substances.
Policy 1.1	Locate facilities that store and use hazardous substances so that they do not pose an actual or potential risk to the environment or community health and safety.
Policy 1.2	Avoid the adverse effects resulting from the discharge of hazardous substances to land and water.

The improper release of hazardous substances into the environment presents a major threat to the life-supporting capacity of the environment and community health. Minimising the risks from use is necessary for preventing or mitigating adverse effects on the environment. Definition of this risk occurs through the Hazardous Facility Screening Procedure (see Appendix C, Volume Two) which determines appropriate locations for hazardous facilities.

Important for hazardous facility planning is the avoidance of adverse effects caused by spillage or other accidents. Contingency planning and relevant training are essential to facilitate efficient and co-ordinated emergency responses.

Rural activities may involve discharges of chemicals to land, for example pesticides, herbicides and fertilisers. This discharge may result in chemical residues entering and remaining in water and is of particular concern in the Marlborough Sounds area. The contamination of the marine environment by chemicals and nutrients could have significant effects on activities using the marine environment, for example marine farming and recreational activities.

The use of hazardous substances provides benefits to the community by providing products and services. However, any facilities or activities involving hazardous substances represent a risk. It is important to achieve appropriate environmental protection before accepting the risks and securing the benefits of hazardous substance use.

17.2.2 Methods of Implementation

Assessment	<p>The Council will assess and manage hazardous facilities with a focus on the hazard potential of those facilities and activities that use and store hazardous substances, including the intrinsic properties of the substances themselves. This risk assessment will be based on the combined assessment of the hazard of a substance, its physical form and the manner in which it is used or stored.</p>
Zoning	<p>Zones will appropriately locate activities involving similar levels of risk associated with the use and storage of hazardous substances.</p> <p>Zone based rules define threshold levels for hazardous substance risk and require all hazardous facilities that are permitted activities to comply with performance standards.</p>
Rules	<p>The Hazardous Facility Screening Procedure will be used to assess the risk of from an activity or facility and take taking into account risks associated with the transport of hazardous substances to determine whether the proposal will be permitted or require a consent.</p> <p>The Council will monitor existing facilities to ensure compliance with other relevant legislation. Existing facilities will be subjected to the Hazardous Facility Screening Procedure when they expand or alter their operations. Where it is considered that an existing facility is operating at a level of risk which has or may have a significant adverse effect on the environment, the Council will consider using its enforcement powers under the Act.</p> <p>Conditions will be imposed on resource consents, as appropriate, to take into account relevant standards and Codes of Practice as part of the Hazardous Facility Screening Procedure. Site management plans may be required as a condition of consent. Such plans will put in place measures to reduce the likelihood of accidents occurring while spill contingency or other emergency plans allow the facilitation of efficient and well co-ordinated responses to any accidents.</p> <p>The Plan requires all hazardous facilities that either exceed the threshold effects ratio for the zone or fail to meet the permitted performance standards to be considered as Discretionary Activities.</p>
Monitoring	<p>The Council will maintain a list of all consented users of hazardous substances and facilities as part of the Hazardous Facility Screening Procedure and will monitor changes to their operations or facilities that may pose an increased risk to the environment or community health.</p> <p>The Council will monitor compliance with section 97 of the Hazardous Substances and New Organisms Act 1996 and carry out enforcement functions.</p>

	<p>The Council will monitor hazardous facilities to determine the cumulative effects of activities and ensure they do not create adverse environmental effects or reduce community health.</p>
Agency Cooperation	<p>The Council will cooperate with the Land Transport Safety Authority, New Zealand Police, and Department of Labour to monitor the movement of hazardous substances and to ensure that transportation of hazard substances is undertaken in a safe and efficient manner.</p> <p>The Council will act as a local co-ordinating body for agencies responsible for legislation, guidelines and codes of practice, to ensure that effective management of hazardous substances and facilities occurs.</p> <p>The Council will co-ordinate with Environmental Risk Management Authority to ensure effective management of hazardous substances and facilities.</p>
Consultation	<p>The Council will ensure public participation in any significant decisions involving hazardous substances or facilities which exceed specified threshold levels, fail to meet environmental standards, or pose a significant risk to the community.</p>
Education	<p>The Council will develop an education program to inform users about safe methods for the transport, use, storage and disposal of hazardous substances. The Council will promote knowledge on hazardous substances and facilities, and relevant regulatory controls.</p> <p>The Council will promote a clean production ethic aimed at reducing the quantity and type of hazardous substances used and the risks associated with that use.</p> <p>The Council will undertake education programs in conjunction with other organisations to inform users of hazardous substances about ways of reducing risks and adverse effects caused by hazardous substances and facilities. The Council will also act as a local source for information about hazardous substances.</p> <p>The Council will promote national industrial standards, codes of practice, and guidelines for the management of hazardous facilities to avoid, remedy or mitigate adverse environmental effects.</p>

It is important to distinguish between the hazard and risk posed by the substance. Hazard is defined by the intrinsic properties of the substance, such as flammability or toxicity. Hazard determines what environmental effect the substance is likely to have. Risk is defined by the probability or likelihood of an effect occurring. In other words, risk is a combination of three factors, being the intrinsic hazard of the substance, the manner of use of the substance and the environmental sensitivity to the substance. The hazard is usually fixed while the use and environment can be modified. The manner in which the substance

is stored or handled, and in what quantities can alter the level of risk (i.e. the design of industrial sites and site management practices, safety controls and contingency and emergency provisions and transportation procedures).

The Hazardous Facility Screening Procedure is a tool for determining the status of an activity. Other essential and complementary elements include consents and performance standards for hazardous facilities. Compliance with industrial standards, codes of practice and guidelines, and site management plans will minimise the risks of adverse environmental or community health effects arising from hazardous substances and facilities.

Proposals involving the use, storage, or transportation of hazardous substances that do not meet the standards prescribed in the Plan may still be acceptable given their individual circumstances including the nature of the substance, proposed operational practices, and local environmental conditions. Such proposals will be considered as non complying activities and assessed in terms of the objectives and policies of the Plan and specific criteria for hazardous substances.

Cleaner production and waste minimisation practices will reduce the quantities of hazardous wastes produced by activities using hazardous substances. Improved information and understanding about improvements and cost savings associated with cleaner production systems can reduce the risk associated with hazardous facilities.

One of the most effective ways of achieving safe use of hazardous substances, including agricultural and garden chemicals, is to ensure that users fully understand the adverse effects of misuse and therefore appreciate the use of best operational practices.

Monitoring hazardous facilities, including storage, use and transport of hazardous substances will identify activities that can have adverse effects on the environment or community health. Monitoring can also determine if several hazardous facilities are producing a cumulative adverse effect. Monitoring will reduce the likelihood of dangerous or unauthorised activities which can have adverse effects on the environment or community health.

Promotion of knowledge will enable the community to identify hazardous substances and know how they should be managed to avoid adverse effects on, and risks to, the environment. Community participation is an important element in the assessment of environmental risk. It is important to provide an opportunity for community consultation in respect of proposals that have wide community significance.

17.2.3 Objectives and Policies

Objective 1	Avoidance or mitigation of adverse effects on the environment and community health presented by the disposal of hazardous substances.
Policy 1.1	Facilities for disposal of waste hazardous substances must avoid the discharge of contaminants into the environment which are likely to produce adverse effects.

Waste hazardous substances require careful disposal to avoid adverse effects on the environment. Effects include contaminated sites. Disposal involves a range of technologies including incineration, reprocessing and co-disposal in landfills. None of these options will be available in the Marlborough Sounds area.

The present landfills are not suitable for co-disposal and are to be closed before the year 2000. The Blenheim transfer station accepts some hazardous wastes and in the future some hazardous wastes will also be accepted at other transfer stations.

It is necessary to have information in order to ensure that adverse effects arising from the transport of hazardous wastes can be identified and managed. There is a need for national agreement on requirements for transporting hazardous substances and hazardous substance information systems.

17.2.4 Methods of Implementation

Rules	Rules prohibit the disposal of hazardous wastes in the Marlborough Sounds plan area.
Education	The Council will co-ordinate hazardous waste disposal operations and develop associated management strategies, including fostering a cleaner production ethic and promoting industry based waste management programs.
Incentives	The Council may initiate pick up and disposal programs for unwanted hazardous substances. The Council will provide transfer stations for the collection and temporary storage of hazardous wastes, including domestic hazardous wastes, before they are transported to more appropriate facilities.
Information	The Council will participate in national initiatives to develop compatible inter-regional hazardous waste tracking systems.
Liaison	The Council will co-operate with national and inter-regional initiatives for managing transport of hazardous wastes and developing waste tracking systems.

There are no facilities in the Marlborough Sounds area capable of safely receiving and disposing of hazardous wastes. The Hazardous Substances and New Organisms Act 1996 provides for the development of a nationally co-ordinated hazardous substances tracking system.

17.2.5 Objectives and Policies

Objective 1	Remedying the adverse effects on the environment and community health caused by contamination from past discharges of hazardous substances and avoidance of future contamination of sites.
Policy 1.1	Promote the management of contaminated sites to avoid, remedy or mitigate any adverse environmental effects or risks to community health resulting from the use of the site or discharges from the site.

Policy 1.2	Promote the rehabilitation of contaminated land with effective site control measures, including monitoring, prior to future redevelopment, change of use, or occupation.
-------------------	--

There are a number of known contaminated sites in the Marlborough Sounds resulting from past activities involving the use of hazardous substances. The identification and investigation of all contaminated sites is a priority, along with the establishment of a monitoring programme for the more seriously contaminated sites.

Contaminated sites need to be managed to avoid adverse effects on the environment. This management is especially important before redevelopment takes place. Any clean up activities need to avoid or mitigate any adverse effects on the environment and be appropriate to the end use of the site.

17.2.6 Methods of Implementation

Rules	<p>Rules require site management practices which ensure that risks to the environment and community health are avoided, remedied or mitigated.</p> <p>Resource consent for a discretionary activity will be required before any contaminated site is redeveloped, or the use or occupation of the land changes.</p> <p>The Council will require all users of hazardous substances and producers of hazardous wastes to adopt measures aimed at minimising quantities of waste produced and controlling the adverse effects on the environment of discharges and disposal of any such materials (particularly to avoid creating future contaminated sites).</p>
Guidelines	The Council will promote the use of the Australia and New Zealand Environment and Conservation Council (ANZECC) guidelines for the management of contaminated sites.
Information	<p>The Council will compile a database of contaminated sites and prioritise them in terms of degree of contamination and associated risk to the environment and community health.</p> <p>Risk assessment procedures for identified contaminated sites will be carried out in conjunction with owners and occupiers and other interested parties.</p>
Monitoring	The Council will monitor seriously contaminated sites and determine the need for any special rehabilitation and site control measures.

The establishment of a database listing and ranking contaminated sites is a prerequisite to the management of those sites. Contaminated sites must be managed and cleaned up in a manner that prevents adverse effects on the environment and community health.

Monitoring seriously contaminated sites is a priority for assessing the adverse effects of those sites.

Public consideration and assessment of changes in the use of contaminated sites are necessary to ensure adequate clean up procedures are undertaken. This will ensure that adverse effects of contaminated sites are avoided or mitigated prior to redevelopment.

17.3 Anticipated Environmental Results

Implementation of the policies and methods relating to hazardous substances will result in:

- The avoidance or minimisation of adverse environmental and human health effects and risks associated with the use, storage or transport of hazardous substances;
- A greater public and user understanding of the need for, and risks associated with, hazardous substances and facilities, including the need for safe and effective management practices;
- A reduction in the quantities of waste generated through the adoption of cleaner production methods; and
- Increased knowledge of, and control over, actual and potential contaminated sites in the Marlborough Sounds, including requirements for ongoing monitoring and active cleanup of seriously contaminated land.

18.0 Land Transport

18.1 Introduction

The land transport infrastructure of Marlborough forms a significant component of the physical resources of the District. The network of roads, rail, cycleways, and pedestrian pathways and the movement of vehicles, goods, and people through that network is essential to the District's economic activity and to the convenience and wellbeing of the people of Marlborough. The resource management issues associated with land transport focus on the sustainable management of the physical infrastructure of transport networks, as a resource, rather than on the services that use them and the adverse environmental effects that arise from the network.

The Marlborough Sounds land transport infrastructure is dominated by national networks. The main north - south State Highway, with connections to Nelson and the West Coast, and the South Island main trunk railway line pass through the Marlborough Sounds. There is an extensive network of roads connecting the small outer Sounds settlements. However, the small population and distances mean that these roads carry relatively few vehicles. These networks combine to produce a hierarchy of roads within the land transport infrastructure.

Picton and Havelock are the two port entrances to the District. Picton is the principal gateway to Marlborough and the South Island. Havelock provides a key point of access to the Pelorus and Kenepuru Sounds. A key characteristic of transport in the Sounds is a reliance on water transport because of the large distances between parts of the Sounds and the main towns of Picton and Havelock, and the standard of local roading. Water transportation is addressed in Chapter 19.

Rail has a significant role in freight and passenger movement through the District.

Responsibility for the provision and maintenance of the land transport infrastructure is shared between a number of organisations including:

- Marlborough District Council (for local roads, pedestrian paths and facilities, cycle ways and facilities);
- Transit New Zealand (for the State Highways);
- Tranz Rail Limited (for the main trunk railway and rail yards); and
- Individual land developers (in creating new public and private roads and transport facilities).

Achieving an appropriate mix of land transport infrastructure requires the combined efforts of all agencies.

The safe and efficient transport of people and produce relies on appropriate interaction between land and water modes of transport.

18.2 Issue

The adverse effects from the development, maintenance and use of the transport infrastructure on the resources of the Sounds.

The construction and maintenance of transport infrastructure can cause adverse effects on the environment. The location of new road alignment is often limited by engineering factors but can scar the landscape or cause siltation of waterways. Adverse effects of transport infrastructure need to be considered in relation to community health, safety and wellbeing.

The use of transport infrastructure and transportation activities can give rise to localised adverse effects including: reduced safety; loss of amenity due to noise, dust, and vehicle exhaust emissions; and contamination of resources from surface water run-off from roads, and discharges and spills from vehicles. Effects on the environment also include the global cumulative effect of vehicle emissions on components of the atmosphere and ozone depletion.

There is considerable investment in the land transport infrastructure in the Sounds. The infrastructure includes roads, railway lines and facilities, pedestrian pathways and facilities, street lighting, vehicle parking facilities, and directional and safety signage. It is important to the wellbeing of the community that this infrastructure is able to function effectively.

It is important that extensions are compatible with the existing infrastructure and have consistent design, construction and maintenance standards. Extensions to the roading network that unnecessarily duplicate existing roads or which create intersections with difficult safety conditions will not be compatible with the sustainable management of the transport infrastructure.

Provision for vehicle parking is important to the sustainable management of the transport infrastructure. It is important to achieve a balance between parking clear of moving vehicles and the shared use of roads by moving and parked vehicles. In general, it is expected that on-site parking will accommodate the likely demand for parking resulting from activities on the site.

The use of public passenger transport is not a feature of land transport in the Sounds. Most people use private vehicles and boats. Taxis and buses are important in Picton and Havelock. It is important to ensure that the land transport infrastructure continues to accommodate public passenger transport by making provision for taxi and bus stands, and shelters.

The transport of primary products can place strain on the capacity of the local roading network and create conflicts with other users of the often narrow, metalled roads. Expansion in the forestry and shellfish industries give rise to particular needs for access, loading and storage areas close to the transport network. Changes in long-haul freight transport patterns and vehicles have also given rise to demands for new facilities in the transport infrastructure such as overnight parking areas for heavy goods vehicles, and stock effluent disposal facilities.

Accessibility is a key factor in determining whether land should be subdivided and settled. The provision of land transport, particularly roading, strongly influences the demand for residential development throughout the Sounds. Areas which are conveniently accessible by roads experience strong pressure for further subdivision and residential development. More remote areas, with no or less convenient road access, experience less pressure for development. Managing the location of new roads and road upgrading is one factor of importance in managing the location and intensity of residential development throughout the Sounds.

Roads, as public spaces, are used for a variety of purposes. The Plan recognises and provides for a variety of community uses of roads.

It is important that the transport infrastructure is able to adapt. New types of vehicles and changing social patterns may give rise to new transport facilities. The growth of cycling for recreation and transport means that there is an increasing need to provide cycle lanes on existing and new roads. The popularity of the Sounds for recreational boating creates demand for vehicle and boat trailer parking at launching areas. The Plan should ensure that such change within the transport infrastructure is able to be accommodated provided that adverse effects are avoided, remedied or mitigated.

18.2.1 Objectives and Policies

Objective 1	Development and maintenance of the land transport infrastructure in a way that avoids, remedies or mitigates adverse effects on the Sounds environment, or that reduce the health and safety, and wellbeing of the community of the Sounds.
Policy 1.1	Avoid, remedy, or mitigate adverse effects from the land transport infrastructure on the amenity values and natural and physical resources of the Sounds.
Policy 1.2	Ensure all new roads and extensions to existing roads are consistent with the District roading hierarchy in the Marlborough Regional Land Transport Strategy, and that all subdivisions and developments of land incorporate provision for the connection of future stages of development to existing roads consistent with the roading hierarchy.
Policy 1.3	Require that all new or extended roads are appropriate and necessary to provide safe and convenient access; and will avoid future inappropriate subdivision and development in the coastal environment.
Policy 1.4	Maintain amenity values by encouraging the use of national and arterial roads by high volumes of traffic and heavy vehicles; and discourage high volume and heavy traffic use of collector and distributor roads which serve rural areas, or pass through residential areas.
Policy 1.5	Require all new roads to be designed and constructed to standards to mitigate adverse environmental effects and enable safety and efficiency of vehicle movement.
Policy 1.6	Require all crossing places connecting sites to public roads to be constructed between the kerb line and the property boundary in such a way as to minimise any adverse effect on the safety or convenience of users of public footpaths.
Policy 1.7	Ensure that buildings in commercial areas, located adjacent to pedestrian footpaths, provide overhead shelter for users of those footpaths (e.g. overhead verandahs).

Policy 1.8	Enable use of public roads for a range of community activities.
Policy 1.9	Ensure that the cost of new roading, which is needed to provide access to new subdivision or development, is met by the developer, and that any necessary upgrading of existing roads is contributed to by the developer.
Policy 1.10	Provide for the discharge of non point source stormwater to land from the roading network in areas where no reticulated stormwater system is available and where such a discharge will not adversely effect the receiving environment.

These policies recognise the adverse effects that can be caused by the transport infrastructure and transport activities and intend that adverse effects be avoided, remedied or mitigated as appropriate. Construction and maintenance of the land transport network will be subject to the same procedures as similar land use activities in order to avoid, remedy, and mitigate adverse effects on the environment.

The Council has prepared a Regional Land Transport Strategy which defines the hierarchy of significant roads within the District. The roading hierarchy represents the intended status and function of roads and determines their design and speed characteristics. It would be inappropriate for new roads to be incompatible with the hierarchy. Future subdivision and development of land serviced by roads should have those roads consistent with the roading hierarchy.

Assessment of the necessity, appropriateness, and efficiency of all new roads is an important consideration in achieving sustainable management of the roading infrastructure.

Road surface and gradient are particularly important to road safety and environmental effects including discharge of water and contaminants. Where higher volumes of traffic are expected, on urban roads, road surfaces should be hard-surfaced for long-term wear and tear and ease of maintenance. Rural roads which carry lesser volumes of traffic will not always warrant the cost of hard surface finish at construction. However, maintenance of road surfaces needs to avoid, remedy or mitigate any adverse effects.

As a matter of public safety and convenience all roads, except those which are very short no-exit roads, should be capable of carrying two lanes of traffic. The design width of a road will depend on its status within the roading hierarchy but must be sufficient to accommodate the services and facilities usually expected within roads. Roads provide the servicing trenches for several essential public services. In some circumstances facilities such as footpath(s), cycle lanes, vehicle parking, and landscaped berms may be appropriate. It is important that the road's future function be fully understood at the time of its design and that it be sufficiently wide to accommodate that function.

In the interests of safety, the Council expects cul-de-sacs to have sufficient dimension to enable small vehicles and moderate sized trucks to enter and leave in a forward direction. It is considered that a larger design dimension to permit heavy vehicles to enter and leave in a forward direction would be unreasonable because heavy vehicles are expected to be less frequent users of cul-de-sacs except in industrial and commercial zones.

Roads are public spaces heavily used by pedestrians and cyclists, as well as by vehicles. Roads have different safety characteristics at night compared to the daytime. It is important that roads be designed to maximise personal safety of all users. Street lighting and separation of road users enhances safety for all users of roads.

Access along public roads is unrestricted and provides wide community benefit. That community-wide benefit is reflected in the funding of road maintenance from Council rates. Where new roads are extended specifically to connect new subdivisions or developments to the existing road network, the capital cost of that construction should be met by the principal beneficiary of the access being: the subdivider or developer.

Public roads will be designed and maintained to enable their use by public passenger transport services and the Council will continue to provide facilities where demand necessitates.

The current state of vehicle technology in New Zealand means that there are minimum levels of noise and vehicle emissions that must be expected from the operation of vehicles on roads. There is little the Plan can do to modify those conditions. The Plan can control the extent of these effects by adopting a roading hierarchy which encourages higher volumes of traffic and heavy traffic movements on certain routes and discourages them on others.

18.3 Issue

The adverse effects of activities on the sustainable management of the land transport infrastructure.

Land use activities can have adverse effects on the safe and efficient operation of the land transport network. Adverse effects on the land transport infrastructure from activities include inappropriately sited entrances that restrict site lines for traffic; road-side stalls that distract and disrupt traffic flows; buildings and trees that shade roads and contribute to ice and reduced vision; activities generating high vehicle movements that increase the chance of intersection accidents; night lighting and glare from buildings that reduce visibility of road users; vehicle loading and delivery that interferes with pedestrians' free and safe use of footpaths; advertising signs that distract motorists; and activities that demand off site vehicle parking cause congestion on adjacent roads. Maintaining safe rail crossings is an issue for the few rail crossings within Picton.

One of the issues that has not been resolved is the question of how to fund such road upgrading works and whether contributions should be sought from the industry sectors which place particular wear and tear demands on the roads. No conclusion has been reached on this issue nation-wide and research is continuing by a number of agencies into the appropriateness of such contributions.

Discharges and accidental spills from vehicles onto roads create slippery or hazardous road surface for other road users and are an environmental and safety issue. The enforcement provisions of other transport legislation are available to control these incidents.

18.3.1 Objectives and Policies

Objective 1	That any adverse effects of activities on the sustainable management of the land transport infrastructure be avoided, remedied or mitigated.
Policy 1.1	Ensure that subdivision and development of land adjacent to public roads does not compromise the safe or efficient flow of traffic on those roads through increased traffic volumes, kerb-side vehicle parking, or location of access points and intersections.
Policy 1.2	Provide for traffic safety and directional signs and road marking on or adjacent to all road and rail facilities.
Policy 1.3	Ensure that buildings, vegetation and activities do not reduce clear sight lines for trains and road vehicles at level rail crossings; or for vehicles at road intersections.
Policy 1.4	Avoid or mitigate any adverse effects from activities for any road or rail users, including glare, inappropriate direct lighting, smoke, discharges and shading onto the road, or distractions.
Policy 1.5	Ensure minimum distraction to road users by controlling the location, design, and extent of road side advertising signs, requiring the signs are located within the site to which the sign relates, and avoiding a proliferation of road-side advertising signs.
Policy 1.6	Ensure that activities that generate demand for parked vehicles and which involve loading of vehicles provide space within their site to accommodate manoeuvring, loading and parking of vehicles without creating congestion or conflicts with moving vehicles or with pedestrians on adjacent roads.
Policy 1.7	Require vehicle crossing places and vehicle entrances from public roads to be constructed and maintained to standards appropriate to the circumstances of traffic volume, pedestrian movement, and local traffic speed.
Policy 1.8	Require appropriate facilities for vehicle and boat trailer parking and loading of vehicles and storage of goods at public wharf and boat launching facilities throughout the Sounds.
Policy 1.9	Require new urban subdivisions and developments to incorporate facilities to increase the safety and efficiency of non-motorised transport users and particularly require: <ul style="list-style-type: none"> • Footpaths or access ways intended to be used by both cyclists and pedestrians, and encourage their separation for safety reasons; • Provision for cycle traffic within road carriageways in such a way that lane width, design, and surface finish are adequate to safely accommodate both motorised vehicles and cycles;

	<ul style="list-style-type: none"> • Pedestrian access routes connecting residential areas, schools, shopping centres, recreation reserves, and public transport collection points and terminals where appropriate; and • Pedestrian footpaths in urban areas: <ul style="list-style-type: none"> • Adjacent to but separated from vehicle carriageways and private property by appropriate safety structures including fences, where appropriate; • Constructed with permanent hard surfaces, such as asphalt or concrete; • Constructed to minimise any surface water flow that would be an impediment or hazard to pedestrians; • Pram and wheelchair crossings located at convenient positions in relation to intersections; • Longitudinal profile and surface finish not unduly disrupted by vehicle crossings; and • Gradients not exceeding 1 in 6 except in extraordinary circumstances where steps should be provided.
Policy 1.10	Where proposed allotments have access from a public road require that access to be suitable for the safe and efficient carriage of vehicles, cyclists, and pedestrians.

The Council has a responsibility to manage the adverse effects of activities including effects on the land transport infrastructure. Council seeks to ensure that activities are appropriate to the speed and function of adjoining roads. This may mean that in some locations, for reasons of transport safety and efficiency, activities that have specific effects on the transport infrastructure will need to be modified or even prevented from occurring.

It is a normal expectation, in today's society, that households will use motor vehicles. The Council considers that it is reasonable to expect that new allotments will be provided with vehicle access from public roads, except allotments adjoining the coastal marine area. That access should be provided between the road kerb line and the property boundary and should be constructed in a way that does not disrupt the safety or convenience of pedestrian use of footpaths.

The Council is committed to minimising accidents at rail crossings and road intersections. The design of all future road intersections will therefore be required to incorporate safe sight distances appropriate to the local environment and location within the roading hierarchy.

Road marking and traffic signs are an important component of the transport infrastructure. The Plan provides for essential traffic safety and directional signs and road names.

Public roads provide a certain amount of kerb-side vehicle parking. It is important to maintain vehicle carriageways for the free movement of vehicles and cyclists and to ensure that parked vehicles do not compromise pedestrian safety. Where activities give rise to demand for vehicle parking they will be

expected to make provision, clear of public roads, for that parking. Public roads will continue to be available for supplementary parking for extraordinary events and, particularly in commercial areas, where kerb-side parking maximises convenience for visitors to premises without compromising road safety.

18.4 Methods of Implementation

Rules	<p>The Plan adopts the current District roading hierarchy as the determinant of the status and function of all roads in the Sounds.</p> <p>Rules are included that:</p> <ul style="list-style-type: none">• Require all new allotments and development sites to be connected to a public road by a suitable vehicle access way formed to a standard appropriate to the rural or urban circumstances, except allotments with their only access to the coast;• Permit essential road markings and signs subject to standards controlling their size and location;• Control the location, size, and design of advertising signs visible from transport routes;• Set standards for activities to avoid, remedy, or mitigate adverse effects including effects on transport routes (such as glare, night lighting, smoke and dust discharges, liquid discharges, and shading from tall vegetation);• Control building location to maintain clear sight lines to all intersections and rail level crossings;• Specify:<ul style="list-style-type: none">• Standards to be applied to the design and construction of public roads, private roads and access ways; and• Provisions required for non-vehicle land transport including facilities for pedestrians, cyclists, and people with disabilities.• Where an existing road is extended or upgraded to serve a subdivision the Council will require the subdivider, as a condition of subdivision consent, to pay the full cost or contribute to the cost of the extension or upgrading in accordance with the level of benefit the upgraded road provides for the subdivision compared with other road users;• Amount of on-site vehicle parking required in association with land use activities;• Requirements for loading and access facilities required for activities which involve loading or delivery vehicles; and• Standards for the construction and maintenance of vehicle crossings which seek to maintain public safety.
-------	---

	<p>The Plan provides for all public roads and parking areas as designated public works and will enable usual works and activities associated with roads within their boundaries.</p> <p>The Plan recognises designated railway lines and rail facilities.</p> <p>Proposed subdivisions and developments which create new roads or access ways will be assessed in terms of the objectives and policies of the Plan and will be required to comply with the specified standards. Where applications for resource consent are required, conditions may be imposed to ensure adequate provision for all forms of land transport including vehicles, pedestrians, cyclists, and persons with disabilities.</p> <p>All proposed extensions to the physical transport infrastructure will be assessed in terms of the Plan’s policies relating to protection of the qualities of natural and physical resources (including water quality, land disturbance, landscape quality, protection of archaeological and historic sites).</p> <p>Transportation activities are subject to the Plan’s rules relating to environmental effects, including discharges to land, water, and air.</p> <p>Rules make provision for point source and non point discharge of stormwater.</p>
Annual Plan	<p>The Council will continue to fund capital works and maintenance of land transport infrastructure as needs dictate throughout the Sounds.</p>
Code of Practice	<p>The Council has developed a Code of Practice for Subdivision and Land Development which serves as a practical guideline for the construction of roads and other services infrastructure. Compliance with the construction methods stated in the Code will be accepted as compliance with the standards specified in the Plan.</p>
Other	<p>The Council will continue to maintain and extend the network of pedestrian and cycle routes and facilities throughout the Sounds.</p> <p>The Council will continue to work with other agencies, notably Department of Conservation, in maintaining and upgrading the network of recreational walkways throughout the Sounds.</p> <p>The Council will continue to maintain and upgrade facilities for cyclists on existing roads and will continue to work with Transit New Zealand to upgrade facilities and safety for cyclists on the State Highways.</p> <p>The Council will work with New Zealand Police (Traffic Safety Service) to encourage heavy vehicles to use the national and arterial routes indicated in the roading hierarchy.</p> <p>The Council will seek, through appropriate road signage and road speed environment, to ensure that high volumes of traffic use the national and arterial routes indicated in the roading hierarchy in preference to collector and distributor routes.</p>

	<p>The Council will liaise with Tranz Rail Limited in relation to issues and activities having an adverse effect on the rail network.</p>
Liaison	<p>The Council will continue to liaise with Central Government in terms of national initiatives to monitor and reduce overall emissions affecting the atmosphere and the Government’s commitment to reduce carbon emissions by the year 2000.</p> <p>The Council will forward copies of resource consents and subdivisions of land adjacent to state highways to Transit New Zealand to ensure that any adverse effects on the safe and efficient operation of the state highway network are able to be identified and avoided, remedied, or mitigated as appropriate using either the Resource Management Act 1991 or the Transit New Zealand Act 1989.</p> <p>The Council will forward copies of resource consents and subdivisions of land adjacent to the Main Trunk Railway Line to Tranz Rail Limited to ensure that any adverse effects on the safe and efficient operation of the railway line are able to be identified and avoided, remedied, or mitigated as appropriate using the Resource Management Act.</p> <p>The Council intends to continue to work with New Zealand Police Traffic Safety Service, transport operators and Transit New Zealand to minimise the incidence of accidental spillage onto roads.</p>

The Council is the agency with primary responsibility for the district’s road infrastructure, including facilities for pedestrians and cyclists. Changes to the road network will occur primarily through new subdivision and development. Given the importance of land transport infrastructure to the community, Plan rules and resource consent applications are considered to be the only way to ensure appropriate location and alignment of new roads and to ensure consistent high standards in the design and construction of new roads and other transport infrastructure.

Designation of public works including transport infrastructure and facilities is a method available under the Act. The Council will consider notices of proposed new designated transport works in terms of the objectives and policies of the Plan.

The Plan specifies the standards to be met and subdividers and developers can employ whatever methods are appropriate to meet those standards. The Council is able to offer the Code of Practice for Subdivision and Land Development as a means of compliance with specified standards.

The Council will continue, in association with other agencies, to improve infrastructure and facilities for pedestrians and cyclists and public transport passengers and will continue to maintain and improve the safety and efficiency of the road network.

The Plan recognises existing roads through designations. New and extended roads will be considered on their merits as new designations and be assessed in terms of the policies of the Plan relating to environmental quality.

The Plan adopts the regional roading hierarchy and accepts a certain level of effects from transportation activities along national and arterial routes. It will be the non-Plan initiatives of the Council and other agencies which will encourage traffic to use appropriate routes within the hierarchy.

The Council acknowledges the Government's commitment to reducing overall carbon emissions to the atmosphere and acknowledges the significant contribution to emissions made by vehicles. The reduction of these emissions relies on a co-ordinated national strategy, rather than piecemeal initiatives of individual authorities. The Council will therefore remain in touch with the development of any national strategy and is prepared to become involved with initiatives and programs as they are developed.

The Plan is considered to be the most appropriate and effective means of controlling the adverse effects of activities on and from the transport infrastructure and activities. In the case of district roads, the Council is able to assess the likely effects of activities. The Council will, in the case of state highways, recognise Transit New Zealand's role and interest in maintaining safe and efficient highways and will ensure that Transit New Zealand is aware of proposed activities likely to affect the highway. Transit New Zealand has powers under the Transit New Zealand Act 1989 to control the location and design of state highway crossings and remove trees shading roads. Remedies under this legislation should be used where appropriate to control adverse effects.

Transit New Zealand has produced a guideline 'Transit New Zealand Planning Policy Manual SP/M001, December 1989' which is a useful reference when considering the effects of land use activities adjacent to highways. The Council will continue to use this document as a reference when considering applications for resource consent which have implications for the land transport infrastructure.

18.5 Anticipated Environmental Results

Implementation of the policies and methods for land transport will result in:

- A land transport system capable of safely and efficiently moving people, goods and vehicles, where practical, throughout the Sounds;
- Minimal adverse effects on the natural and physical resources, the amenities of the environment and the landscape of the Sounds resulting from the construction and maintenance of the land transport infrastructure and operation of transport activities; and
- Minimal interference, caused by land use activities, to the safe and efficient movement of people, goods and vehicles throughout the land transport networks of the Sounds.

19.0 Water Transportation

19.1 Introduction

The waters of the Sounds are of strategic significance in terms of water transportation. They provide a very important link between the North and South Islands of New Zealand, particularly through the inter-island ferry operations. In addition, they form an integral part of the overall transportation network of the Marlborough Sounds area.

The working nature of the Sounds and the restrictive nature of vehicular access means that many activities, including marine farming, forestry, farming and residential activities are reliant on water transportation as the primary or most economic way of getting around or moving goods. The waters are also used for a diverse range of recreational and tourist purposes.

A number of different types of water transportation take place or are likely to take place in the future, within the Marlborough Sounds. They include: The inter-island ferry link between Wellington and Picton (including the operation of this by high speed ferries); freight shipping associated with the Port of Picton and exports/imports to Marlborough/New Zealand; transportation of primary produce of the Sounds such as logs and livestock; commercial fishing boats; charter boats; transportation to and from residences; and, extensive recreational boating.

The requirements for the various types of water transportation on the coastal marine area vary considerably. Likewise the effects which they create differ among the various forms of transportation.

The safe and efficient transport of people and produce relies upon appropriate interaction between water and land modes of transport.

19.2 Issue

The need to:

- Recognise and provide for the different types of water transport;
- Manage the adverse effects of water transportation; and
- Provide for the maintenance and enhancement of navigational safety.

These issues relate closely to Policy 7.1.19 of the Marlborough Regional Policy Statement, which in part, is given effect to by the Plan. *“Enable the safe and efficient operation of water transport systems within Marlborough consistent with the duty to avoid, remedy or mitigate adverse environmental effects.”*

In dealing with water transportation, in particular, maintaining or ensuring navigational safety, it is important to recognise other relevant agencies and legislation. In doing this, the Plan can clearly focus on those matters over which the Marlborough District Council has jurisdiction over under the Act.

The Maritime Safety Authority of New Zealand under the Maritime Transport Act 1994 oversees all maritime safety and is responsible for both maritime safety and marine environment protection beyond the 12 mile limit.

The Council is responsible for marine environment protection within the 12 mile territorial limit under the Resource Management Act 1991. This responsibility is essentially controlling pollution from ships and offshore installations as regulated by the Resource Management (Marine Pollution) Regulations 1998.

In addition, under the Maritime Transport Act 1994, the Marlborough District Council, as a unitary authority, is responsible for oil spill management and response within the 12 mile limit.

Navigation and safety within the harbour limits is the responsibility of the Marlborough District Council as a harbour authority under the Harbours Act 1950. These functions are carried out by the Council's Harbourmaster under Harbour Bylaws and General Harbour Regulations. These functions will inevitably overlap at times.

The role of Council is clearly very important in the management of water transport in the Sounds.

With regard to navigation, the main function of the Plan is to ensure that activities in the coastal marine area, when allowed either directly by the Plan or by a resource consent, do not adversely affect navigational safety. The inappropriate siting of a structure may have an effect on the ability of vessels travelling in that area to navigate safely. Some control needs to be exercised over the exact location of structures in relation to important water transportation routes and other structures.

Managing the environmental effects of water transportation is the other main function of the Plan in relation to this activity. That is, environmental effects outside of those controlled directly by regulations under the Act (e.g. pollution from ships - explained above). Water transportation is a very broad reaching activity which has a number of interconnections with other activities. For example, the need for log barging and log barging sites on the foreshore has a direct link with forestry activity in the Sounds; similarly, jetties - which are an essential part of the water transportation infrastructure - relate very closely to Sounds residential development and subdivision on the adjacent land. Generally, these matters will be dealt with at source, rather than in isolation under this chapter of the Plan.

In addition, there have been a range of adverse environmental effects experienced from ship generated waves and speed, through the operation of fast and large ships within Tory Channel and Queen Charlotte Sound, in particular. While some aspects of their operation are dealt with in this chapter, a more comprehensive policy framework addresses the issues surrounding ship-generated waves and speed at 9.5 of the Coastal Marine chapter.

Finally, water transportation needs to be provided for in a way which is compatible with other activities which take place in the coastal marine environment. This will involve the prioritising of some forms of water transportation in some areas of the Sounds and thus limiting them from other areas.

19.3 Objectives and Policies

Objective 1	Safe, efficient and sustainably managed water transport systems in a manner that avoids, remedies and mitigates adverse effects.
Policy 1.1	Avoid, remedy or mitigate the adverse effects of activities and structures on navigation and safety, within the coastal marine area.
Policy 1.2	Ensure land based activities and subdivision do not adversely impact on the safety and efficiency of water transportation in the Sounds.
Policy 1.3	Avoid, remedy or mitigate the adverse effects of water transport activities on the natural and physical resources of the Sounds.
Policy 1.4	Achieve an appropriate balance between water transportation and other users of the coastal marine area.
Policy 1.5	Identify and enable the use of water transport corridors which form a significant part of the transport network.
Policy 1.6	Provide for surface water transportation activities which do not have a significant adverse effect on the coastal environment.
Policy 1.7	Recognise and allow for those structures, facilities, coastal access and appropriate loading sites where no adequate land transportation is available to serve an area.
Policy 1.7	Recognise the following jetties and landing areas as necessary community/commercial landing areas: Oyster Bay (Port Underwood), Elaine Bay (Tennyson Inlet), Okiwi Bay (Croisilles Harbour), Elmslie Bay (French Pass), Kapowai Bay (d'Urville Island) and Portage.
Policy 1.8	Avoid the adverse effects of transporting forestry produce through water by using barges or other vessels rather than rafting techniques.

The policies are designed to manage the effects of nearby activities on the water transportation network. Likewise, the policies recognise the adverse effects that can be caused by water transport activities and intend that these effects can be avoided, remedied or mitigated. Policy 19.3.1.3 states the need to avoid, remedy or mitigate adverse environmental effects brought about by water transportation activities. It is intended that this be applied to the specific environment as appropriate. For example, Tory Channel is recognised as a transportation route where a certain level of effect is expected and can be withstood. Therefore adverse effects from water transportation here should be mitigated, or where possible, remedied.

Policies 19.3.1.7 and 19.3.1.8 recognise those facilities (such as jetties and community landing areas) which are essential to the transportation network of the Marlborough Sounds.

The New Zealand Coastal Policy Statement Policy 3.3.1 requires that when classifying activities in the Plan the Council needs to apply a precautionary approach where there is a relative lack of understanding about coastal processes and the effects of activities.

19.4 Methods of Implementation

Area Identification	<p>Tory Channel and part of Queen Charlotte Sound have been identified as a National Transportation Route -see Volume Three. The National Transportation Route is located in Tory Channel (between East and West Head) and extends into inner Queen Charlotte Sound (between West Head, Ruakaka Bay, and a point southwest of Kaitapeha Bay) to the Port of Picton (excluding Grove Arm).</p> <p>Queen Charlotte Sound (excluding the National Transportation Route) has also been defined as being part of an established shipping route.</p>
Rules	<p>Rules relating to the use of surface waters by ships apply to Queen Charlotte Sound and Tory Channel. The use of surface waters in these areas is subject to maximum speed limits and for controlled activities, a maximum wave energy limit as well.</p> <p>The areas to which speed limits apply are defined in Volume Three Maps.</p> <p>Other forms of water transportation and shipping in other areas of the Sounds are provided for as of right.</p>
Other Legislation	<p>Navigation and public safety within the harbour limits is also the responsibility of the Council as a harbour authority. The Council's Harbourmaster, under Harbour Bylaws, the Navigation Bylaw 2000, the Maritime Transport Act and associated Maritime Rules, (or any successor to the above bylaws or regulations) carries out these functions. Harbour bylaws may impose additional constraints on speed e.g. the 5 knot harbour speed limit.</p>
Education	<p>Encourage the use of barging, in reference to land transport, to transport forest produce from the Sounds area.</p>
Monitoring	<p>The Council will monitor the effects of permitted and consented activities in the coastal marine area to: determine the effectiveness of plan policies and rules; assess compliance with consent conditions; and promote sustainable resource management.</p>

Controls are necessary to ensure efficient, safe and environmentally sustained water transportation, in the Marlborough Sounds.

19.5 Anticipated Environmental Results

Implementation of the policies and methods for water transportation will result in:

- The maintenance of navigational safety throughout the Sounds;
- The adverse environmental effects of water transportation being avoided, remedied or mitigated; and
- A water transportation system capable of safely and efficiently moving people and goods.

20.0 Utilities

20.1 Introduction

Utilities form an essential part of community infrastructure. Utilities must be maintained and developed in order to contribute to the health and safety, and social, cultural and economic wellbeing of the community. Most communities are unsustainable without the provision of water supply, drainage, sewage disposal, energy and communications. Reticulated provision of essential utilities enhances the efficiency of use of natural and physical resources, and enables consistent management of adverse environmental effects of human settlement. While providing utilities there is still a need to avoid, remedy or mitigate adverse effects.

Utilities include:

- Energy, electricity lines, cables, pylons, receivers, transmitters, substations;
- Telecommunication and radio communication, lines, cables, masts, antennas, dishes, aerials, microwave towers, telephone booths;
- Water collection and distribution structures, water supply catchments, water pipes, open drains, irrigation channels, stock water races, reservoirs, treatment plants;
- Stormwater collection and removal facilities, pipes, pumping stations, treatment plants, ponds;
- Sewage, collection structures, pipes, pumping stations, treatment plants, ponds;
- Air, land and water navigation aids and beacons;
- Meteorological networks;
- Trig stations and survey marks;
- Street lighting structures and traffic direction and control devices;
- Roads; and
- Rail lines.

20.2 Issue

Adverse environmental effects resulting from the establishment, maintenance and operation of utility networks necessary to sustain communities.

There are three main reasons why particular provision is being made for utilities. These reasons are:

- Utility networks provide services, such as water and electricity, that are essential to the health and safety of the community;
- Reticulated and integrated utility provision is essential to avoid cumulative adverse effects of settlements on the environment; and
- Utility networks require an integrated and comprehensive infrastructure which treats them as whole units rather than addressing their individual parts.

The maintenance and development of utility networks can have adverse land stability, water quality and visual effects. Some utility network structures, such as transmitters and masts, need to be sited in prominent positions in the landscape in order to fulfill their function. The essential nature of utility services, the specificity of site suitability, and the adverse effects of their prominence all need to be taken into consideration.

Adverse visual effects tend to be the most obvious and persistent while land disturbance and adverse water quality effects are generally related to construction and maintenance and tend to be short-term. Other adverse effects can include noise, electro-magnetic radiation and interference between similar electrical and telecommunication equipment.

20.3 Objectives and Policies

Objective 1	The continued operation, maintenance and development of essential utility networks necessary to sustain people and communities in the Plan area.
Policy 1.1	Enable utility operators to maintain and develop reticulated utility networks throughout the Plan area.
Policy 1.2	Enable individuals to contribute to or provide their own utility needs in appropriate areas.
Policy 1.3	Ensure that utility infrastructure is programmed to have capacity to accommodate future developments of serviced settlements.
Policy 1.4	Ensure Plan provision for sustainable management of utilities and planning certainty for utility operators.
Policy 1.5	Enable buildings, structures and equipment necessary or ancillary to utility networks to be established throughout the Plan area.
Policy 1.6	Provide a fair and reasonable means of financing extension of community utility networks without placing an unfair burden on the general community, which may include total funding by the developer.
Policy 1.7	Assess proposals for new utilities by acknowledging the necessary roles, and the locational and operational constraints they experience.
Objective 2	Establishment and operation of utility networks in a way that avoids, remedies and mitigates the adverse effects of those networks on the environment.
Policy 2.1	Require use of construction and maintenance practices, associated with utility management, which avoid, remedy and mitigate land disturbance, including disturbance of archeological sites.
Policy 2.2	Ensure that utility network construction, maintenance and operation avoids adverse effects on water quality.

Policy 2.3	Enable the provision of individual water supplies and electricity generation where appropriate to supplement services to rural households.
Policy 2.4	Maintain visual amenity by avoiding or mitigating the potential adverse visual effects of utility network structures.
Policy 2.5	Where appropriate, require utility networks to be placed underground in urban areas and areas of identified landscape significance.
Policy 2.6	Promote the establishment of utilities in locations in such a way as to not adversely affect any known natural hazard; and to minimise the risk of damage to the utility network from any natural hazard.
Policy 2.7	Co-locate structures and ancillary equipment where practicable.

As settlement continues to develop in the Sounds there is continued demand for utilities. The provision of utilities as networks avoids cumulative effects of individual settlements providing their own services. To enable the sustainable management of utility networks as a resource, operators of those networks require consideration of the demands for and provision of services at the earliest possible time. These policies seek to ensure early consideration and provision of utilities and thereby avoid cumulative effects of provision of similar services by individual communities.

The establishment of utility networks can have adverse effects on resources and amenities, and defined areas of special interest. Policies seek to ensure that the construction and maintenance of utility networks will not have adverse effects on identified areas prone to natural hazards, or areas with ecological or landscape value.

20.4 Methods of Implementation

Rules	<p>Rules provide for utility networks as Permitted Activities, subject to standards and terms where there are minor adverse environmental effects. The placement of equipment underground and in or alongside road carriageways reduces likely disruption from natural hazards and long-term visual effects, and minimises land disturbance.</p> <p>Plan rules require special consideration for the location and construction of utilities in areas of identified special interest including natural hazard prone, and ecological and landscape value areas.</p>
Other Statutory Documents	The Annual Plan provides a vehicle for setting priorities for provision of Council operated utility networks.
Information/ Codes of Practice	Most Utility Operators conduct their operations according to industry-based codes of practice. Landscape and screening guidelines are often included in these codes.

	The Marlborough Code of Practice for Subdivision and Land Development establishes a means of complying with the Plan's requirements.
Designation Process	The Plan recognises and provides for designations established by Utility Operators.
Liaison	The Council will liaise with Utility Operators to ensure continued provision of utility network services throughout the Marlborough Sounds area.
Monitoring	The Council monitoring of compliance with resource consent conditions and the results of State of Environment Monitoring will provide feedback on the adverse effects of utilities. Provisions built into industry-based codes of practices for Utility Operators specify monitoring requirements. The incidence of public health issues relating to utility networks will indicate the effectiveness of the management.
Information/ Advocacy	Energy and water conservation devices and systems will be promoted.
Other Legislation	The Council will continue to administer the requirements of the Building Act 1991 relating to aspects of utility provision including water supply, drainage, waste disposal and electricity.

Plan rules enable utility operators to sustainably manage their structures, buildings and facilities provided adverse effects are avoided, remedied or mitigated. The health and safety, and wellbeing of the community is dependant on the services provided by utility networks. However, the provision of these services should avoid, remedy or mitigate adverse effects on amenity values or the environment.

There is a continuing need for consultation and exchange on information relating to the operation and maintenance of utility networks. Utility Operators, customers and the Council all need to remain aware of the many statutes, controls and guidelines relating to the provision of utility services.

20.5 Anticipated Environmental Results

Implementation of the policies and methods for the management of utilities will result in:

- Sustainable utility networks which operate without significant adverse environmental effects; and
- Small settlements with sustainably managed community-based utility services.

21.0 Outdoor Advertising

21.1 Introduction

The purpose of outdoor advertising is to provide information to the general public and attract business. Information is conveyed for a number of purposes which include: identifying properties; giving notice of forthcoming events; informing of the availability of goods and services; and to give directions to traffic. Signs are essential throughout the Sounds for the information they provide.

The ability of the environment to accommodate signs varies considerably between town centre, residential and rural areas. Amenity standards vary between different parts of the Sounds, and are defined by the range and nature of land uses in an area. The susceptibility of different areas to be adversely affected by outdoor advertising varies considerably, particularly between town centre, industrial or other business areas, and rural or residential areas. The highest concentration of outdoor advertising is in town centre areas where a greater number and size of signs is accepted, in keeping with the scale and nature of the site and activities. However, in residential and rural areas, where the maintenance and enhancement of amenity standards is considered important, the potential adverse effects of signage are viewed more critically.

21.2 Issue

There is a need for signs but they may have adverse effects on visual amenities and traffic safety.

There is a need for signs to allow people to provide for their wellbeing, however, in order to avoid adverse effects on amenity values and people's health, safety and wellbeing, some controls on signs and outdoor advertising are required. There is also the possibility that signs and other forms of outdoor advertising may have adverse environmental effects particularly on visual amenities, and may conflict with traffic safety.

In particular, from a traffic safety viewpoint, careful consideration needs to be given to the location, design, size, or type of sign along major arterial routes, where the potential for conflicts with traffic safety are highest. All outdoor advertising on State Highway land is subject to the controls specified in the Transit New Zealand Bylaw 1987/3. Signs for State Highway or road purposes are permitted as an integral part of the road designation. Any other signs located on State Highway land and other designated roads have the same potential adverse effects on traffic safety as on-site signs, and need to be controlled through the Plan.

21.3 Objectives and Policies

Objective 1	Signs and outdoor advertising which convey necessary information while avoiding or mitigating any adverse effects on public safety and the visual amenities of the Sounds.
Policy 1.1	Control outdoor advertising variably throughout the Sounds in recognition of the character and amenity of particular areas.

Policy 1.2	Avoid the display of outdoor advertising which may adversely affect traffic safety by causing confusion or distraction to, or obstructing the views, of motorists or pedestrians.
Policy 1.3	Provide for signs on the same site as the particular activity, or use of land or buildings, to which they relate.
Policy 1.4	Support the establishment of 'welcome to' signs, and information laybys, at the entrances to the region and towns and at sites of natural, cultural or historical interest.
Policy 1.5	Encourage the use of information laybys and kiosks.

Signs and other forms of outdoor advertising are a necessary part of the community's social and economic activities, but must be controlled to protect public health and safety, and to minimise their adverse effects on amenity values in the district.

The policies recognise that signs need to be controlled although different environments within the Sounds have different levels of sensitivity to the potential adverse effects of signs. The potential adverse effects of outdoor advertising on traffic safety are of particular concern to the Council.

The erection of signs on the site where an activity is undertaken is accepted as part of that activity. However, signs which are located off-site in order to attract customers to another site are discouraged. The Council will require an application for resource consent to be made for the erection of off-site signs in order for the necessity and appropriateness of the proposed sign to be assessed.

The establishment of information and laybys provide an important service to visitors to the Sounds and an opportunity for local businesses to notify their location and services.

21.4 Methods of Implementation

Rules	Rules to control the location, number, size and type of outdoor advertising and signs are included for all zones and are appropriate to the zone concerned.
Control	The Council will, as the authority responsible for all roads in the Sounds (other than state highways) exercise control over advertising on roads.
Consultation	The Council will consult with Transit New Zealand regarding the implementation of Transit New Zealand Bylaw 1987/3 restricting advertising signs on State Highways.
Annual Plan	The Council will through the Annual Plan, as resources are available, support the establishment of information signs for towns and for sites of natural, cultural and historical interest.
Education	The Council will make people aware of restrictions on the erection of signs and educate them as to the need for such restrictions.

The Council considers that rules controlling the erection of outdoor advertising and signs in the Sounds are the most effective method to avoid any potential adverse effects on traffic safety and visual amenity while recognising that particular areas have different needs for signs and sensitivities to the potential adverse effects of signs.

The Council considers that the establishment of information signs and laybys is an effective way of providing for signs and information, while protecting visual amenities of the Sounds.

21.5 Anticipated Environmental Results

Implementation of the policies and methods relating to outdoor advertising will result in:

- Outdoor advertising necessary to convey information for the social, economic and cultural welfare of the community;
- Minimal adverse effects from outdoor advertising on traffic and pedestrian safety;
- Avoidance of any adverse effects of outdoor advertising on visual amenities; and
- The establishment of information signs and laybys at the entrances to townships and at other sites of natural, cultural and historic interest.

22.0 Noise

22.1 Introduction

Noise is a normal part of most activities and a necessary part of day to day life. Provision for appropriate activities through the Plan needs to include provision for reasonable noise associated with those activities. At the same time, unreasonable, excessive or unnecessary noise should be controlled. Whether that noise should be subject to control will depend in many cases on the circumstances. For example, lower noise levels are properly associated with residential amenities, however, this needs to be balanced in particular circumstances, such as in Picton, with associated or nearby port activity. In such circumstances the plan provisions need to reflect the established use of these areas and the general acceptance by neighbouring residences of the existing ambience when assessing the effects of noise.

Noise can affect people physically, psychologically and socially. Absence of adverse noise effects positively contributes to amenity values and is consequently an indication of sustainable resource management.

Generally, complaints occur when noise is at sufficient levels to create adverse effects. The desirable upper limit for night time noise exposure is determined by criteria to protect the community from either disturbance to the onset of sleep or awakening thresholds of noise for the average person. However, adverse effects of noise are subjective and influenced by:

- Time, frequency and duration of noise; and
- Individual sensitisation to a particular noise.

Most frequent noise related complaints arise from:

- Music - band practices, parties, public bars;
- Industrial operations - generators, processing equipment and machinery;
- Transportation - vehicle movement, loading and unloading vehicles;
- Rural activities - crop sowing, tending and harvesting
- machinery and equipment, animals;
- Home occupations - tools, machinery; and
- Barking dogs.

The Council has set limits for noise around the Port Zone which reflect existing levels of noise from port related activities at the ports of Picton and Havelock. This is considered an appropriate approach given that there have been no complaints from residents in Picton about existing levels of noise from activities at the port of Picton—over recent years and no complaints from residents in Havelock about existing levels of noise from Sanford's factory, wharf and the main wharf areas. Furthermore, section 16 of the Act continues to apply, requiring all persons including those using the ports to use the best practicable options to ensure that their emissions of noise do not exceed reasonable levels.

Description of Areas Affected by Existing Noise Levels

The areas affected by noise from 24 hour activities at Picton lie predominantly to the south, west and north of the main Port facilities and at Havelock to the west and east. The Picton township lies to the south and has its own noise associated with road traffic, commercial activities, etc. and is relatively unaffected by noise from port activities.

The primary area of existing noise impact at Picton is along the western hillsides which are zoned rural immediately to the west of the port, and overlooking it. This area includes all land to the west of the Port both below and above Queen Charlotte Drive. At Havelock the primary area of existing noise impact is to the west of the port.

Existing Noise Sources

The areas described above receive sounds from arrival and departure, berthing, cargo loading and unloading (and includes at Picton Cook Strait ferries) and other vessels operating at the ports.

The noise sources at Picton include stationary, and mobile sources associated with road transport and rail, and loading activities taking place within the port including noise from light and heavy vehicle traffic within the port areas (excluding noise from vehicles on public roads).

Existing Noise Levels

Measurements undertaken during both daytime and night-time during 2005 and 2006 indicate L_{10} levels between 55 and 66 dBA at all assessment points above Queen Charlotte Drive and 50 dBA at Havelock. Noise levels at assessment points representative of existing dwellings in the area above Queen Charlotte Drive have been measured at between L_{10} 55 dBA and 60 dBA at times of port activity over 24 hour periods during 2005 and 2006. Some variability in sound levels occurs due to variations in port activity throughout the day.

22.2 Issue

Adverse effects of noise on community health, including environmental and amenity values, due to disturbance, disruption or interference.

These adverse effects of noise could include:

- Sleep disturbance;
- Stress;
- Disturbance and stress related health problems;
- Disruption of speech and hearing;
- Interference with concentration;
- Disturbance with relaxation; and
- Reduction of amenity values.

22.3 Objectives and Policies

Objective 1	To avoid, remedy and mitigate the adverse effects of unreasonable noise, while allowing for reasonable noise associated with port activities.
Policy 1.1	Avoid, remedy and mitigate community disturbance, disruption or interference by noise within coastal, rural, and urban areas.
Policy 1.2	Include techniques to avoid the emission of excessive or unreasonable noises within the design of any proposal for the development or use of resources.
Policy 1.3	Accommodate inherently noisy activities and processes which are ancillary to normal activities within industrial, port and rural areas.
Policy 1.4	Accommodate defined transport corridors by requiring methods to mitigate the adverse effects of noise caused by vehicle movement.
Policy 1.5	Recognise that residential activity adjoining port and rail facilities can be subject to higher noise levels than would normally be experienced, and that resulting effects may be justified in certain circumstances.
Policy 1.6	At Picton and Havelock, recognise that the residential settlement is built up around existing port and rail facilities, whose effective and efficient operations need to be provided for by allowing for noise limits at existing levels of noise.

Residential areas have noise levels that create an amenity value conducive to rest, relaxation and sleep.

Commercial and industrial areas have amenity values which are noisier than residential areas but still require limitations on unreasonable noise. The noise from some processes in industrial areas cannot be avoided.

At Havelock and Picton, the port areas have played an integral part in the development of the towns. This historic close association between place of work and living has led to the current land use pattern where residential properties are often very close to port areas. Port areas are vital for the economic wellbeing of the community, and residential activities adjoining the port may have amenity values compromised by noise arising from these existing activities.

Notwithstanding existing uses, the noise emitted from these areas is still subject to the obligations imposed under section 16 of the Act, which requires occupiers of land to adopt the best practicable option to ensure that the emission of noise from land does not exceed a reasonable level.

Rural areas are often perceived to be quiet, tranquil places – but this is not always true. Many rural activities involve noisy mobile equipment and machinery with some special audible characteristics of that noise (e.g.; birdscaring). People living in rural areas also have to accept, as part of their lifestyle, reasonable noise that is generated by legitimate rural activities, including noise from animals.

However, rural activities cannot operate in such a manner that the amenity values of rural areas are reduced. Consequently, rural activities will be required to avoid emission of unreasonable noise and mitigate the effects of noise adjacent to other areas.

Transport corridors and marshalling areas are known and expected to be subject to higher noise levels than some other areas.

Segregation of noise-sensitive activities from transport corridors, commercial, industrial, port or rural areas is a practicable method for avoiding noise effects. Noise-sensitive activities which establish within transport corridors, commercial, industrial, port or rural areas should do so in the knowledge that the environment is more noisy than others. The occupiers of land and every person who carries out an activity has a duty to avoid unreasonable noise and to ensure that the noise does not exceed any relevant noise limits. A noise-sensitive activity which establishes in a noisier environment should have no expectation that reverse sensitivity will apply. If it is not a practicable option to reduce noise, the noise-sensitive activity should be required to have appropriate acoustic treatment of buildings or places where such activities occur.

22.4 Methods of Implementation

Rules	Set noise performance standards for different areas to reflect the existing amenity values.
Guidelines	Development of guidelines for the operation of inherently noisy rural equipment and machinery (eg; wind machines, birdscarers). These will address: <ul style="list-style-type: none"> • Location of activity; • Operation of equipment and machinery; • Operating techniques and hours of operation; • Noise levels relative to notional boundaries; • Design and form of any structures; and • Means to mitigate emission of excessive noise.
Enforcement	The Council will use the noise abatement provisions of the Act where the emission of noise is excessive or unreasonable.
Monitoring	Monitoring of noise to establish annual and seasonal profiles and to ensure compliance with rules and consent conditions.

22.5 Anticipated Environmental Results

Implementation of the policies and methods for management of noise will result in:

- Enhancement of individual and community health, and amenity values; and
- Improved conditions within which the community can provide for its social, economic and cultural wellbeing.

23.0 Subdivision and Development

23.1 Introduction

The Act places a responsibility upon the Council to ensure that subdivision and development occurs in a manner which avoids, remedies or mitigates the adverse effects on the environment. The Plan recognises that the subdivision of land, by itself, is not a land use but is, in effect, a procedural and legal process which produces a land tenure pattern to facilitate the subsequent development of land for various activities. The technical act of subdividing is therefore a critical first step for subsequent actions of preparing the land for use and the actual use of the land, both of which may substantially affect the environment and the community.

Subdivision is one mechanism for the provision of esplanade reserves, esplanade strips and public access strips. Thus, it performs a significant role by enhancing public access to waterways and the coastal marine area.

The Council is also required to define its policies in relation to financial contributions on subdivisions. The Plan must state the circumstances where such contributions will be imposed, the maximum amount or means for their determination, and the general purpose for such contributions.

23.2 Issues

The development of land has environmental implications. Within the Marlborough Sounds Resource Management Plan area there are a number of issues which have been identified and which assist in identifying constraints and opportunities to resource use and development. These issues are:

- Recognising the inherent constraints of the natural environment, eg; wetlands, bush, slope, natural hazards, amenity, drainage and access, and managing the effects of subdivision accordingly;
- Recognising the potentially significant effects arising from stormwater and waste disposal, on coastal and fresh water quality in the Sounds, and managing subdivision accordingly;
- Identifying and understanding infrastructural constraints (effluent disposal in particular) and how land use activities and subdivision inter-relate with them.
- Allowing the market to decide on appropriate activities which follow on from subdivision whilst avoiding environmental effects;
- Understanding the effects of the cultural and strategic constraints imposed by existing settlement patterns;
- Recognising the nature and extent of existing roading and how it provides for future subdivision opportunities;
- Recognising that a high proportion of all lands in the Plan area are part of the coastal environment;
- Ensuring land use opportunities are preserved by an appropriate subdivision pattern;

- Recognising and maintaining the existing quality of life and lifestyle associated with living in the Sounds by providing a diverse range of subdivision opportunities;
- Ensuring that new subdivision and development contributes in a fair and reasonable way towards the costs associated with the additional servicing demand it creates or the environmental costs it imposes; and
- Recognising the principles of the Treaty of Waitangi in relation to the subdivision of land.

Under the Act no person may subdivide land unless the subdivision is expressly allowed by a rule in a Plan. Thus the Plan must serve two purposes. The first is enabling, that is it must provide the circumstances under which subdivision may occur. The second purpose is to avoid and mitigate possible future adverse effects that subdivision may generate.

23.3 Objectives and Policies

Objective 1	Provision for the subdivision of land in a manner which recognises and is appropriate to the natural form and environmental characteristics of the Plan area.
Policy 1.1	Ensure that subdivision of land provides for an appropriate range of future uses and opportunities.
Policy 1.2	Promote subdivision which reflects the natural and physical capability of the land by regulating the type and intensity of development by applying a variety of zones, based on this resource base.
Policy 1.3	Provide for the creation of allotments which protect the natural environment including bush, riparian lands, wetlands, headlands, heritage features, ridges and hazard areas, and archaeological and cultural heritage sites.
Policy 1.4	Ensure appropriate subdivision that avoids, remedies or mitigates adverse effects on the natural character of the coastal environment and wetlands, lakes, rivers and their margins.
Policy 1.5	Recognise the diverse lifestyles, cultures and quality of life associated with the Plan area community, by providing flexible options for settlement.
Policy 1.6	Provide opportunities to create special purpose allotments that protect the natural environment, in tandem with widening and diversifying opportunities for land use activities.
Policy 1.7	Ensure that rural character and amenities are protected and enhanced in parallel with providing for appropriate land use activities.
Policy 1.8	Consider the effects on soil conservation from subdivision of land and avoid or mitigate any adverse effects.

Policy 1.9	Consider the effects of the subdivision on the sustainable management of land resources in so far as this contributes to the character of the Plan areas, and avoid or mitigate any adverse effects.
Policy 1.10	Avoid or mitigate any adverse effects on water quality in the Plan area, arising from subdivision.
Policy 1.11	Recognise the principles of the Treaty of Waitangi in relation to subdivision and development of land.
Policy 1.12	Provide for innovative subdivision, such as energy efficient subdivision design, which is responsive to landscape character and which avoids adverse effects.

The objective and policies address the layout and form of the Marlborough Sounds area as it relates to subdivision. They seek to promote subdivision which takes into account the natural form and environmental characteristics of the Sounds. Council also seeks to ensure that subdivision, being the first step for a lot of development, promotes rather than limits the orderly and efficient use of the land resource.

Subdivision can have impacts on the natural character of certain areas. The Plan seeks to protect natural character and significant indigenous vegetation through avoiding, remedying and mitigating adverse effects of subdivision on these values. Subdivision can also impact on general amenities and character. In some rural areas, for example, the dominant character is one of openness. The Plan seeks to avoid, remedy or mitigate adverse effects on this openness.

The Act also requires Council to control land uses for the purpose of soil conservation [section 30(1)(c)(i)]. Soil conservation encompasses those matters contained in Chapter 13: Soil Conservation, namely maintaining the productive potential and life-supporting capacity of soil by minimising erosion from activities which disturb land. In relation to subdivision though, soil conservation is more broad reaching. Subdivision, where it is used to facilitate urban development, generally does not promote soil conservation at all. The covering of land with structures and impervious surfaces destroys the soil and its fertility, structure and drainage. It is not practical to attempt to protect all soil from urban use, nor is this consistent with soil conservation. But rather, the protection of the higher quality soils, being the more important part of the soil resource, from these effects, will achieve the overall conservation of soil.

Council seeks to ensure that subdivision is carried out in such a way that the contribution made by productive use of land to the character of the Sounds is maintained. As well, that subdivision respects important soil conservation values. In seeking to ensure this though, Council does not wish to give preference to any particular future land uses and types of development. This is something which the market will determine. These ideas merely indicate the types of issues which need to be addressed in order to determine whether a subdivision promotes sustainable management of resources in the context of the Sounds environment, as based on the subsequent effects of development.

With subdivision being a critical first step which often facilitates the design and form of future development, it is important that the effects of such future development are considered at the time of subdivision. Therefore, there will be a number of other very relevant objectives and policies contained throughout the Plan, which also need to be considered in conjunction with those above.

Objective 2	Protection of the environment from the adverse effects of site works associated with subdivision and the promotion of effective and efficient servicing of development.
Policy 2.1	Reduce the need to remedy or mitigate any avoidable adverse effect by ensuring that the site is suitable prior to commencement of site works or subdivision.
Policy 2.2	Recognise the need to integrate subdivision practice with the environmental requirements for resource use and development contained throughout the Plan.
Policy 2.3	Recognise the absence of infrastructure such as reticulated sewage disposal systems at the time of subdivision and allow the use of alternative solutions and/or technologies where adverse environmental effects are avoided, remedied or mitigated.
Policy 2.4	Ensure that subdivision is either restricted, or avoided where it affects or is affected by natural hazards, including areas subject to flooding, subsidence and slippage.
Policy 2.5	Ensure the provision of vehicle access to new allotments does not adversely affect the safety and efficiency of the roading network by requiring compliance with appropriate intersections and access standards.

Subdivision itself, is a legal process, which does not have direct environmental effects. But the subsequent site development works and effects relating to site servicing requirements can have an adverse impact on the environment. Specific objectives, policies and methods of implementation are provided throughout the Plan, which relate to site development and servicing effects brought about by the subdivision of land. Effects need to be addressed at the time of subdivision and in a way which is consistent with effects from development that occurs without subdivision. Policy 23.3.2.2 in particular, recognises this relationship and directs users to other policies and requirements contained throughout the Plan. This direction also avoids repetition and provides for consistency of interpretation through out the Plan.

Examples of relevant sections include, Chapter 13 Soil Conservation in relation to erosion and land disturbance arising from site development work, and, Chapter 14 Discharges of Waste to Land which contains policies and requirements relating to on-site waste treatment. Chapter 16 Natural Hazards contains policies and methods to manage development (including subdivision) in relation to natural hazards.

Objective 3	<p>The acquisition of reserves and financial contributions in order to achieve any of the following:</p> <ul style="list-style-type: none"> • Protection or enhancement of amenities, ecological values, landscape values, natural character, functioning of riparian margins, wetlands, archeological or iwi values; • Avoiding, remedying, mitigating or off-setting any adverse effects from subdivision or development; • Provision of public access to or along the coast, lakes or rivers, or public land;
--------------------	---

	<ul style="list-style-type: none"> • Provision of public services, roads or utilities; • Creating or improving open spaces, recreation areas and/or amenity areas; and • Creating a financial resource to be used for any of the above purposes.
Policy 3.1	Ensure that the acquisition of reserves is undertaken to enhance landscape, conservation and open space amenities, provide recreational areas, enable heritage protection and facilitate public access.
Policy 3.2	Ensure that esplanade reserves are taken in order to facilitate public access, promote recreation values, manage landscape characteristics, protect conservation values, and take into account principles of the Treaty of Waitangi.
Policy 3.3	Ensure that all contributions are directly related to the public costs likely to be generated by the subdivision or development.
Policy 3.4	Administer financial contributions in a transparent and effective way.
Policy 3.5	Ensure that financial contributions are generally used to benefit the area within which the development or subdivision is located. A portion of reserve fund contributions will be utilised for district facilities and reserves.
Policy 3.6	Apply financial contributions in a consistent way to subdivision consents, resource consents for development, and development arising from plan change requests.
Policy 3.7	Council will waive or reduce contributions in relation to any particular proposal where the subdivider/developer suggests alternatives to avoid, remedy or mitigate the adverse effects of that proposal.

The provisions of the Plan relating to financial contributions are aimed at ensuring the public costs of development are contributed to in a fair and reasonable way, by the developer. Two types of contributions are required as a result:

- i) The vesting of reserves and rights over riparian strips (esplanade strips), and/or payment of reserve fund contributions (including contributions for development); and*
- ii) The vesting of roads and the contribution towards immediate servicing and the related servicing infrastructure.*

The provision of reserves and open space, along with the maintenance and development of existing reserves, is critical in the Sounds, eg, provision and maintenance of esplanade reserves, which are of district and national importance.

The securing of esplanade reserves or strips is incorporated to further improve public access to and along the coast, rivers and lakes. This will contribute to the continued development of walkways in the area.

Subdivision/development can give rise to a reduction in open space and, ultimately, as population increases, there is a greater demand for open space, recreational and community facilities. Council administers a “Reserves and Recreation Policy”. The Annual Plan process, sets out objectives and policies to mitigate the adverse effects of subdivision/development by acquiring land and maintaining and developing existing reserves and facilities.

Fundamental to these objectives is the acquisition and development of community facilities and reserves from reserve fund contributions and development levies.

The Council has elected to continue with a percentage of land value approach, previously available under the Local Government Act 1974. The percentages to be applied have been reviewed against the Council’s “Reserves and Recreation Policy”. It is the Council’s view that the use of percentages is the fairest and most cost-effective means of avoiding, remedying or mitigating adverse effects on the community’s cultural and amenity resources.

This approach is based upon the standard of open space and community facilities (both at the local and district level) put in place under the Local Government Act provisions. This standard has set a level of amenity expectation for the Marlborough community. Consequently, the Marlborough community anticipates that the cultural and amenity resource aspects of the district will be sustained to present standards. Further, the Council’s long term planning strategy in this area (which is in place and is being implemented) is based upon sustainably providing for/managing these resources to this historic and expected level. The alternative of a lesser standard is not acceptable to the community.

Reserves and/or reserve fund contributions are therefore required at the time of subdivision. These will be determined and calculated in accordance with the criteria set out in Volume Two: Chapter 28 Standard Requirements for Subdivision and Development. Refer also to Chapter 12: Open Space, which further explains the importance of providing reserves.

With roading, the financial contributions will reflect the demand created by the subdivision or development and will include: the need for kerb and channel for amenity value as well as stormwater drainage; the need for footpaths for pedestrian traffic generated by the subdivision; road widening to cater for traffic movement as well as off carriageway parking; the provision of grass berms for amenity value for the adjoining properties; and, the sealing of the carriageway for amenity value for the adjoining properties. Work beyond the frontage of the subdivision or development may also be included.

Where subdivision creates additional stormwater disposal demand the financial contribution will reflect the costs involved in providing for the disposal of stormwater or the upgrading of existing systems to adequately cater for the additional discharge created by the subdivision.

Where water supply and sewerage systems are already in place, and where a subdivision will require connections to that existing system there will be a recoupment of costs. This will provide for future users to buy into the existing facility, and extension of those facilities. The contributions will be based on the depreciated value of the facility taking into account any debt outstanding so that the net value is shared across all users who benefit from the system. There may also be a contribution required for the upgrading of existing systems to adequately cater for the additional demands created by the subdivision.

23.4 Methods of Implementation

Rules	Rules relating to subdivision are included in Volume Two of the Plan. Assessment criteria and performance standards have been incorporated into the subdivision rules.
Code of Practice	The Council has developed a Code of Practice for Subdivision and Land Development. The Code of Practice sets out specific methods by which the subdivision requirements of the Plan can be met.
Reserves Strategy	The Council, as part of its integrated management practice has prepared a Reserves Strategy. The contribution levels have been designed to integrate with this strategy.
Annual Plan	<p>The Council's Annual Plan, which is the subject of public participation and submission, forecasts specific expenditure of the funds obtained from financial contributions both for reserves and services.</p> <p>This process provides for the transparent implementation of capital works in the context of giving effect to the Reserves Strategy and strategic works and servicing initiatives.</p>
Non Regulatory Method	Consultation with applicants over requirements for financial contributions on non-notified resource consents prior to a formal decision being made on the application.

Rules are necessary to enable the process of subdivision to occur. In adopting particular rules the Council has been guided by the purpose of the Act, the objectives and policies of the Plan, the requirements of the New Zealand Coastal Policy Statement and the Marlborough Regional Policy Statement.

23.5 Anticipated Environmental Results

Implementation of the policies and methods relating to subdivision is expected to result in:

- A subdivision pattern which respects and allows for the retention and enhancement of environmental values, including the preservation of natural character;
- The constraints of the environment being recognised at the time of subdivision;
- Efficient provision of services and infrastructure;
- Site development which does not adversely affect the environment;
- Reasonable contribution by developers to costs associated with the provision of services, infrastructure and reserves;
- Enhancement of public access to and along the coast, lakes and rivers; and
- Social and cultural benefits through the progressive development and improvement of community facilities and reserves.

Appendix One

Landscape

Areas of Outstanding Landscape Value: Criteria for Selection

The dimensions of landscape are landscape *character* and landscape *quality*.

The analysis of landscape character and quality draws heavily on the visual assessment of particular localities in the Sounds carried out in 1989 and 1990 by the Department of Conservation and in particular, Earl H. Bennett (see references).

Landscape Character

Landscape character can be described and used as a record of what is seen in the environment. It gives the place identity and makes it distinctive. Rather than classifying whether one landscape is better than another, character describes the landform and land cover elements that make up the landscape. It can provide a basis for the comparison of landscapes and can distinguish different landscape areas.

An assessment of the landscape character may identify distinctive landscapes and how changes are most likely to alter the character of any particular landscape.

By delineation of the landscape into individual units of landscape type it may be possible to identify the dominant character of a particular landscape. This can assist by providing a clear point of reference (a description of landscape type or feature) against which land use proposals can be assessed.

Descriptions of landscape character can be divided into the land component and the coastal segments of the landscape unit. The land component is the wider landform and land cover of the landscape unit. The coastal segments are smaller units, usually a narrow band along the land/water edge.

The key expressions of landscape character are:

- 1 **form** = the overall shape of the landscape; the sense of scale; the degree of enclosure or openness apparent to the eye; the cross-section created by significant landforms; the volume or shape of any significant formations or features.
- 2 **line** = trace of a point moving through space; commonly an edge which is perceived where two elements or planes meet; a line can occur along skylines (between sky and landform); along ridgelines (between landforms and backdrop); along shorelines.
- 3 **texture** = the nature of the surface of the landscape; the density of the land cover; the effect of light and shade on land cover and landform; the way individual land surfaces are broken up by vegetation, erosion scarring, rock outcrops or run-off channels; the way the surface of water is affected by tide, rocks, seaweed or wind; the sea bed beneath the water described in terms of smoothness or roughness.
- 4 **pattern** = the way in which features, land cover, form or line are arranged; the series of repetitions of arrangement which establish a pattern over the landscape; the landscape or waterscape could be entirely without pattern - random; or could have a highly regular pattern and appear highly arranged.

- 5 **colour** = the combined colours of land, vegetation, water, and sky which change with the seasons; and the variations of colour within and between the landscape units.

Different kinds of expression can be identified with a range of grades for each of these key expressions. No one kind or gradation is better than the other. They are simply different. Table 1 describes types of landscape character for the overall landscape. Table 2 describes types of landscape character for the **coastal segments** of the landscape.

Within the Sounds it is possible to identify examples of dominant or typical characteristics which contribute significantly to the quality of the landscape. Some of the examples are included in Table 3, Examples of Typical and Significant Sounds Landscape Characteristics.

Landscape Quality

Landscape quality is an evaluative measure of a landscape unit in comparison with other units within a region. From this, a range of values can be derived. Quality also provides a measure of the vulnerability of particular landscapes to different types of change and how important those landscapes are to a region.

The key indicators of quality are:

- 1 **Vulnerability** indicated by:
 - Lack of structures = a measure of how unmodified the landscape is by structures; the presence or absence of settlements, roads, visible utility services, built structures on land or on the surface of water;
 - Naturalness = the degree of modification to natural character; modification to landform and indigenous vegetation; the presence or absence of exotic species and crops;
 - Extent of sensitive areas = the presence or absence of **visually** sensitive areas; areas which are important to the visual character of the landscape; areas which might occur as patches of indigenous vegetation or the curve of a beach, the skyline, a landform peak, a ridge line or saddle; and
 - Memorableness = a measure of how strong an impression it leaves in the mind; a measure of whether the visual experience of the coastline is memorable or forgettable.
- 2 **Importance** indicated by:
 - Rarity = a measure of how unique a landscape is; a comparison with the rest of the area being studied; a measure of the value as an example of its kind; and
 - Coherence = the visual unity or harmony between the elements of a particular landscape; a measure of how well the landscape "hangs together"; the presence of deviations or unusual features which stand out from the background character - examples might be wilding pines within predominantly indigenous vegetation or a jetty perpendicular to a curved beach or a firebreak cut down a hill face.

3 **Visiblness** indicated by:

- Visiblness = the visibility of the landscape from human vantage points such as state highways, other roads, scenic routes, walkways, recreation areas, major boating channels, camping areas or settlements. This contributes to the overall significance of the landscape unit and is used to modify vulnerability and importance attributes in the interpretative process.

Each indicator of quality can be divided into gradations from “low” to “high” as described in Table 4 Landscape Quality (Coastal Segments within Landscape Units) and Table 5 Landscape Quality (Overall Landscape Unit).

Outstanding Landscapes

In terms of the VAMPLAN methodology used in the source documents, landscapes which are likely to warrant extreme control and preservation management regimes are those which have high indicators of quality in one or more of the quality indicators. Landscapes which are likely to warrant strict control and preservation-oriented management regimes are generally those which have moderate-high indicators of quality and/or high in ranking in one or several key indicators.

Interpretation of the landscape studies’ findings is that outstanding landscapes are those which equate with those needing extreme control and preservation management and are at one high end of the scale. Therefore, outstanding landscapes can be defined as being:

Outstanding landscapes = landscapes exhibiting high quality in one or more indicators which might be expressed as landscapes which have the following characteristics:

- None or very few structures, roads or excavated tracks;
- Existing development is insignificant or small scale or well camouflaged from view from major routes, waterways and public areas;
- None or very little modification of natural landform or indigenous vegetation;
- Very distinct natural character;
- None or very little apparent modification of the land/water shoreline;
- Very few exotic species apparent;
- The coastal segment is unforgettable and remains distinct in the memory;
- Many visually sensitive areas or large areas that are visually sensitive;
- Uniqueness with no or very few similar landscapes within the region;
- Very clear harmony in the landscape;
- Strong coherence in the landscape;
- Very few negative, or out-of-character, deviations from overall coherence; and
- Highly visible or easily seen from major population centres, roads, waterways, scenic areas, recreation areas or settlements.

The higher the rating in all Quality attributes the greater the likelihood of having a significance to the Marlborough Sounds area. For example, for a landscape which is a good example of its kind and is highly visible, development is likely to seriously compromise landscape value.

Assessing Effects of Proposed Changes in the Landscape

Effects on the landscape should be assessed in terms of their effects on *quality and character*. The key is to identify what the significant characteristics are within the landscape unit; then to assess the effects of the location and land use change on those characteristics in terms of the indicators of quality.

The evaluation will help determine whether the effects of a proposed change will be positive, neutral or negative examples and what levels and kinds of management is appropriate and/or required.

Evaluation criteria may include:

- Will it add a significant level of structures or roading to the landscape?
- Will it compromise natural landform by modifying elements of the landscape?
- Will it reduce the area of or degrade the significance of any indigenous vegetation?
- Will it compromise the natural character of the coastal edge through modification by artificial structures or land disturbance?
- Will it alter the landscape in such a way that the landscape's unique status is compromised?
- Will it introduce into the landscape a feature, activity, form, line, or texture which is incongruous with the dominant character and coherence of the landscape?
- Will it introduce into the landscape a feature, activity, form, line, or texture which enhances or improves the overall coherence of the landscape?

References

- Department of Conservation 'Marlborough Sounds Draft Landscape Assessment: Selected Sites' Earl H. Bennett, Landscape Architect, July 1989.
- Department of Conservation (Nelson) 'Marlborough Sounds Visual Impacts of Coastal Development - Selected Locations' Earl H. Bennett, FNZILA, Landscape Architect, June 1990 (principal report and appendices).
- Department of Conservation (Nelson/Marlborough Conservancy) 'Draft Regional Landscape Assessment' Sissons and Conway Ltd, June 1993 (a draft unpublished report).

Table 1: Types of Landscape Character (Overall Landscape)

Primary Expression						
Form - Enclosure scale character of the overall landscape unit and degree of enclosure apparent from normal eye level	low enclosure = virtually no sense of enclosure or visual containment; expansive, open landscape	moderate-low enclosure = visual enclosure is indistinct; weak enclosure	moderate enclosure = visual containment is apparent but not dominant	moderate-high enclosure = strong sense of enclosure; visual containment is dominant	high enclosure = visual containment is immediate; very strong sense of enclosure	
Form - Perceived Cross-Section two-dimensional representation of general cross-section of landscape unit	flat	gently curving	curving	distinct sides or walls	narrow V-shape	
Form - Volume the shape of any significant three-dimensional formations found within landscape unit	spherical	truncated conical or cone shape	cone shape	pyramid shape	truncated pyramid shape	
Line the alignment of line occurring where two edges meet; along skylines, ridgetlines, shorelines	straight	smoothly curved	sharply curved	angular	broken or branching	
Texture the nature of the surface of the landscape which results from the effect of light and shade on land cover and determined by the way individual surfaces are broken up by vegetation, erosion scars, rock outcrops, run-off channels	smooth or fine = consistently very small individual components relative to overall size of landscape unit	medium-smooth or medium-fine = small components having limited variety in size and shape	medium-smooth or medium-fine = moderately-sized components relative to the size of the overall landscape unit and limited variety in size and shape	medium-rough or medium-coarse = large individual components having variety in size and shape	rough or coarse = very large individual components relative to the overall landscape unit's size and great variety in their size and shape	
Pattern the series of repetitions in a landscape which creates recognisable regularity or landform or vegetation or other characteristic; often recognised as a series of two dimensional shapes	geometric = largely rectangular shapes having apparently similar outline and shape in a very regular pattern	consistent = shapes having similar outline even though sizes may vary; occurring in a regular pattern	random = a mixture of shapes and sizes but with limited variety; with some regularity of pattern	irregular = a variety of shapes and sizes with no regularity of pattern	very irregular = a great variety of shapes and sizes; few repetitions of many different shapes and sizes	
Colour derived from the land and vegetative cover; with changes in colour occurring with the seasons						

Table 2: Types of Landscape Character (Coastal Segments Within Landscape Units)

Primary Expression					
Form - Enclosure scale character of the coastal segment and degree of enclosure apparent from normal eye level	low enclosure = virtually no sense of enclosure or visual containment; expansive, open landscape	moderate-low enclosure = visual enclosure is indistinct; weak enclosure dominant	moderate enclosure = visual containment is apparent but not dominant	moderate-high enclosure = strong sense of enclosure visual containment is dominant	high enclosure = visual containment is immediate; very strong sense of enclosure
Form - Cross-Section two-dimensional representation of general cross-section of coastal segment	flat	gentle slope	low hills/dunes	steep hills	cliffs or bluffs
Line - Detail of Edge the edge between water and land	straight	smoothly curved	sharp	angular	broken
Line - Edge Alignment the overall alignment of the land/water edge within the coastal segment	straight	gentle	smooth	sharp	sinuous
Line - Edge Regularity regularity of pattern of the line of the land/water edge	regular	consistent	random	irregular	intricate
Texture - Water Component a measure of the visual breaking-up of the water surface; the roughness of the water surface caused by movement and/or the presence of rocks and other objects	smooth or fine = flat, unbroken surface; little apparent movement; no protruding rocks	medium-fine = essentially unbroken surface; some ripples or small waves; very few protruding rocks or other objects	medium = water surface is broken by eddies and waves; some protruding rocks and other surface interruptions	medium-coarse = water surface broken by larger waves; some white water; many interruptions to the surface	coarse = very broken water surface; a great deal of white water; many surface interruptions
Texture - Land Component the nature of the surface of the land component of the coastal segment; results from the effect of light and shade on land cover and determined by the way individual surfaces are broken up by vegetation, erosion scars, rock outcrops, run-off channels	smooth or fine = individual components are very consistently small relative to overall coastal segment;	medium-fine = individual components are relatively small; limited variety in size and/or shape	medium = individual components area moderate in size; limited variety in size and/or shape	medium-coarse = individual components are relatively large; some variety in size and/or shape	coarse = individual components are very large; great variety in size and/or shape
Pattern - Water Component the series of repetitions that creates a recognisable regularity of arrangement of water; the pattern that derives from the arrangement of natural and artificial elements	geometric = geometric shapes; very regular	consistent = shapes of similar outline but varying sizes; regular pattern	random = mixture of shapes and sizes; no apparent regularity	irregular = variety of shapes and sizes; no apparent regularity	very irregular = a great variety of shapes and sizes; few repetitions of many objects
Pattern - Land Component the series of repetitions in a landscape which creates recognisable regularity or landform or vegetation or other characteristic; often recognised as a series of two- dimensional shapes; applied only to the land component of the coastal segment	geometric = largely rectangular shapes having apparently similar outline and shape in a very regular pattern	consistent = shapes having similar outline even though sizes may vary; occurring in a regular pattern	random = a mixture of shapes and sizes but with limited variety; with some regularity of pattern	irregular = a variety of shapes and sizes with no regularity of pattern	very irregular = a great variety of shapes and sizes; few repetitions of many different shapes and sizes

Example of Characteristic	Reason for Significance	Activity Types Having Greatest Potential Impact
Prominent headlands	<ul style="list-style-type: none"> • Provide a point of focus and visual presence (a visually sensitive area); • Contribute to enclosure of landscape units; • Provide distinct division between landscape units; 	Form and texture changes: eg structures, pylons, land disturbance, vegetation clearance, vegetation changes
Spurs, ridges, and steep hillsides	<ul style="list-style-type: none"> • Provide the backdrop to landscape units and contribute strongly to visual enclosure; • Give strong lines to landscape; • Define the shape of the cross-section of valleys; • Provide the pattern of hills and valleys in the landscape; 	Form and line changes: eg structures, pylons, land tracks and roads, vegetation disturbance, clearance, utility network lines, shelterbelts
Significant landform peaks	<ul style="list-style-type: none"> • May be visible from long distances and from many angles; • Define the cross sectioncross-section of the broader landscape; • Strongly define the shape of the landscape unit; • Contribute to the natural pattern of the landscape; 	Form and line changes: eg structures, pylons, land disturbance, tracks and roads, vegetation clearance, utility network lines, shelterbelts
Skylines	<ul style="list-style-type: none"> • Define the predominant line of the landscape; • Are highly visible and dominate the landscape such that contrasting land use changes visible there significantly deviate from the natural line; • Colours at the skyline edge are consistent either side of the line and contrasting colours which are visible there significantly interrupt line and colour coherence; 	Line changes: eg structures located on skylines, utility network lines, pylons, shelterbelts, vegetation clearance at skyline
Horizon/water interface viewed to open sea	<ul style="list-style-type: none"> • Define a strong line to the waterscape; • Are highly visible and dominate the landscape such that contrasting land use changes visible there significantly deviate from the natural line; • Colours at the horizon are consistent either side of the line and contrasting-coloured structures which are visible there significantly interrupt line and colour coherence; • The horizon defines the clear flat plane of the coastal element of the landscape; 	Line changes: eg structures in coastal marine area, utility network lines
Water surface	<ul style="list-style-type: none"> • Defines the flat plane cross sectioncross-section of the coastal element of landscape; • Provides a mirror to the land; • Provides variety and changing colour and light reflection; • Its texture varies with tide and weather and seabed changes but is generally consistent over large areas such that changes which introduce contrasting texture (fixed structures) can significantly interrupt the coherence of natural texture; • Variations in seabed, tide, weather, and light create water patterns which are vulnerable to change by contrasting structures or features; 	Texture and colour changes: eg structures in coastal marine area, disturbance of seabed and tidal areas, floating structures on water surface
Shorelines	<ul style="list-style-type: none"> • Provide a point of intense interest at the water/ land interface and are visually sensitive areas; • Highly visible from usual vantage points; • Highly accessible from water therefore highly visible; • Strongly defines the linear edge of the landscape's coastal/land interface; • Establish pattern in the regularity of the curve or straightness of the shore edge; 	Line and form changes: eg structures in coastal marine area, structures on land, utility network lines, vegetation clearance, land disturbance Water based activities

Example of Characteristic	Reason for Significance	Activity Types Having Greatest Potential Impact
Small coves	<ul style="list-style-type: none"> • Strongly enclose parts of the landscape; • Provide a human scale when viewed from the water; • Features within the cove can be visually contained within the cove; • Establish curved lines at the land/water edge; • Establish pattern of a series of indented or curved beaches and headlands • Contribute to the intricacy of the alignment of the coastline (an individual cove may be one of a series of coves important for the pattern they create in their natural state and may need to be judged in a wider context than just within the cove itself); 	Form, line, and pattern changes: eg structures on land, structures in coastal marine area, land disturbance, utility network lines
Significant areas of indigenous vegetation	<ul style="list-style-type: none"> • Strongly define the unique New Zealand texture of the land cover; • Establish natural patterns in their coverage of landform, flowing with the topography of the landscape; • Create soft edges at ridgelines, skylines, shorelines, and at edges with other vegetation; • Contributes to visual enclosure of individual coves; • Strongly define the muted green colour of the landscape and its reflection in water; • Significant in contributing to coherence of landscape; 	Texture, pattern and colour changes: eg vegetation clearance, land disturbance, structures
Areas of re-growth scrub	<ul style="list-style-type: none"> • Defines unique New Zealand texture and pattern as low cover over landform; 	Texture pattern and colour changes: eg vegetation clearance, land disturbance, structures
Scattered small baches and jetties, where small and unobtrusive	<ul style="list-style-type: none"> • Occur as positive deviations in the landscape; • Add visual interest and activity to the landscape; • Contribute to variety in the texture of the landscape; • Create a visual pattern depending on their distribution 	Texture pattern and colour changes: eg large obtrusive structures prominently sited
Distinctive drowned valleys	<ul style="list-style-type: none"> • Provide clear U-shaped and V-shaped cross-section; • Provide open and expansive (super-human) landscape scale; • Provide distinctive pattern in ridge lines and valleys 	Form and pattern changes: eg land disturbance, utility network lines
Flat valley floors	<ul style="list-style-type: none"> • Strongly define the cross sectioncross-section having distinct sides and floor; • Provide open, expansive landscape, and large scale (larger than human scale); 	Form changes: eg storage of materials, landform changes, macro-scale utility network structures.
Pasture on valley floors and hill slopes	<ul style="list-style-type: none"> • Defines particular fine texture of landscape; • Provides distinct colour and contrast; • Often accompanied by paddock fences which provide a geometric pattern and linear edges; 	Texture changes: eg land disturbance, vegetation change
Coastal cliffs and bluffs	<ul style="list-style-type: none"> • Define a strong edge to the coastline; • Create a blunt linear edge to the cross-section of the landscape at the land/water interface; • The detail of the skyline and land/water edge created at cliff edges and cliff bottoms is often intricate and establishes distinctive pattern at the coastal edge; • Often define the visual "front door" of the Sounds and are therefore visually significant and sensitive; • Highly visual from long distances at sea and therefore visually significant and sensitive; • Rugged appearance of land creates distinctive surface texture which is generally fine and consistent across the face of the cliff with distinctive rocks and varied texture at cliff bottoms 	Line, pattern and colour changes: eg structures, vegetation change, land disturbance water discolouration.

Example of Characteristic	Reason for Significance	Activity Types Having Greatest Potential Impact
Tidal narrows and passes	<ul style="list-style-type: none"> • Are visually significant in themselves as events and as visually sensitive areas; • There are few known locations so their rarity value is significant; • Contribute strongly their own particular water texture as tide changes; 	Texture changes: eg structures in coastal marine area
Exotic (pine) plantations shelter belts wood lots	<ul style="list-style-type: none"> • Contribute their own distinctive uniform texture to the landscape; • Create sharp lines of contrast with other land cover; • Contribute a different colour to land with reflection to water; • Establishes variety of patterns depending on the landform and the shape of boundaries and edges and age of trees and size of plantation; 	Texture, pattern and colour changes: eg vegetation clearance, vegetation change, land disturbance, and water discolouration.
Fire breaks	<ul style="list-style-type: none"> • Define strong lines through and across landscape; • Occur as negative deviations to overall coherence of land cover and landscape pattern; • Are highly visible, often from large distances, and are therefore visually significant depending on the degree of re-growth; 	Line changes: eg; vegetation change
Tree Exotics (eg; Wilding Pines)	<ul style="list-style-type: none"> • Isolated clumps of exotics exotics/riparian trees/rogue exotics can occur as negative deviation to overall coherence of landscape; 	Texture and colour changes of exotic plantations
Rock Outcrops	<ul style="list-style-type: none"> • Bedrock formations which extend out of the land or land/sea interface; • Contribute to variety and diversity of landform and natural pattern of landscape; 	Texture, form and line changes: eg land disturbance structures, vegetation changes utilities
Islands	<ul style="list-style-type: none"> • Smaller landforms and associated features associated within the waterscape; • Occur as positive features which add detail to landscape and are focal points which are of significant visual interest; 	Form and line changes: eg land disturbance, structures, utilities
Homesteads and Farm Structures	<ul style="list-style-type: none"> • Structures which are scattered throughout sounds rural landscape which add variety and interest to landscape; • Contribute to variety in the texture, pattern and colour of landscape, and a strong focus from the surrounding landscape and waterscape; 	Texture, pattern and colour changes: eg vegetation change, location and scale of structural additions
Pastoral Landscape	<ul style="list-style-type: none"> • Defines pastoral rural landscape area and contrasts strongly with scrub and tree crops; • Provides a clear expression of landforms and can significantly interrupt or be interrupted by areas of scrub and forest; • Has no capacity to camouflage structures, tracks, utilities. 	Texture and pattern changes: eg vegetation change, land disturbance.

Table 4: Landscape Quality (Overall Landscape Unit)

Criterion	
Determines Vulnerability of Landscape	<p>low = a great number of structures and extensive road and service networks</p> <p>moderate-low = many structures and a well-developed road and service network</p> <p>moderate = several structures and roads</p> <p>moderate-high = a few structures or roads</p> <p>high = very few structures or roads; any existing development is insignificant or small-scale</p>
Determines Vulnerability of Landscape	<p>low = great deal of modification to landform and/or vegetation</p> <p>moderate-low = modification of landform and/or vegetation is obvious; exotic vegetation dominates</p> <p>moderate = some modification of landform and/or vegetation is apparent; native vegetation need not dominate</p> <p>moderate-high = little apparent modification of landform and/or vegetation; a dominance of native vegetation is apparent; few exotics</p> <p>high = very little apparent modification of landform and/or vegetation; very few obvious exotics</p>
Determines Vulnerability of Landscape	<p>low = no or very few areas of sensitivity</p> <p>moderate-low = very few areas of sensitivity; all small in size</p> <p>moderate = limited number and size of areas of sensitivity</p> <p>moderate-high = several areas of sensitivity</p> <p>high = many or extensive areas of sensitivity</p>
Determines Importance of Landscape	<p>low = many similar units</p> <p>moderate-low = several similar units</p> <p>moderate = a limited number of similar units</p> <p>moderate-high = very few other similar landscape units</p> <p>high = the landscape unit is unique or distinctive in the study area</p>
Determines Importance of Landscape	<p>low = obvious lack of harmony; obvious negative deviations from any pattern</p> <p>moderate-low = some disharmony; presence of some negative deviations from patterns</p> <p>moderate = some harmony; few negative deviations</p> <p>moderate-high = harmonious relationship between elements and expressions of landscape; readily-apparent unity; limited negative deviations</p> <p>high = very harmonious relationship; high level of unity; nil or very few negative deviations</p>

Table 4 (cont): Landscape Quality (Overall Landscape Unit)

Criterion	
Determines Visiblteness	<p>low = not visible from settlements of transport routes</p> <p>moderate-low = visible from small settlements, minor roads, or minor walking tracks</p> <p>moderate = visible from secondary routes, railways, small settlements; readily accessible from major population centres and primary transport routes, scenic routes, recreation areas or major walking tracks</p> <p>moderate-high = close to and visible from major population centres, primary transport routes, scenic areas or recreation areas or major walking tracks</p> <p>high = very close to or easily seen from or surrounding major population centres, primary transport routes, scenic areas or recreation areas</p>
	<p>Visiblteness determined by the visibility of the landscape unit from or proximity to state highways; scenic routes; country roads; principal access routes to national parks and forest parks or major recreational areas or major camping areas or population centres; rail routes; walkways and walking tracks; settlements; major recreation areas eg; camping, water sports</p>

Table 5: Landscape Quality (Coastal Segments Within Landscape Units)

		Criterion					
Determines Vulnerability of Landscape	Lack of Structures a measure of how unmodified the landscape is in terms of settlements, roads, visible utility services	low = the land/water edge is completely structured; eg; may be concrete-lined or have geometrically-shaped stopbanks	moderate-low = the land/water edge has obvious structure; eg; extensive rip-rap or groynes	moderate = several structures are apparent; some edge protection and/.or small structures in the water component	moderate-high = few structures; very limited edge protection	high = very few apparent structures; any existing structures are insignificant, not visible, or small scale	
Determines Vulnerability of Landscape	Naturalness a measure of how modified the landform or vegetation of the landscape is	low = great deal of modification to land/water edge and/or vegetation	moderate-low = modification of land/water edge and/or vegetation is obvious	moderate = some modification of land/water edge and/or vegetation is apparent; native vegetation need not dominate	moderate-high = little modification of land/water edge and/or vegetation; a dominance of native vegetation is apparent; few obvious exotics	high = very little apparent modification of land/water edge and/or vegetation; very few obvious exotics	
Determines Importance of Landscape	Memorableness a measure of how strong an impression the visual experience of the coastal segment will create	low = mental image is so weak as to be forgettable	moderate-low = the memory is indistinct; easily confused with other coastal segments	moderate = a memorable coastal segment; may be occasionally confused with others	moderate-high = the coastal segment is clearly memorable; very little confusion in recall of the image	high = the coastal segment is unforgettable; image remains distinct in memory	
Determines Importance of Landscape	Rarity a measure of how common or uncommon a coastal segment is; compares particular landscape character within area of study	low = many similar coastal segments	moderate-low = several similar segments	moderate = a limited number of similar segments	moderate-high = very few other similar coastal segments	high = the coastal segment is unique or distinctive in the study area	
Determines Importance of Landscape	Coherence a measure of visual unity; of how well the landscape "hangs together" visually; level of harmony evident in the components of the landscape (the elements and expressions); deviations from coherence would occur as unusual visual events or features which could be positive or negative in the context of the landscape unit	low = obvious lack of harmony; obvious negative deviations from any pattern	moderate-low = some disharmony; presence of some negative deviations from patterns	moderate = some harmony; few negative deviations	moderate-high = harmonious relationship between elements and expressions of landscape; readily-apparent unity; limited negative deviations	high = very harmonious relationship; high level of unity; nil or very few negative deviations	

Table 5 (cont): Landscape Quality (Coastal Segments Within Landscape Units)

		Criterion				
Determines Visiblness	Visiblness determined by the visibility of the coastal segment from or proximity to state highways; scenic routes; country roads; principal access routes to national parks and forest parks or major recreational areas or major camping areas or population centres; rail routes; walkways and walking tracks; settlements; major recreation areas eg; camping, water sports	low = not visible from settlements of transport routes	moderate-low = visible from small settlements, minor roads or minor walking tracks	moderate = visible from secondary routes, railways, small settlements; readily accessible from major population centres and primary transport routes, scenic routes, recreation areas or major walking tracks	moderate-high = close to and visible from major population centres, primary transport routes, scenic areas or scenic routes, recreation areas or major walking tracks	high = very close to or easily seen from or surrounding major population centres, primary transport routes, scenic areas or routes, major recreation areas

Appendix Two

Natural Character Areas

Guide to Using this Appendix

This appendix describes both the overall natural character of the Marlborough Sounds across terrestrial, freshwater and marine environments, as well as the natural character of each of the 11 land and eight marine natural character areas.

When to use this Appendix

Appendix Two is referred to in the assessment criteria for all consents across all zones.

This appendix identifies the known core biophysical and ecological components that make up the natural character of the Marlborough Sounds. Consideration of the effect of any plan change and consent applications on the natural character of the Marlborough Sounds must therefore have regard to these descriptions.

Consideration of the effect of activities on these core components is therefore required in:

- i) the preparation of plan change and resource consent applications Assessment of Environment Effects;
- ii) decisions on those plan changes and consents; and
- iii) the development of appropriate consent conditions, mitigation options and environmental offsets, where these are deemed to be appropriate.

How to use this Appendix

The overall character of the terrestrial, freshwater and marine systems that function within the area covered by the plan is described in terms of known biophysical and ecological characteristics that typify the Marlborough Sounds area.

The same characteristics are used to describe the natural character of the particular areas across the 11 land and eight marine systems. The boundaries to these areas are clearly mapped (Sheet 106) Each natural character area contributes to the overall natural character of the Marlborough Sounds area. Sustainability of the characteristics of individual natural character areas is therefore important in sustaining the overall natural character of the Marlborough Sounds.

The core ecological and biophysical components of each of the natural character descriptions are described in terms of the parameters listed in Table 1 below. These parameters condense the natural character components described in Chapter One of the New Zealand Coastal Policy Statement.

Table 1
Core Ecological and Biophysical Components
of Natural Character

- Collective Characteristics
- The Physical Environment
 - Landform/Geological patterns and features
 - Dynamic features and processes, including climate
 - Water
- The Biological Environment
 - Predominant indigenous vegetation
 - Distinctive biota, communities and habitats
 - Potential for Restoration

Descriptions of the landscape and seascape experience in each part of the plan area, whilst often an important contribution to natural character, have not been included.

Definitions of Terms Used

Distinctive indigenous biota:	Describes the indigenous flora and fauna that is special to a particular natural character area, but is not necessarily confined to that area.
Endemic:	Refers to species of plants and animals which are unique to an area or animals which may migrate but breed only in the area.

Overall Natural Character of the Marlborough Sounds - Terrestrial

Collective Characteristics

A highly distinctive landform of partially drowned valleys. An intricate, complex indented coastline with numerous promontories, bays and islands. A diverse range of ecosystems determined by a wide range of geology, landforms, climate and biota. Distinctive mineral belt ecosystems. A strong maritime influence and high exposure to the strong winds of Cook Strait. Exceptional biodiversity. Over 50% is in indigenous vegetation cover. Extensive areas of intact upland forest, and a few large tracts of lowland and coastal forest. Distinctive alpine and coastal communities. A collection of island refuges for nationally threatened native species. Gondwanaland remnants with highly distinctive native animal species such as tuatara; numerous endemic species (confined to Marlborough Sounds) and species reaching their distributional limits. Extensive wild and scenic areas.

A. The Physical Environment

1. Landforms/Geology

Largely sedimentary and metamorphic rocks regionally arranged in broad, more or less parallel bands aligned southwest - northeast.

Sedimentary strata, of predominantly indurated sandstones (greywacke), confined to the western parts of Pelorus catchment and Sound.

Metamorphic rocks are schists of varying degrees of development. Weakly schistose rocks, with limited alignment of their minerals into plates and limited separation of those minerals into discrete layers (foliation), comprise much of Pelorus Sound and eastern Queen Charlotte Sound. Strongly schistose rocks, with well-developed foliation into quartz layers, comprise much of the Wakamarina catchment and central parts of the Sounds including eastern parts of Mt Stokes massif.

The geology of the western part of the Sounds, including D'Urville Island, is dominated by the Nelson/Marlborough mineral (ophiolite) belt, and comprises ultramafic rocks and melanges of various rock types in an ultramafic matrix. These have originated deep within the earth and are extremely nutrient-poor but have unusually high concentrations of magnesium and iron and the trace elements nickel, copper, cobalt, chromium and manganese. Such high concentrations of these elements have altered the earth's magnetic field along the belt.

Also associated with the belt are rare outcrops of serpentinitic breccia, argillite and limestone.

Due to regional submergence, alluvium is generally uncommon in the Sounds proper, being largely confined to relatively small pockets behind embayment heads. Nevertheless, it is quite extensive further inland, and is a very important valley floor component of the Pelorus, Wakamarina and Kaituna catchments.

The various rock types in the Sounds have played a large part in determining the pattern and characteristics of many landforms, differences in rates and types of erosion, differences in relief, drainage patterns, and biotic assemblages and patterns.

Soils include: hill country strongly leached to podzolised stony steepland soils and podzols from indurated greywacke; argillite; schist and associated solid fluvial debris. Alluvial soils in restricted locations with high fertility; mineralised soils from ultrabasic rocks with strong nutrient imbalances; highly enriched soils of seabird islands; and skeletal soils of the exposed coastal margins.

Overall, the Sounds are a rare and nationally important landform. This is the largest and most well-developed example of a ria coastline in New Zealand, formed as a result of both subsidence and sea level rise, to produce a profoundly incised and intricately indented coastline with attenuated, fragmented blocks of land largely surrounded by sea.

The 70 km wide, 150 km long wedge of erosion-resistant greywacke and schist that makes up North Marlborough has been shunted northward into Cook Strait by the Alpine Fault. Submarine subsidence of the Wanganui Basin has tilted the wedge downwards to the northeast, and has combined with post-glacial sea level rise to create a partially-drowned landscape. River valleys and terraces have been inundated to become sounds, inlets and bays; ridges have become peninsulas and headlands; islands created as ridgelines have sunk below sea level; major river systems have changed direction and course (eg; Pelorus River); the penetrating influence of the marine environment on coastal erosion, regional climate and biological systems has been profound.

The major landforms that contribute to the natural character of the region include: the two steep-flanked main mountain ranges (Bryant and Richmond); various steep-sided, isolated mountain massifs (eg. Mts Stokes, Stanley and Robertson) (v&s); extensive river valleys (Pelorus, Rai, Wakamarina, Kaituna) with well developed fluvial landforms (alluvial terraces and fans, floodplains, deltas, wetlands, estuaries) and diversity of river types (eg; meandering, intrenched); the distinctive topography of the western ultramafic areas (including Patuki and Croisilles melanges) (v&s); a multitude of capes, headlands, peninsulas and points; an extensive and complex labyrinth of waterways; narrow sea channels, passages, reaches, arms, harbours and embayments (v&s); discrete marine-created landforms: barrier beaches, boulder banks and lagoons, tombolos, spits, cusped forelands, dunelands (mainly in the western sounds) (v&s); well-developed coastal cliffs especially in the Outer Sounds; numerous islands and rock stacks (v&s). (v&s = visually and scientifically important).

Nationally important geological features include: Matarau Point beach ridge foreland; Greville Harbour boulder spit; serpentinitic breccias along parts of the western coast; Dun Mountain and Patuki melange ultramafic geologies and landforms.

Internationally and nationally important areas for soils and soil processes include forested areas of: Pelorus headwaters; Pelorus Bridge; Endeavour Inlet head and Tennyson Inlet - Nydia Bay; and indigenous vegetation on the mineral belt along the Bryant Range and on D'Urville Island.

2. Dynamic Features and Processes, Including Climate

That very diverse, highly variable climate ranges from warm and maritime dry-temperate in the Outer Sounds, to wet and cold alpine along the Richmond and Bryant Ranges.

Rainfall varies from around 800 mm in the Outer Sounds to over 2000 mm along the ranges. Rainfall generally increases with increasing altitude and distance from the outer coast, as well as from the eastern Sounds to the western Sounds.

The area is notable for occasional high intensity rainfall events, especially in western and southern parts. Droughts are generally not common but areas with low elevation and low rainfall, mainly in the Outer Sounds, are predisposed to summer drought, especially on north and west faces.

Overall, maritime influence is very high, with decreasing influence away from Cook Strait. Much of the Sounds is surrounded by sea although the maritime influence is ameliorated by the relatively sheltered nature of the Inner Sounds.

Temperature ranges are relatively narrow in areas with high maritime influence, but are very wide away from the coast, especially in sheltered inland valleys where days can be very warm, but where evening cold air drainage and ponding are pronounced and frosts severe. The Outer Sounds and many parts of the Inner Sounds are largely frost-free.

Exposure to winds and storms ranges from severe in the Outer Sounds and at high altitudes (especially ridges, ranges and summits), to minimal in sheltered bays and inland valley systems. The Inner Sounds are notable for its sheltered bays and waterways, while the Outer Sounds are notable for their high wind velocities, especially through the Cook Strait narrows. In the Outer Sounds, the effects of storm surges and high energy wave action on landforms, erosion processes, and biotic communities are profound.

Fog is a significant feature of the valleys of the Pelorus catchment.

Winter snow is uncommon and confined to main ranges and high summits (eg; Stokes, Robertson) and is ephemeral on all but the highest peaks of the Richmond Range.

Overall elevation is high, ranging from sea level to 1756 m (Mt Richmond); mean altitude is c. 350 m.

3. Natural Air Quality

Very high natural air quality throughout Marlborough Sounds.

B. The Biological Environment

[Comprises all of Sounds Ecological District, most of Pelorus and D'Urville Ecological Districts, and parts of Para and Cook Strait Ecological Districts].

1. Predominant Indigenous Vegetation

The total area of the Sounds District is 291,696 ha of which 55% is native forest, 14% is shrubland (both exotic and native), 20% is pasture and non-woody native vegetation and 11% is exotic forestry. (Note: Percentages based on interpretation of 1990 satellite images.)

Originally, over 90% of the Sounds and hinterland was covered in forest. Non-forest communities were naturally restricted to areas that were inimical to forest development due to physical and environmental constraints such as steepness, exposure, salinity, substrate type and instability, extreme water regimes (inundation/excessive drainage), and low temperatures.

They include coastal, estuarine, riparian, ultramafic, subalpine and seral shrublands; coastal, ultramafic riparian, estuarine and alpine tussocklands, herbfields and rocklands (especially on bluffs); dunelands, estuarine rushlands, and various wetland communities.

Disturbance and loss of indigenous vegetation cover correlates very well with altitude. Mid-altitude and upland forests, and alpine communities are still largely intact. Coastal and lowland forests have been extensively compromised and are fragmented or lost over much of the Sounds, especially in the drier parts; however a few exceptional areas are still intact. Alluvial communities, especially forests and wetlands, have been drastically compromised with very little remaining - almost regionally extinct.

D'Urville Island, Mt Stokes and the forests of the upper Pelorus Valley and Tennyson Inlet retain much of their indigenous cover. They make a major contribution to the natural character of the Sounds as a whole.

Lowland hill country with regenerating and old growth indigenous forest provides much natural character, despite a long history of modification and loss. The overall pattern is that natural character is better retained in the west and at higher altitudes. These western areas are representative of some of the natural character intrinsic to the Sounds and their preservation and restoration would contribute greatly to the Sounds as a whole.

Where indigenous vegetation areas exist in the east, in low altitude areas of the Pelorus catchment, and in the low relief areas of outer Pelorus Sound, they break up the predominately modified landscape and make a strong contribution to the natural character of the Sounds as a whole.

2. Distinctive Biota, Natural Biodiversity, Productivity

The ecological districts that make up the Sounds are further subdivided into eleven distinct terrestrial ecosystems, each with a unique combination of geology, landforms, climate, natural communities and biota.

There is very high overall natural biodiversity due to habitat heterogeneity and the presence of island refuges.

Generally natural productivity is moderate throughout the Sounds, with limited areas of extremely high productivity (seabird islands) and of very low productivity (ultramafic areas).

The area contains over a third of New Zealand's native plants species.

3. Biotic Patterns

Natural biotic patterns are strongly influenced by intricate landforms, substrate and strong climatic gradients between the Inner and Outer Sounds, eastern and western Sounds, lowlands and uplands (eg; Pelorus lowlands with moderately high rainfall/low exposure, compared to the Cook Strait narrows with low rainfall/high exposure).

Although relatively small in extent, the non-forest communities and alluvial communities of the Sounds are extremely important in adding to community and species biodiversity, many being highly distinctive and confined to the North Marlborough - Sounds - Cook Strait areas, providing vital habitat to numerous

localised species including those endemic to, or having their strongholds in the area, as well as nationally threatened species.

Nationally outstanding, unusual and distinctive community types include: Cook Strait shrublands; tussock-herbfields and herbfields; coastal, lowland and upland mineral belt communities; seabird and reptile islands; and Mt Stokes and Richmond Range alpine zones.

Also nationally important are all communities on possum-free islands, especially those dominated by mixed-broadleaf forests. D'Urville and Arapawa Islands are exceptions in this regard.

Nationally important tracts of lowland forest are located in the middle Pelorus, Tennyson Inlet - Nydia Bay, and on D'Urville Island due to their large size, intactness and uninterrupted sequences.

Intact vegetation sequences from seafloor to ridgetops elsewhere in the Sounds are also nationally important because of their rarity.

4. Communities and Habitats

The area provides vital habitat important for the survival of a number of endemic and/or nationally threatened species, including: giant land snails (*Powelliphanta 'bicolor'*, *P. 'consobrina'* and *P. 'obscura'*); land snail (*Rhytida 'stephenensis'*); ngaio weevil, Cook Strait giant weta; Cook Strait click beetle; flax weevil; several species of large beetles and native slugs; Cook Strait and Brothers Island tuatara; striped gecko; Marlborough green gecko; Duvaucels gecko; speckled skink; Hamilton's frog; Maud Island frog; king shag; Hector's dolphin; *Kirkianella* "Cook Strait"; titirangi; Cooks scurvy grass; Cook Strait bristle tussock; pygmy button; Mt Stokes cushion daisy and carrot; Richmond Range cushion daisy, muttonbird groundsel; *Hebe rigidula* (including the D'Urville mineral belt hebe) and several other mineral belt species; Stephens Island hebe; Cook Strait mahoe; bamboo tussock; fierce lancewood; *Pimelea tomentosa*; *Teucrium parvifolium*; *Scutellaria novae-zelandiae*; *Poranthera microphylla*; *Brachyglottis traversii*; *Brachyglottis 'Richmond'*; *Ourisia 'Richmond'*.

Habitats associated with nationally rare and endangered species include: predator free habitats (for species such as kaka, kakariki, tuatara, Hamilton's frog, little spotted kiwi, South Island saddleback); and tupeia mistletoe riparian and alluvial communities, especially in the Pelorus catchment; maritime communities (for species such as King Shag, *Kirkianella*, bristle tussock, and fierce lancewood); coastal vegetation (for species such as large-leaved milktree and coastal sand spurge); and bird islands (for species such as Cooks scurvy grass and mutton bird groundsel).

Islands which lack one or more introduced mammalian pests are nationally rare.

The area provides very important habitat for millions of seabirds including several species of prion, shearwater, petrel and shags.

The area is nationally important for its coastal black beech/hard beech forests which are rare throughout the rest of New Zealand.

The area is covered in significant mixed broad-leaved forests of tawa, kohekohe, pukatea, nikau and karaka. These lowland and coastal forests are notable for their profusion of epiphytes, lianes, ferns and understorey species.

The area provides an important 'mixing zone' of subantarctic and northern New Zealand species, many of which reach their respective northern and southern limits here, or, in the South Island, are represented only in the Sounds.

North Marlborough is one of the national strongholds for widespread species such as hard beech, little blue penguin, fairy prion and fluttering shearwater.

Most vulnerable to disturbance and further loss are communities on predator-free islands, alluvial terraces, fans, deltas and floodplains, coastal dunes, all wetlands and estuaries and their margins, riparian margins, coastal and lowland ultramafic areas and regenerating shrublands.

There is natural movement of some species, such as seabirds and penguins, between land and sea which are still largely fully functioning.

There is also natural movement of wildlife between natural areas generally unrestricted at higher altitudes where areas are largely intact and continuous. There are constraints on natural movement of many species in lowland and coastal natural areas because of loss, contraction, fragmentation and isolation of habitats. Constraints are severe on some species in alluvial natural area remnants. Connections between natural areas of the Sounds proper, and the Pelorus hinterland are also completely severed as are those to the Mts Cullen and Robertson massifs.

C. Priorities and Potential for Restoration

Re-establishment of natural patterns of indigenous vegetation and wildlife.

Minimising threats and maximising viability of nationally and regionally rare communities and species.

Reduction of weeds and pests to the point where the indigenous elements can persist as significant components of natural character. Control of pines, old mans beard, banana passionvine, is particularly important as well as control of gorse and Spanish heath in ultramafic areas. Pigs, goats, deer and possums also have major impacts on natural character.

Eradication of introduced mammals from islands where technically feasible; establishing protocols and management practices to prevent further introductions.

Removal of conspicuous and intrusive development from areas of otherwise high natural character.

Prevention of ongoing or new activities which depress or disturb natural character.

Re-establishment of natural riparian margins.

Restoration of degraded, extremely fragmented communities, especially alluvial systems, estuarine and riparian margins, wetlands and their margins is a major priority.

Restoration of coastal and lowland forests, through the continued regeneration of secondary shrublands.

Overall Natural Character of the Marlborough Sounds - Freshwater

Collective Characteristics

An abundance of small coastal streams with good water quality and instream habitat makes the area nationally significant for its native fishery values.

A. The Physical Environment

1. Landforms/Geological Features

Generally small contributing catchments. Abundance of small coastal streams.

2. Climate

Strong climatic gradients between Pelorus hinterland (high rainfall) to the Cook Strait narrows (low rainfall) influence catchment size and summer low flows.

3. Natural Water Quality

The natural water quality of the Marlborough Sounds is very high although degraded in some lowland river catchments (Rai and Kaituna).

Very clear, cool waters flow from forested catchments.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

High freshwater diversity due to habitat heterogeneity, and coastal proximity. Wide range of natural levels of biological productivity.

Valued trout fishery in large catchments such as the Pelorus. Very diverse native fisheries in small low-gradient coastal streams, particularly in the Outer Sounds.

Provides habitat for the survival of a number of endemic freshwater fish species. Banded kokopu, koaro, torrentfish, blue-gilled and redfin bullies widespread throughout Sounds, and limited records of giant and short jawed kokopu. Lamprey and dwarf galaxias also present in a few streams.

Riparian, wetland and estuarine habitat, water quality, unimpeded passage for migratory fish including coastal access, are all important in sustaining significant and threatened freshwater fish species found in the Marlborough Sounds (short jawed, giant and banded kokopu).

Numerous small estuaries, wetlands and streams vulnerable to disturbance.

Natural biotic patterns are complex. Strongly influenced by intricate landforms, substrate patterns, strong climatic gradients between Pelorus hinterland (high rainfall) to the Cook Strait (low rainfall).

C. Potential for Restoration (including priorities for restoration)

Initiate riparian management in lower sections of streams known to contain short-jawed kokopu.

Maintain and enhance riparian vegetation in lower altitude stream areas of high native fishery values. Similarly, restore fish passage in streams where it is currently impeded.

Address impacts of subdivision (stormwater, water abstraction, fish passage, effluent soakage), forestry and farming (sediment, fish passage fertiliser runoff, gravel extraction and vegetation clearance).

Riparian management for the degraded catchments of Rai to Kaituna to address degraded water quality.

Overall Natural Character of the Marlborough Sounds - Marine

Collective Characteristics

The Marlborough Sounds marine environment largely retains its natural character. Bordered by Tasman Bay to the west and Cook Strait to the north-east, exposed to open ocean conditions along its south-eastern flank, yet mostly sheltered by their convoluted form, the Marlborough Sounds are uniquely structured and situated.

A number of broad and sometimes interacting environmental gradients traverse the length and breadth of the Marlborough Sounds, notably: wave exposure, tidal influence (currents, tidal height, water exchange), turbidity, sedimentation, temperature, salinity, nutrient availability, and substrate composition. The interplay of these various characteristics creates a unique marine environment notable for its broad scale variability.

The marine and terrestrial environments combine visually to form a region of distinctive natural character. Notable features include: an intricate coastline; numerous islands and off-shore rocks and stacks; wild and remote localities; exposed and sheltered waters in close proximity; and strong tidal flows.

A. The Physical Environment

1. Form/Geology

Cobble/boulder and bedrock shores dominate the inter-tidal and shallow sub-tidal zones of the Marlborough Sounds. Sediments with a mixture of sand, broken shell and silt can occur below the reef zone in shallow wave-worked areas or areas with moderate-high currents. An extensive and comparatively uniform mud/silt bottom typically extends beyond, dominating the off-shore regions of the Sounds.

Exceptions to this general pattern include: off-shore reefs, rocks and stacks of the Outer Sounds; off-shore areas of coarse sand and/or pebbles in some exposed locations; mudflats in estuarine areas; pea gravel beaches in eastern Cook Strait; and a very limited array of sandy shores.

Notable coastal landforms include: estuaries and tidal flats; cusped forelands; coastal bluffs; off-shore islands, stacks, emergent rocks, and reefs; numerous headlands and bays as a result of the convoluted and intricate nature of the Sounds as a whole.

2. Dynamic Features and Processes, Including Climate

Exposed eastern and northern areas of the Outer Sounds are subjected to high wind velocities funnelling through Cook Strait. The south-eastern coast is also exposed to oceanic swells from the south. Shores in these exposed localities are subjected to moderate-high seas, however, elsewhere the Marlborough Sounds are noted for their relatively sheltered conditions.

Strong tidal currents occur around the Outer Sounds, especially off headlands and through constricted channels. Moderate currents also occur off the exposed faces and headlands of the major channels within the inner and middle regions of the Sounds.

Tidal range varies from about four metres in the west to 0.5 metres in the east.

3. Water

Water quality is mostly very high. Notable features include: low sediment loadings in Queen Charlotte Sound and the Outer Sounds generally; moderate to high sediment levels in Pelorus Sound and Port Underwood; cooler waters in the east, warmer waters in the west; reduced salinities towards the head of Pelorus Sound; very complex and variable hydrodynamics; nutrients predominantly derived from sediment remineralisation, upwelling from Cook Strait, and river inflows; relatively poor water quality in the vicinity of Havelock and Picton.

B. The Biological Environment

1. Natural Biodiversity

Natural biodiversity of the Sounds as a whole is high as a result of the diverse range of environmental conditions traversing the Sounds. However, on a more localised scale biodiversity can range from the very diverse (eg reefs and off-shore rocks/stacks of the Outer Sounds) to the relatively simple (eg benthic communities of the more sheltered, enclosed bays). There is an overall gradient from the Inner to the Outer Sounds, with biodiversity generally increasing with proximity to the open ocean.

2. Productivity

Productivity is variable, but generally moderate across the plan area. Some areas are distinguished by their very high productivity (eg. estuaries and exposed parts of the outer coast) whereas other areas can have relatively low productivity (eg. enclosed, sheltered bays with limited water exchange).

3. Ecological Features

Ecological features which distinguish the Marlborough Sounds marine environment include: low energy rubble shores dominated by mobile and encrusting animal species and with little seaweed cover; extensive and relatively uniform mud bottom off-shore areas; high current communities in areas subjected to strong tidal currents; brachiopod dominated communities; bryozoan coral beds; horse mussel beds; off-shore reefs, rocks and stacks in the Outer Sounds; soft-bottom sponge communities; elephant fish spawning grounds; scallop beds; large tubeworm mounds in certain areas; *Macrocystis* beds in colder, sheltered eastern areas; a fish fauna noteworthy for the predominance of blue cod and spotties.

A wide range of marine mammal species inhabit or migrate through Marlborough Sounds waters. Cook Strait is an important migratory route for several large whale species, including sperm, humpback, minke and southern right whales. Orca (killer whales) are regular visitors to the Marlborough Sounds and there are small resident populations of Hector's and bottlenose dolphins. Dusky dolphins can be relatively numerous at times. New Zealand fur seals have established small haul-out colonies at various sites through the mid-Outer Sounds, with a large breeding colony present on Stephens Island.

Numerous seabirds feed through the mid-Outer Sounds including terns, shearwaters, petrels, prions, shags and gannets. King shags, endemic to the Marlborough Sounds, are restricted to only a few breeding sites in the Outer Sounds. Little blue penguins occur in good numbers throughout the Marlborough Sounds.

Tidal wetlands are found at the heads of most major bays and inlets, forming an important wetland network within the Marlborough Sounds. Most of these wetlands are relatively small, the major exceptions being Whangarae Estuary and a very significant estuarine complex centred on the Kaituna Estuary at the head of Pelorus Sound. Collectively these coastal wetlands are a crucial habitat for numerous wetland bird species.

C. Potential for Restoration

Many off-shore areas have been trawled or dredged, resulting in the disturbance of natural seabed communities. Benthic communities would gradually recover should trawling or dredging cease in any particular area.

Marine reserve establishment.

Removing conspicuous and intrusive development from areas of otherwise high natural character.

Restoration of natural riparian margins around coastal wetlands and estuaries.

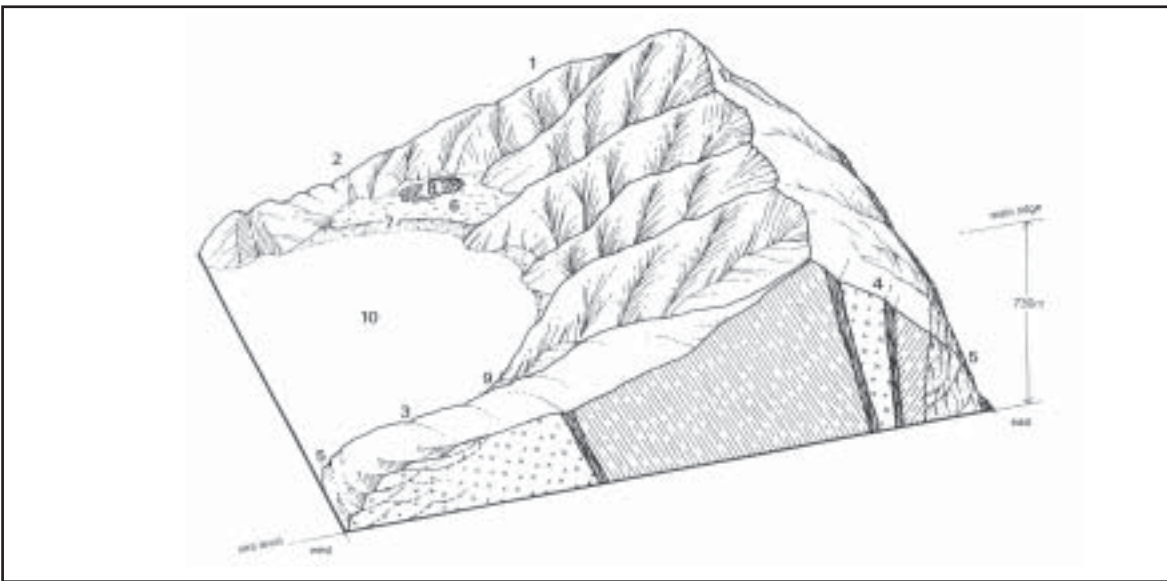
Reduction of contaminants entering the coastal marine area from point source discharges, river inflows and general run-off.



1 D’Urville

Hard Beech, Manuka, Weka, Bellbird, Coastal Ultramafic-Dominated Ecosystem

Steep hills and mountains typify this land ecosystem with bluffy sea cliffs and headlands in places. At sea level lie large drowned river valley harbours featuring along their land/sea margins a varied array of coastal landforms such as inlets, spits, estuaries, beaches, lagoons and minor fans. Elevation is moderately low but rainfall moderately high in places as the landmass is being constantly buffeted on all fronts by the sea. D’Urville has a strong maritime influence and is subject to frequent sea storms. Base rocks eventuate from deep within the earth’s mantle, often erupting through the surface as dykes and sills. Some of the soils lack many essential nutrients and have toxic concentrations of trace elements creating generally inhospitable conditions resulting in unusual vegetation. D’Urville has many streams, some quite large, and extensive tracts of native vegetation.



**Table 2
Indigenous Vegetation and Landforms - D’Urville Ecosystem**

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Steep to very steep upper hill and mountain slopes on sedimentary rocks >500 m elevation	Sandstone and siltstone of Rai and Greville Formations	Forest Red beech-silver beech forest. Silver beech forest with Halls totara, southern rata, miro and rimu.	Forest Red beech-silver beech forest. Silver beech forest with Halls totara, southern rata, miro and rimu.

Table 2 (cont)				
Indigenous Vegetation and Landforms - D'Urville Ecosystem				
Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2.	Moderately steep to steep lower hill slopes on sedimentary rocks 0-500 m elevation	Sandstone and siltstone of Rai and Greville Formations	<p>Forest Kohekohe-karaka forest. Kohekohe-tawa-nikau forest. Mahoe-mixed broadleaf forest. Hard beech forest with kamahi, hinau, tanekaha in places and scattered emergent rimu. Pukatea-mahoe-nikau-supplejack-mixed broadleaf forest. Kanuka forest with ponga, fivefinger, mingimingi, <i>Gahnia</i>, heketara.</p> <p>Scrub Rewarewa-manuka scrub. Manuaka scrub.</p> <p>Vineland Nikau-kiekie vineland</p>	<p>Forest Kohekohe-karaka forest. Kohekohe-tawa-nikau forest. Hard beech forest with kamahi, hinau, tanekaha in places and scattered emergent rimu. Pukatea-mahoe-nikau-supplejack-mixed broadleaf forest.</p>
3.	Rolling, moderately steep to very steep lower hill slopes on ultrabasic and serpentinitic rocks [prone to slumps and earthflows] 0-550 m elevation	Dun Mountain Ultramafic, Lee River Group gabbro, Patuki and Croisilles melanges	<p>Treeland Mountain beech-southern rata/manuka treeland</p> <p>Scrub, Shrubland and Heathland Manuka scrub Manuka - square rush rush-shrubland. Mountain beech-silver beech-cedar-mountain toatoa shrubland. Manuka-inaka heathland. <i>Coprosma</i>-weeping mapou-inaka shrubland.</p> <p>Turfland, herbfield and boulderfield Herb-tussock boulderfield. Umbrella fern-comb sedge-turfland. <i>Raoulia-Epilobium</i> open herbfield.</p>	<p>Treeland Mountain beech-southern rata/manuka treeland</p> <p>Shrubland and Heathland Manuka - square rush rush-shrubland. Manuka-inaka heathland. Mountain beech-silver beech-cedar-mountain toatoa shrubland. <i>Coprosma</i>-weeping mapou-inaka shrubland.</p> <p>Turfland, herbfield and boulderfield Herb-tussock boulderfield. Umbrella fern-comb sedge-turfland. <i>Raoulia-Epilobium</i> open herbfield.</p>
4.	Rolling, moderately steep to very steep low hill slopes on basic igneous rocks 0-500 m elevation	Part Brook Street Volcanic	Unknown	Unknown
5.	Steep to precipitous eroding sea cliffs, [some large scale slope failures, eg; 026/690210] 0-250 m elevation	Sandstone and siltstone of Rai and Greville Formations part Brook StStreet. Volcanics, Patuki and Croisilles melanges	<p>Forest Akiraho-puka-wharariki-rangiora-kiekie forest on coast fringe.</p> <p>Scrub and Shrubland Taupata-ngaio scrub and shrubland.</p> <p>Tussockland Silver tussock and/or knot sedge tussockland.</p> <p>Herbfield and Rockland Wharariki-rengarenga-rauhua flax-herbfield coastal fringe. Horokaka rockland.</p>	<p>Forest Akiraho, puka-wharariki-rangiora-kiekie forest on coast fringe.</p> <p>Scrub and Shrubland Taupata-ngaio scrub and shrubland.</p> <p>Tussockland Silver tussock - knot sedge tussockland.</p> <p>Herbfield and Rockland Wharariki-rengarenga-rauhua flax-herbfield coastal fringe. Horokaka rockland.</p>

Table 2 (cont)
Indigenous Vegetation and Landforms - D'Urville Ecosystem

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
6.	Minor prograding inlet heads and fans, eg; P25/790425 0-20 m elevation	Recent alluvium from predominantly sedimentary rocks, swamp deposits	Forest and Treeland Tawa-mixed broadleaf forest. Swamp maire treeland. Kahikatea-pukatea mixed broadleaf tall swamp forest. Matai, rimu, miro, kahikatea forest with scattered tawa, tanekaha, mahoe, kiekie. Rimu-matai-miro-hinau mixed broadleaf forest. Shrubland Manuka/baumea shrubland	Forest Kahikatea-pukatea mixed broadleaf tall swamp forest. Kahikatea-swamp maire-pukatea forest. Kahikatea-matai-totara-tawa forest. Matai-rimu-miro-kahikatea forest with tawa, tanekaha, mahoe, kiekie. Rimu-matai-miro-hinau mixed broadleaf forest.
7.	Barrier spits tombolos, beach ridges and dunes, eg; P25/780432, O26/628123 0-20 m elevation	Recent marine sand and gravel	<i>Raoulia</i> sand flats. Pohuehue vineland on boulder bank.	<i>Raoulia</i> sand flats. Pohuehue vineland on boulder bank. Spinifex-pingao duneland.
8.	Lagoons and estuaries, eg; P25/785437, O26/620120 0-3 m elevation	Recent fluvial and lagoonal deposits	Scrub Marsh ribbonwood-coastal shrub daisy - <i>Coprosma propinqua</i> estuary scrub. Rushland and Reedland Giant spike rush rushland. Oioi-sea rush estuarine rushland. Raupo-pukio reedland. Herbfield Sea primrose-remuremu-glasswort herbfield.	Scrub Marsh ribbonwood-coastal shrub daisy - <i>Coprosma propinqua</i> estuary shrubland. Rushland and Reedland Giant spike rush rushland. Oioi-sea rush estuarine rushland. Raupo-pukio reedland. Herbfield Sea primrose-remuremu-glasswort herbfield.
9.	Confined inlets [Okiwi Bay, Camp Bay]	Not applicable	-	-
10.	Large drowned river valley harbours [Port Hardy, Greville and Croisilles harbours] 0 m elevation	Not applicable	-	-

A. The Physical Environment

1. Landforms/Geology

Ultrabasic, intermediate, and acid intrusive and extrusive geologies and serpentinitic melange (all mineral belt geology); associated sedimentary strata; minor alluvium.

Mineral belt geology, includes iron and magnesium rich minerals, but also nickel, cobalt, manganese and chromium trace elements in concentrations toxic to many species.

Steep hills and mountains, cliffs, headlands and peninsulas, harbours, inlets, spits, estuaries, beaches, dunes; minor fans, deltas and alluvial terraces; islets and islands.

Nationally important geological features: Matarau Point beach ridge gravel foreland, Greville Harbour boulder spit; serpentinitic breccias along parts of western coast.

Regionally important landforms: Pakiaka Point barrier island and lagoon; the Greville Harbour barrier dune system, and associated lagoon and swamp; French Pass partly submerged ridgeline and reef; Whangarae and D'Urville Island limestone outcrops.

Naturally prone to slips and earthflows due to predisposition of ultramafic geology to structural failure.

Coastal lagoons characteristic and regionally rare. Valley floors and stream flood plain/debris.

Low gradient streams with good pool-riffle structures.

2. Climate and Elevation

Climate moist to wet; warm temperate.

Moderately low to high rainfall: 1100-2000 mm. Lowest at northern end of island. Occasional high intensity rainfall events.

Highly maritime - largely surrounded by sea. Many places frost-free. Salt spray a major coastal influence.

Generally exposed and windy; severe gales and storms occasional.

Harbours and estuaries relatively sheltered.

Moderate elevation: 0-856 m altitude range; mean altitude 250m.

3. Water

Large, permanent-flowing streams with stable substrate.

Excellent water quality with stream headwaters often draining from native forest.

B. The Biological Environment

[Part of D'Urville and Sounds ecological districts]

Total area of D'Urville Ecosystem is 25,960 ha, of which 49% is native forest, 30% is shrubland (both exotic and native), 7% is pasture and non-woody native vegetation and 5% is plantation forestry.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. Predominant Indigenous Vegetation

Detailed in Table 2

Originally the area was predominantly indigenous forest.

Indigenous vegetation loss has been largely on lowland, maritime peninsulas, west-facing slopes and gentle topography, especially alluvium. Upland vegetation is largely intact.

Original non-forest vegetation is confined to exposed or heavily mineralised ultramafic areas, estuaries, freshwater wetlands, dunes, spits and barrier beaches, coastal bluffs, exposed islands and stacks.

2. Communities and Habitats

Coastal, lowland and upland ultramafic vegetation is extensive, very distinctive, an important habitat and vulnerable to disturbance and loss. Very low productivity; low species diversity but highly distinct; some communities, especially tussocklands, rocklands, shrublands and stunted forest, endemic to the mineral belt due to the tolerance by their species to high levels of trace elements, especially nickel, are nationally important. Coastal ultramafic communities are unique.

Dune, spit, beach, lagoon, freshwater wetland, estuarine and alluvial communities are very distinctive and rare in the Sounds - they are important habitats which add considerably to the biodiversity, biotic patterns, and productivity of the ecosystem.

Island communities are nationally important - distinct and rare biotic assemblages, highly productive. Some are predator-free, others free of major predators (eg; no possums on D'Urville) allowing for survival of species, communities and processes now under threat on the mainland.

Forest communities, especially with kohekohe, titoki or southern rata, are nationally important due to lack of possums.

One of the more extensive tracts of lowland forest remaining in Marlborough is found here.

Coastal shrublands are distinctive - endemic to Cook Strait.

Upland biotic patterns are still largely intact. Lowland and coastal patterns are often fragmented. Still very good connections remain between some communities, allowing for movement of biota and buffering from threats.

The area has very high native fisheries values, with diverse assemblages of native fish species. Absence of introduced freshwater fish. Good access for threatened fish species due to coastal proximity. Eel fishery in coastal lagoons.

Overall, natural biodiversity of communities and species is exceptional.

3. Plants

Hebe rigidula var. 'D'Urville' (d); *Euphorbia glauca* (r); Cooks scurvy grass (r); *Poranthera microphyllar* (r); *Craspedia* 'ultramafic' (r); *Chionochloa defracta*; bamboo tussock (r); *Rytidosperma petrosum* (r); *Spinifex sericeus* (r); *Hebe urvilleana*; *Tupeia antarctica* (r); *Knightia excelsa*; *Gahnia lacera* (r); *Lepidosperma laterale* (r); *Atriplex cinerea* (r); tanekaha; *Chionochloa beddei* (r); hutu; sand coprosma; whau (r); *Hebe elliptica* (r); *Melicytus obovatus*;

black maire (r); *Olearia serpentina*; large-leaved milktree; *Pimelea gnidia* (r); *P.longifolia* (r); raukawa; *Gingidia montana*; *Tetragonia tetragonioides* (r); *Baumea arthropphylla* (r), *Carex devia*, *Carex litorosa* (r); pingao (r); *Schoenus nitens* (r); *Corybas cheesemanii* (r); *Adiantum formosum* (r); *Pleurosorus rutifolius* (r); matagouri (r); *Bulbophyllum pygmaeum*; hangehange, *Dichelachne inaequiglumis* (r).

(d)=endemic to D'Urville Island (r)=rare in the Marlborough Sounds, or nationally threatened.

4. Animals

Powelliphanta 'obscura' (r); long-tailed bat (r); fernbird (r); king shag (r)(e); spotless crane (r); sooty shearwater (r); fluttering shearwater; diving petrel; white-fronted tern; little blue penguin; green-spotted skink; Marlborough green gecko (r)(e); banded kokopu (r); short-jawed kokopu (r); giant kokopu (r); *Wainuia urnula nasuta* (r); D'Urville Id slug (*Pseudaneitea johnsi*) (r)(d).

((d)=endemic to D'Urville Island, (e)=endemic to Marlborough Sounds, (r)=rare in the Marlborough Sounds, or nationally threatened.)

C. Priorities and Potential for Restoration

Terrestrial Values

Upper areas more intact, with other areas extensively modified. Ultramafic areas vulnerable to fire and weed invasion, especially wilding pine and gorse.

Maintain absence of major mammal pests from islands - (eg; goats and possums from D'Urville) and eradicate others (eg; fallow deer).

Restoration of native duneland cover high priority.

Large areas of regenerating shrublands have excellent potential to develop back to lowland and coastal forests, and mature ultramafic forests and shrublands.

Priority to manage wild animal threats, especially pigs and deer, which are destroying *Powelliphanta* snail and its habitat.

Freshwater Values

Maintain and enhance wetland and associated riparian vegetation in lower gradient streams, lagoons, freshwater wetlands, and habitat of threatened species.

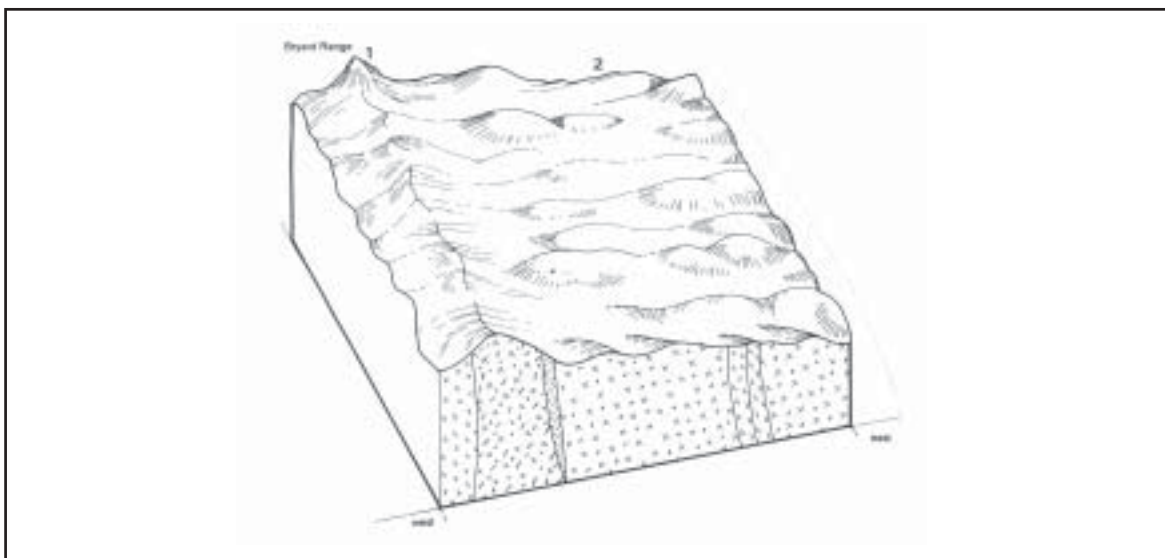
Address impacts of subdivision (stormwater, effluent soakage, water abstraction), forestry and farming (sediment and fertiliser run-off), and roading activity (gravel extraction/instream works/fish passage).



2 Bryant

Pahautea, Southern Rata, Mountain Beech, Rifleman, Tit, Inland Ultramafic Ecosystem

Only the mountain summit crestline and eastern slopes of the Bryant Range plus a few isolated chunks of faulted blocks of nutrient-poor, mineral-rich, mantle rocks nearby make up this system. On the mid to upper slopes, an uneven hummocky character caused by mass earthflows is prominent with numerous rocky outcrops as the bones of the earth poke through. Elevation is high and the climate wet with no maritime influence but exposed conditions on the tops. The poor-nutrient soils with high concentrations of trace elements as allowed unique stunted vegetation to evolve; still mostly intact in its natural state.



**Table 3
Indigenous Vegetation and Landforms - Bryant Ecosystem**

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Steep to very steep upper mountain slopes and summit ridges on ultrabasic rocks 700 - 2325 m.a.s.l.	Dun Mountain Ultramafic, Lee River Group gabbro	<p>Forest and Treeland Mountain beech-southern rata-mountain toatoa forest and treeland.</p> <p>Shrubland Wharariki-mountain tauhinu-mountain wineberry flax-shrubland.</p> <p>Tussockland Mineral belt snow tussockland.</p> <p>Sedgeland Mixed sedgeland (Schoenus, Carex, Carpha) on seepages.</p> <p>Rockland Herb-tussock-rockland Hebe-coprosma shrub-rockland.</p>	<p>Forest and Treeland Mountain beech-southern rata-mountain toatoa forest and treeland.</p> <p>Shrubland Wharariki-mountain tauhinu-mountain wineberry flax-shrubland.</p> <p>Tussockland Mineral belt snow tussockland.</p> <p>Sedgeland Mixed sedgeland (Schoenus, Carex, Carpha) on seepages.</p> <p>Rockland Herb-tussock-rockland Hebe-coprosma shrub-rockland.</p>

Landform Components	Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2. Strongly rolling to moderately steep irregular hummocky mid to upper mountain slopes on serpentinitic rocks [earthflows a feature] 200 - 1214 m.a.s.l.	Patuki and Croisilles melanges	Forest and Treeland Rimu/hard beech-black beech-lancewood forest. Mountain beech-cedar-halls Halls totara-bog pine treeland. Shrubland Inaka-mineral belt shrub daisy shrubland. Manuka shrubland.	Forest and Treeland Rimu/hard beech-black beech-lancewood forest. Mountain beech-cedar-halls Halls totara-bog pine treeland. Shrubland Inaka-mineral belt shrub daisy shrubland. Manuka shrubland.

A. The Physical Environment

1. Landforms/Geology

Ultrabasic intrusives and serpentinitic melange (mineral belt). Includes iron and magnesium rich minerals, but also nickel, cobalt, manganese and chromium in concentrations toxic to many species.

The ecosystem is centred on the Pelorus-Rai catchment portion of Nelson-Marlborough ultramafic belt.

Summits along the Bryant Range are variously broad and undulating in south, to narrow and steep in the north. Upper slopes steep in the north and variable in the south with some very gentle topography.

Midslope topography generally hummocky with gentle knolls and some narrow steep faces. Flights of alternating steep and gentle slopes.

Mass earthflows producing extensive, gently-sloping 'ramps'. Natural earthflow events due to predisposition of ultramafic rocks to structural failure. The source of earthflows often marked by bluffs. Occasional large outcrops of resistant rock.

A cluster of lakelets (Dew Lakes) on the broad, flat crest of the Bryant Range.

Internationally important geological features: Dun Mountain, large area of sheared and faulted ultramafic rocks, including dunite and olivine.

Nationally important geological features: Patuki tectonic melange, consisting of blocks of various rock types in an ultramafic matrix.

Regionally important geological features: 3 km long Alfred Stream earthflow.

Moderate-sized watercourses with gentle to steep gradients depending on landforms, and with a parallel-linear arrangement.

2. Climate and Elevation

Cool temperate to cold, moist to wet climate. Winter frosts typical especially on gentle slopes. Temperature inversion and cold air drainage into valleys very pronounced. Wide annual temperate range. No ameliorating effects from the sea. Mild summer temperatures. Droughts rare. Very high incidence of fog in Pelorus valley which extends up into ecosystem.

Relatively high rainfall: 1700-2000 mm. Highest along the Bryant Range. Occasional very intense rainfall events.

Southeast aspect - slopes generally sheltered from strong winds and storm events. Ridge crests very exposed to prevailing westerly winds and storms. Winter snow on Bryant Range is occasional and ephemeral.

No maritime or coastal influence.

Relatively high elevation: 80-1214 m altitude range; mean altitude 600m.

3. Water

Permanent Flowing Streams

Generally, very good water quality with most areas draining intact catchments. Localised high impacts from forestry.

B. The Biological Environment

[Part of Pelorus Ecological District]

1. Predominant Indigenous Vegetation Detailed in Table 3

Total area of Bryant ecosystem is 10,537 ha, of which 81% is in native forests, 13% is shrubland, 5% is plantation forestry and 1% is pasture.

(Note: Percentages based on interpretation of 1990 satellite images.)

Originally, predominantly a mosaic of tall and short-statured forest and shrublands - correlating with degree of influence of ultramafic substrate, topography and natural disturbance. Tussocklands, rocklands and low-statured shrublands on bluffs, slips, outcrops and the crest of the Bryant Range where ultramafic and climatic influences are high.

Ecosystem still largely intact with the exception of the lower altitude parts of Tinline and Heringa Streams, and Maungatapu, Rai and Ronga Saddles. Regenerating shrublands in some of these areas.

2. Communities and Habitats

Very distinctive, low-fertility forest, shrublands and tussocklands on ultramafic substrate (Nelson/Marlborough mineral belt) supporting locally endemic ultramafic species, and nationally or regionally rare species; some communities, especially tussocklands, rocklands, shrublands and stunted forest, endemic to the mineral belt due to the tolerance by their species to high levels of trace elements, especially nickel; some of these communities have their stronghold in Bryant ecosystem; upland forest unusual in Marlborough for supporting pink pine and southern cedar upland softwoods and associates more typical of northwest Nelson; high density of southern rata in places - nationally important.

Extensive lowland podocarp-beech-broadleaf forests; part of the largest tract of lowland forest in north Marlborough; a particularly high density of rimu in places - regionally important.

Ecosystem characterised by its moderate to low biodiversity due to it being largely upland, the naturally infertile and toxic nature of the substrate, and lack of coastal and alpine communities. Non-forest communities especially, make an important biodiversity contribution.

Natural processes and dynamics largely intact (including natural earthflow events). Open and low-statured communities vulnerable to fire and invasion by weeds, especially wilding pines and gorse.

Biotic patterns largely intact, transparent and complex. Excellent examples of influence of substrate and topography on vegetation patterns - nationally important.

Low native fish diversity. Too far inland and elevated for most migratory species except eels.

3. Plants

Mineral belt shrub-daisy (*Olearia serpentina*) (m); mineral belt snow-tussock (*Chionochoa defracta*) (m); *Poranthera microphylla* (r); *Myosotis monroi* (r)(m); *Hebe* aff. *carosula* (r)(m); *Pimelea suteri* (r); *Pimelea* aff. *sericeovillosa* (r)(m); *Poa acicularifolia* ssp. *ophitalis* (r)(m); *Colobanthus* 'serpentine' (m); *Bulbophyllum pygmaeum*; *Astelia graminea*; southern cedar (r); pink pine (r); red tussock; *Hydrocotyle dissecta*.

(m)=endemic to Nelson/Marlborough mineral belt (r)=rare in the Marlborough Sounds, or nationally threatened.

4. Animals

Nelson green gecko (r); *Powelliphanta 'consobrina'* (r); falcon, kaka.

(r)=rare in the Marlborough Sounds, or nationally threatened.

C. Priorities and Potential for Restoration

Terrestrial Values

Manage weed spread threats, especially gorse and wilding pines. Manage wild animal threats, especially pigs and goats which are destroying *Powelliphanta* and its habitat.

Excellent potential for allowing successional shrublands to regenerate back to mature ultramafic forest and shrubland communities, especially in lower altitudes.

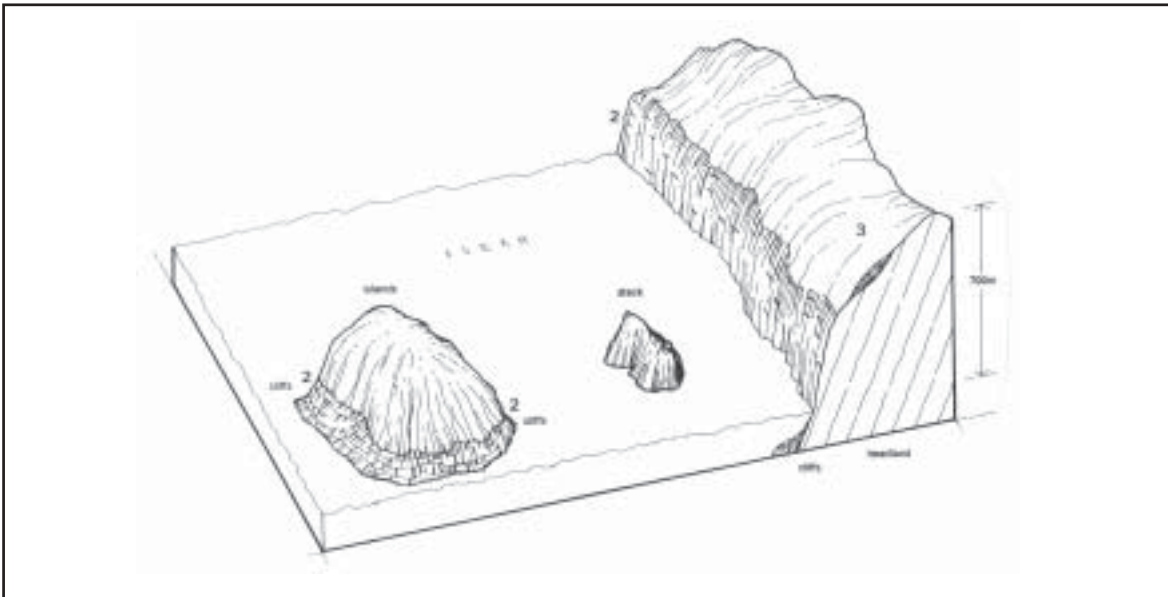
Freshwater values: Priority to control effects of land disturbance activities on downstream values and maintain/restore riparian communities where disturbed.



3 Cook Strait

Taupata, Ngaio, Rengarenga, Tuatara, Diving Petrel, Exposed, Dry, Maritime Ecosystem

Highly exposed maritime land ecosystem. High coherence of cliff face landforms with a collection of jagged stacks and harsh rocky islands. Steep, exposed and daunting sea cliffs, peninsulas and headlands. Wild and scenic sea coast. Dry climate coupled with small catchment areas and few streams. Elevation is low and rocks are predominantly a range of schists and sedimentary strata. Exposure and maritime influence is extreme. Brutal exposure to the elements has shaped a unique Cook Strait vegetation. The sheer nature and the topography and inaccessibility has left some areas, especially islands, predominantly in a natural state. High aesthetic coherence of pastoral landcover. A number of island sanctuaries (Stephens, Chetwodes, Titi and Brothers Islands). Stephens Island tuatara. King Shag stack roosts. Many rare species.



**Table 4
Indigenous Vegetation and Landforms - Cook Strait Ecosystem**

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	<p>Steep to very steep dissected cliff bounded islands 0-280 m. elevation</p>	<p>Predominantly weakly to strongly developed Marlborough Schist</p>	<p>Forest Ngaio-taupata forest. Kohekohe-karaka-nikau forest. Kohekohe-broad-leaved milktree forest.</p> <p>Vineland Pohuehue vineland.</p> <p>Herbfield Silver tussock-muttonbird groundsel tussock-herbfield.</p>	<p>Forest Ngaio-taupata forest. Kohekohe-karaka-nikau forest. Kohekohe-broad-leaved milktree forest.</p> <p>Herbfield Silver tussock-muttonbird groundsel tussock-herbfield.</p>

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2.	Very steep to precipitous sea cliffs with extensive rock outcrop 0-200 m. elevation	Predominantly weakly to strongly developed Marlborough Schist; sedimentary rocks	Shrubland Cook Strait kowhai shrubland. Taupata shrubland. Herbfield and Rockland Sea blite-horokaka herbfield. Herb-rockland. Tussockland Silver tussockland.	Shrubland Cook Strait kowhai shrubland. Taupata shrubland. Herbfield and Rockland Sea blite-horokaka herbfield. Herb-rockland. Tussockland Silver tussockland.
3.	Steep to very steep sinuous headlands with extensive rock outcrop, and very steep coastal hill and mountain slopes 0-753 m. elevation	Predominantly weakly to strongly developed Marlborough Schist; sedimentary rocks	Forest Ngaio-taupata forest. Kohekohe forest. Cook Strait mixed broadleaf forest. Shrubland and Flaxland Cook Strait shrublands. Cook Strait kowhai shrubland. Taupata-ngaio shrubland. Wharariki flaxland. Tauhiru Shrubland. Herbfield and Rockland Herb-rockland.	Forest Ngaio-taupata forest. Kohekohe forest. Cook Strait mixed broadleaf forest. Shrubland and Flaxland Cook Strait shrublands. Cook Strait kowhai shrubland. Taupata-ngaio shrubland. Wharariki flaxland. Herbfield and Rockland Herb-rockland.
4.	Precipitous stacks 0-100 m. elevation	Predominantly weakly to strongly developed Marlborough Schist; sedimentary rocks	Herbfield and Rockland	Herbfield and Rockland

A. The Physical Environment (Cook)

1. Landforms/Geology

Weakly to strongly developed schists; sedimentary strata; minor igneous rocks. No alluvium and limited colluvium.

Very steep landforms. A collection of jagged stacks and rocky islets, steep cliff bounded islands, steep and exposed sea cliffs, and headlands and peninsulas.

Coastal landforms developed as a result of high wave energy.

Soils shallow, stony, skeletal, moderately fertile.

Cliffs and very steep slopes particularly erosion-prone.

Regionally important geological features: Fighting Bay schist sea cliffs.

Streams are usually steep with unstable beds and a lack of good pool-riffle structures. Distinct lack of low gradient stretches, stream flood plains or debris fans.

2. Climate and Elevation

Dry, temperate climate; low rainfall: 800-1200 mm. Drought conditions common. No extremes of temperature. Frost-free. Very limited cold air drainage and ponding.

Maritime influence is extreme. Salt spray is a major influence over the whole ecosystem. Large swells and storm surges typical.

High wind velocities, especially through the Cook Strait narrows. Gale conditions frequent.

Low elevation: 0-560m altitude range; mean altitude 100 m.a.s.l.

3. Water

Reasonable water quality as most agricultural farming extensive in nature.

Some streams ephemeral, especially during summer months.

B. The Biological Environment

[Part of Cook Strait Ecological District]

Total area of Cook Strait ecosystem 6,659 ha of which; 15% is in native forest and 20% is in shrubland (both native and exotic), 52% is in pasture, native non-woody vegetation; and 13% is in plantation forestry.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. Predominant Indigenous Vegetation Detailed in Table 4

Mostly cleared except for some bluff communities and islands. Now in extensive pasture cover.

Originally a mixture of broad-leaved forests, especially kohekohe forest, and on exposed, dry, very steep or rocky sites: stunted forest, windshorn scrub and shrublands, tussocklands and herbfields - especially succulents. Compared to other land ecosystems, a high proportion of non-forest communities.

2. Communities and Habitats

Island communities nationally important - distinct and rare biotic assemblages; vulnerable to disturbance and loss and difficult to recover. Vital habitat for threatened species due to lack of introduced predators. Several species now confined to Cook Strait ecosystem.

Unique animal and plant communities dependent on seabirds - nationally important. Their high fertility/high acid guano input from the marine environment, and major physical effects of burrowing and trampling. Highly productive and high nutrient turnover. Seabirds have a major influence on community composition, structure and processes.

Shrublands, herbfields and tussockland communities are highly distinctive - endemic to Cook Strait; important habitats.

Eastern flanks of Arapawa Island support some of the best remaining examples of Cook Strait mixed broad-leaved forest - nationally important, especially as possum-free.

Frequent swells and surges have a profound influence on coastal communities.

Exceptional biodiversity for a maritime land ecosystem. Moderate natural biodiversity relative to other land ecosystems - limited by extreme environmental conditions and narrow range of landforms, altitude, and water regimes.

Several otherwise southern and subantarctic species occur here at their northern limits.

Lack of introduced freshwater fish. Good fish access from sea but unsuitable in stream habitat due to steep topography and lack of low gradient stream areas.

Coastal location of streams facilitate good access for juvenile whitebait (eg; banded kokopu). Low native fish diversity.

3. Plants

Kirkianella 'glauca' (r)(c); muttonbird groundsel (r); Cooks scurvy grass (r); fierce lancewood (r); *Anemanthele lessoniana* (r); *Sophora* 'Cook Strait'; *Carex trifida* (r) sea blite; *Melicytus obovatus*; large-leaved milktree; *Atriplex buchananii* (r); *Carex testacea*; *Scandia geniculata* (r); *Hebe* aff. *urvilleana* (c); Cook Strait bristle tussock (r); *Hebe 'parviflora'* (r); *Puccinellia walkeri* (r); *Crassula moschata*; *Acipylla squarrosa*; *Craspedia uniflora* var. *maritima*; rengarenga.

(c)=endemic to Cook Strait ecosystem (r)=rare in the Marlborough Sounds, or nationally threatened.

4. Animals

Nationally high concentration of rare, relictual and endemic fauna vulnerable to predation and/or collection.

Cook Strait tuatara (c); Brothers Islands tuatara (c); king shag (r)(c); fluttering shearwater; fairy prion; diving petrel; sooty shearwater; flesh footed shearwater; white-faced storm petrel; little blue penguin; Hamiltons frog (r)(c); speckled skink (r); Duvaucels gecko (r); striped gecko (r)(e); green-spotted skink; Marlborough green gecko (r)(e); flax weevil (r); ngaio weevil (r)(c); Cook Strait click beetle (e); Cook Strait giant weta (r);

Mecodema punctellum (r)(c); *M. c.*

costellum (r); *Odontria nesobia* (r)(e); peripatus, *Rhytida 'stephenensis'* (r); kakariki (yellow-crowned parakeet) (r); South Island robin; slug (*Pseudaneitea schauinslandi*) (r)(e).

(c)=endemic to Cook Strait ecosystem (e)=endemic to Marlborough Sounds (r)=rare in the Marlborough Sounds, or nationally threatened.

C. Priorities and Potential for Restoration

Terrestrial Values

Much of the natural cover of the ecosystem is gone. The severe maritime climate impedes the recovery of indigenous vegetation.

Maintenance of predator-free status of islands and facilitation of eradication of predators from others.

Maintenance of shrublands to provide the vital first stage in forest restoration.

Recognition of importance of mainland peninsulas as potential "mainland island" restoration areas.

Integrity of wild landscape experience vulnerable to signs of modification and disruption eg; land or sea structures and plantation forestry.

Active revegetation on the most important islands vital for restoration.

Freshwater Values

Restoration of freshwater habitat constrained by topography, and few areas worthy of restoration.



4 Bulwer

Kohekohe, Wharariki, Blue Penguin, Western Sounds, Dry, Non to Weakly Schistose Ecosystem

Steepish dissected, climatically dry coastal hill slopes stretch fingers at random into the sea, forming many bays and coves, the landmass itself being the most submerged of the Marlborough land ecosystems. Inside these splayed fingers the sea abuts the land abruptly, with few beaches. Rocks are sedimentary and weakly developed schist. Maritime influence and exposure is high, elevation generally low. Fragmented vegetation patterns, with much scrubland.

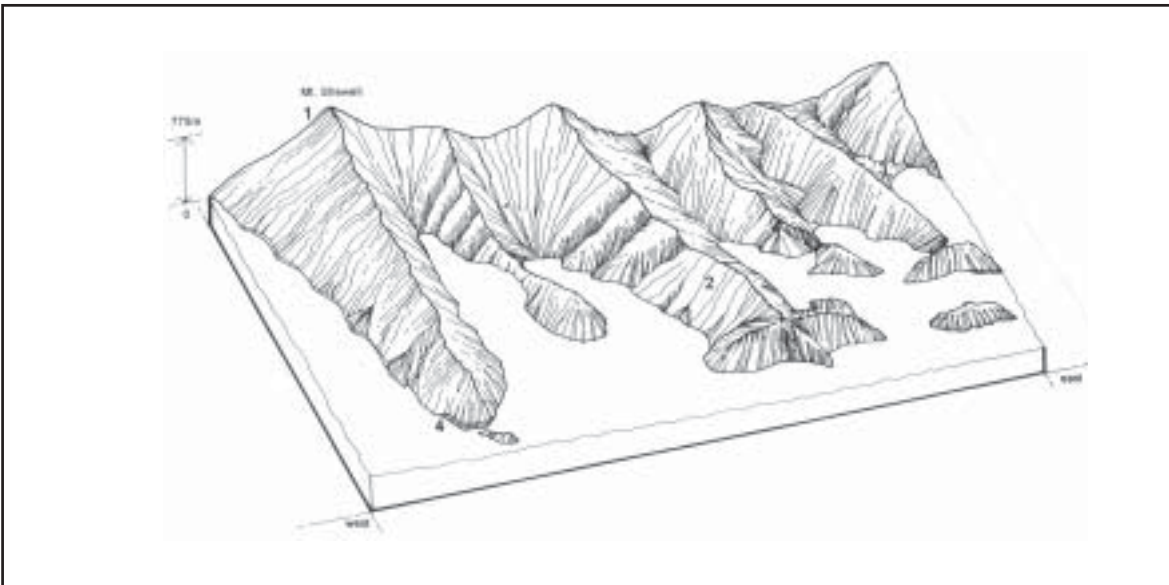


Table 5
Indigenous Vegetation and Landforms - Bulwer Ecosystem

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Steep to very steep upper hill and mountain slopes 500-775 m. elevation	Siliceous, Pelorus Group sedimentary rocks and weakly developed Marlborough Schist	Forest Silver beech-hard beech-miro forest, Mt.Mt Shewell Summit. Rimu-red beech-miro, kamahi forest. Tussockland Silver tussockland.	Forest Silver beech-hard beech-miro forest, Mt Shewell Summit. Rimu-red beech-miro, kamahi forest.

Table 5 (cont)				
Indigenous Vegetation and Landforms - Bulwer Ecosystem				
Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2.	Moderately steep to steep lower hill slopes 0-600 m. elevation	Siliceous, Pelorus Group sedimentary rocks and weakly developed Marlborough Schist	Forest Kohekohe-tawa-nikau forest (with karaka in places). Kohekohe forest. Hard beech-kamahi forest with scattered emergent rimu. Secondary broadleaf forest (mahoe, wineberry, mamaku, putaputaweta, pigeonwood). Kamahi-hinau-miro forest. Mamaku tree-fernland. Scrub cover and vineland Manuka scrub with Pinus radiata emergent in places. Kiekie vineland.	Forest Kohekohe-tawa-nikau forest (with karaka in places). Hard beech-kamahi forest with rimu. Kamahi-hinau-miro forest. Pukatea-tawa mixed broadleaf forest.
3.	Minor prograding inlet heads and fans eg. P26/733188 0-20 m. elevation	Recent alluvium from predominantly sedimentary and schist rocks, minor swamp deposits	-	Forest Kahikatea-pukatea-nikau forest. Kahikatea-pukatea-tawa-kohekohe forest.
4.	Dry headlands, promontories. Minor steep to precipitous eroding sea cliffs 0-200 m. elevation	Siliceous, Pelorus Group sedimentary rocks and weakly developed Marlborough Schist	Forest Hard beech-kamahi forest with rimu. Black beech forest. Akiraho-Wwharariki-fivefinger flax-treeland coastal forest and shrubland. Vineland and rockland Kiekie vineland. Herb-rockland (just above sea level).	Forest Akiraho-Wwharariki-fivefinger flax-treeland, coastal forest and shrubland. Kiekie vineland. Hard beech-kamahi forest with rimu. Black beech forest. Vineland Kiekie vineland.

A. The Physical Environment

1. Landforms/Geology

Sedimentary strata and weakly developed schists; very limited alluvium and colluvium. A few headlands of serpentinitic melange (mineral belt).

Step to moderately steep coastal hill slopes, inlets, beaches, minor fans. Very indented coastline with prominent peninsulas and headlands.

Excessively drowned landscape partly due to sea floor subsidence.

Streams generally small and steeply graded.

2. Climate and Elevation

Moderately dry, warm-temperate to maritime climate. Many places frost-free. Limited cold air drainage and ponding.

Moderate to low rainfall: 1200-1500 mm. Summer drought common.

Moderate to low elevation: 0-775 m altitude range; mean altitude 200 m.

High maritime influence. Salt spray a major coastal influence. Generally, exposed and windy, although some sheltered bays.

3. Water

Summer low flows and a few streams ephemeral in summer.

Some water quality degradation arising from surrounding uses (forestry and subdivision).

B. The Biological Environment

[Part of Sounds Ecological District]

Total area of Bulwer ecosystem is 15,234 ha of which; 22% is in native forest, 35% is in shrubland (both native and exotic), 9% is in pasture and non-woody indigenous vegetation, and 4% is in plantation forestry.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. Predominant Indigenous Vegetation Detailed in Table 5

Originally all forested except for rock and gravel shore fringe communities, bluffs, exposed, rocky or dry headlands, and estuaries at inlet heads. Small amount of remaining forest largely confined to upper slopes or south-facing aspects. Indigenous vegetation lost over most of the coastal and lower altitude zones, especially north and west-facing aspects. Kohekohe and mixed broadleaf forests which were once dominant, are now greatly diminished.

2. Communities and Habitats

Island communities (especially Maud Island) distinctive, rare and nationally important due to predator-free status. Vital habitat to endangered biota.

Communities on Tennyson Inlet islands are possum-free; some very distinct, especially coastal herbfields which support nationally threatened species - nationally important.

Moderately high natural biodiversity due to island contributions and warm temperature nature of ecosystem providing for northern species.

3. Moderate Productivity

Biotic patterns disrupted and fragmented, especially over the warmer and drier aspects, and coastal zone.

Undisturbed natural gradients between terrestrial and marine ecosystems uncommon due to marine farming.

Good habitat for migratory fish species. Large areas still unsurveyed but potential for high native fish diversity. Good access for threatened native fish species due to coastal proximity.

4. Plants

Arthropodium cirratum; *Danhatchia australis* (r); rewarewa; large-leaved milktree; wharangi; *Adiantum viridescens* (r); *Arthropteris tennella*; *Lastreopsis velutina*, Cooks scurvy grass(r)

(r)=rare in the Marlborough Sounds, or nationally threatened.

5. Animals

Maud Island frog (r)(b); striped gecko (r)(e); little blue penguin; *Powelliphanta 'obscura'* (r); Cook Strait click beetle (r)(e); *Odontria nesobia* (r)(e); *Rhytida 'stephenensis'* (r); Trios slug (*Reflectopallium delli*) (r)(b?), Cook Strait giant weta (r).

(b)=endemic to Bulwer ecosystem (e) =endemic to Marlborough Sounds (r)=rare in the Marlborough Sounds, or nationally threatened.

C. Priorities and Potential for Restoration

Terrestrial Values

Very low levels of indigenous vegetation cover remain compared with original cover, and other land ecosystems. North and west-facing communities largely gone. Priority to protect, expand and connect fragments.

Maintenance of shrublands provides excellent opportunity for forest restoration, especially in coastal, and warm north and west-facing situations, and on alluvium.

Maintenance of predator-free status of islands, especially Maud Island.

Freshwater Values

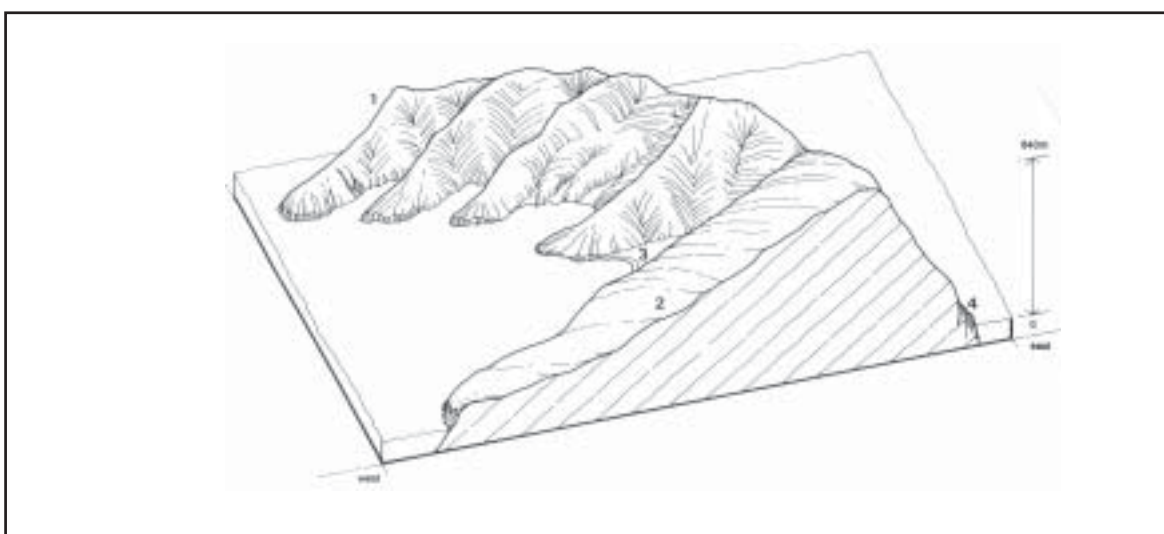
Effects of subdivision and land disturbance need to be managed (water abstraction, fish passage, sedimentation, vegetation clearance). Maintain and enhance riparian vegetation in lower gradient stream areas.



5 Arapawa

Tauhinui, Black Beech, Fluttering Shearwater, *Powelliphanta 'bicolor'*, Eastern Sounds, Dry, Weakly Schistose Ecosystem

Steep to moderately steep dry dissected coastal hill slopes are a feature of this land ecosystem with several islands, a highly indented coast, and confined coastal inlets, beaches and undulating to rolling prograding inlet heads and minor fans filling the valley floors. Baserock is weakly developed schist with minor sedimentary layers, with a valley overlay of alluvium in places. Exposure and maritime influence is generally high due to landmass being surrounded by sea, the elevation low. Fragmented vegetation patterns, with much scrubland.



**Table 6
Indigenous Vegetation and Landforms - Arapawa Ecosystem**

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Steep to very steep upper hill and mountain slopes 500-640 m elevation	Siliceous, weakly developed Marlborough Schist, minor Pelorus Group sedimentary rocks	Forest Red beech forest. Kamahi-hinau-toro-miro-mountain totara-southern rata forest.	Forest Red beech forest. Kamahi-hinau-toro-miro-mountain totara-southern rata forest.
2.	Moderately steep to steep lower hill slopes 0-500 m elevation	Siliceous, weakly developed Marlborough Schist, minor Pelorus Group sedimentary rocks	Forest Kohekohe-nikau-tawa forest. Tawa-hinau-mixed broadleaf forest. Kohekohe-mahoe-broad-leaved milktree forest. Hard beech-kamahi-hinau-miro forest. Kanuka/Manuka-fivefinger-mingimingi-shining karamu forest. Black beech forest. Scrub Manuka scrub.	Forest Tawa-hinau-mixed broadleaf forest. Kohekohe-nikau-tawa forest. Kohekohe-mahoe-broad-leaved milktree forest. Hard beech-kamahi-hinau-miro forest. Black beech forest.

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
3.	Minor prograding inlet heads and fans [eg. P27/090905, Q27/253084] 0-20 m elevation	Recent alluvium from predominantly weakly developed schists, minor swamp deposits	Shrubland Marsh ribbonwood-coastal shrub daisy estuary scrubland. Forest Tawa-titoki mixed broadleaf forest. Tawa-kamahi-mamaku mixed broadleaf forest.	Shrubland Marsh ribbonwood-coastal shrub daisy estuary scrubland. Forest Kahikatea-pukatea-matai-tawa-titoki forest.
4.	Steep to precipitous eroding sea cliffs, minor component 0-250 m elevation	Siliceous, weakly developed Marlborough Schist, minor Pelorus Group sedimentary rocks	Scrub and herbfield Coastal bluffs herbfield. Wharariki-tauhinu-coastal shrub daisy-akiraho scrub. Rengarenga lily cliff herbfield.	Scrub and herbfield Coastal bluffs herbfield. Wharariki-tauhinu-coastal shrub daisy-akiraho scrub. Rengarenga lily cliff herbfield.

A. The Physical Environment

1. Landforms/Geology

Weakly developed schist geology and minor sedimentary strata. Very minor pockets of alluvium.

Steep to moderately steep hill slopes; many inlets; minor beaches, fans and alluvium. Very indented and dissected coastline due to excessive marine submergence, resulting in numerous headlands, peninsulas and deeply recessed bays.

Several islands of various sizes, (including Arapawa, Blumine, Pickersgill and Long Islands) separated from the mainland and each other by narrow passages.

Regionally important geological feature: Long Island gravel cusped foreland.

Steep, small to moderate-sized stream catchments. Some low-gradient stream stretches and few freshwater wetlands (eg. Port Underwood).

2. Climate and Elevation

Dry, temperate climate. Many areas frost-free. Limited cold air drainage and ponding.

Moderately low rainfall: 1200-1400 mm. Summer drought common and drought possible any time of year. Summits moist.

High maritime influence - surrounded by sea. Salt spray a major coastal influence in exposed situations - especially Port Underwood and Outer Queen Charlotte Sound.

Exposure variable. Outer Queen Charlotte Sound and Port Underwood exposed to strong winds and occasional gales. Inner Queen Charlotte, Tory Channel and associated bays generally sheltered. Summits of higher peaks very exposed and wind-shorn.

Low elevation: 0-640 m altitude range; mean altitude 170 m.a.s.l.

3. Water

Reasonable water quality in most catchments.

Summer low flows. Some streams ephemeral in dry spells.

B. The Biological Environment

[Part of Sounds Ecological District]

Total land area of Arapawa ecosystem is 12,962 ha of which; 15% is in native forest, 29% is in shrubland (both native and exotic), 34% is in plantation forestry and 22% is in pasture and non-woody indigenous cover.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. Predominant Indigenous Vegetation Detailed in Table 6

Originally, predominantly forested, except for rock and beach shoreline fringes, bluffs, and estuarine embayment heads. Now, mostly cleared of indigenous forest and that which remains is in small scattered pockets, generally at higher elevations and steeper slopes, or on islands. Fan and alluvial forest almost entirely gone. Other than on the smaller islands, coastal forest is almost entirely gone.

Freshwater wetlands naturally rare in this ecosystem. A few still remain - swamp forest gone.

Regenerating shrublands now a significant component of the landscape.

2. Communities and Habitats

Dry beech forest and mixed broadleaf forests of this ecosystem are distinctive and regionally important.

Possum not present on any islands; deer absent from Arapawa Island.

Island communities with absence of major introduced mammals regionally and nationally important; some of these such as Kohekohe forest, are now becoming threatened on the mainland.

Freshwater wetlands, especially in Port Underwood, a rare and distinctive part of the ecosystem.

Generally, low to moderate productivity due to environmental constraints, especially dry conditions.

Moderate biodiversity due to range of island, coastal, lowland, sheltered/exposed communities. Limited range of landforms, altitude and geology.

Biotic patterns very fragmented and difficult to interpret, with little connection and intact gradation amongst various communities. Dynamics and process functioning is incapacitated or severely compromised in many natural areas.

Smaller islands very important for their uninterrupted natural sequences from ridge top to sea floor, and relatively intact coastal communities.

Freshwater low gradient stretches have the potential to support diverse native fish populations. Good access for threatened native fish species due to coastal proximity.

3. Plants

Hoheria 'tararua' (r); *Olearia solandri*; *Wharangi*; *Hebe 'paviflora'* (r); *Pimelea tomentosa* (r), sand spurge (r), *Tupeia antarctica* (r); large-leaved milktree; red mistletoe, raukawa.

(r)=rare in the Marlborough Sounds, or nationally threatened.

4. Animals

Powelliphanta 'bicolor' (r)(e); little-spotted kiwi (r); Eastern Sounds carabid beetle (*Megadromus* sp.) (r)(e); *Wainuia urnula nasuta* (r).

((e)=endemic to Marlborough Sounds (r)=rare in the Marlborough Sounds, or nationally threatened.)

C. Priorities and Potential for Restoration

Terrestrial Values

Only isolated fragments exist at present. Priority to protect and connect fragments; excellent potential for regeneration of shrublands back to forest. Shrublands prone to pine invasion.

Priority to restore coastal communities, and fan/alluvial communities.

Maintain predator-free nature of islands, and the absence of major mammal pests from islands (eg; deer and possums from Arapawa).

Freshwater Values

Effects of land disturbance such as tracking and forest harvesting require management to avoid effects on water quality and fish passage. Scope and value for riparian restoration in low gradient stretches. Good potential for wetland protection and buffering.



6 Portage

Kanuka, Rewarewa, Pipipi, Sounds, Dry, Strongly Schistose Ecosystem

A strongly dissected long low ridge with many bays forming a gnarled finger separates two water bodies. Rocks are strongly schistose and slopes steep. Both maritime influence and rainfall are moderated. Due to the excessively drowned nature and low relief of the landmass, flats and gentle slopes are common. Slopes generally merge into the sea sometimes terminating in steep rocky shorelines but not usually with tall cliffs.

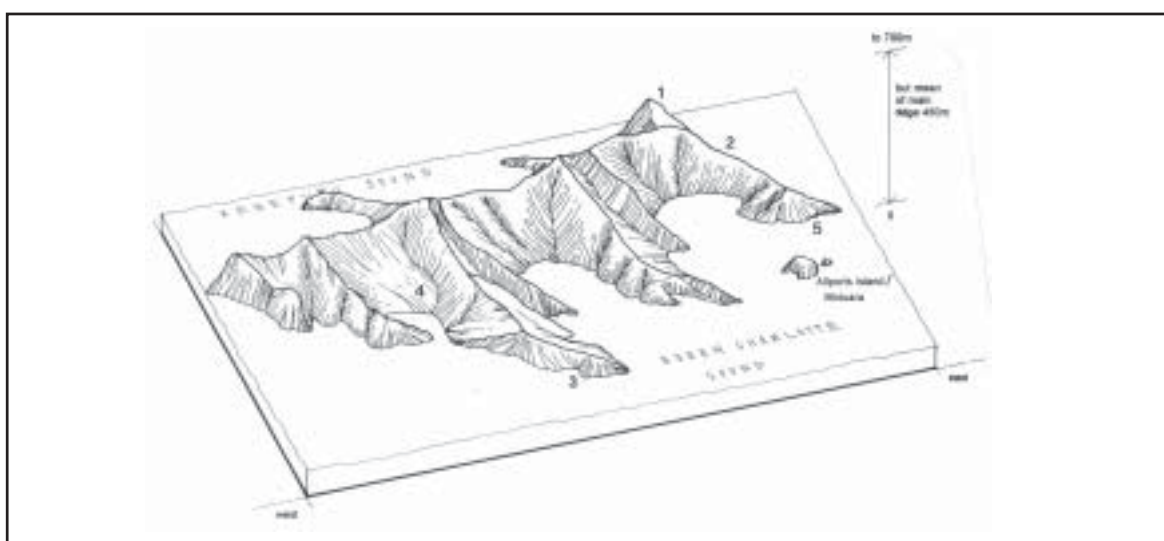


Table 7
Indigenous Vegetation and Landforms - Portage Ecosystem

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Steep to very steep upper hill and mountain slopes, minor component 600-700 m elevation	Siliceous, strongly developed Marlborough Schist	Forest Red beech-silver beech-kamahimountain totara-southern rata-tree fuchsia forest.	Forest Red beech-silver beech-kamahimountain totara-southern rata-tree fuchsia forest.
2.	Moderately steep to steep lower hill slopes 0-600 m elevation	Siliceous, strongly developed Marlborough Schist	Forest Rimu-kahikatea/tawa-kohekohe-pukatea-nikau-hinau forest. Tawa-mixed broadleaf forest. Hard beech-kamahi-ponga-mingimingi forest on ridges and spurs. Secondary mixed broadleaf mamaku forest (mahoe, kaikomako, rangiora, heketara, mapou, fivefinger, wineberry, putaputaweta, karamu). Tawa-pukatea forest (kohekohe, nikau, kiekie in places). Kanuka forest. Scrub Manuka scrub stands with emergent rewarewa.	Forest Rimu-kahikatea/tawa-kohekohe-pukatea-nikau-hinau forest. Tawa-pukatea forest (with kohekohe, nikau-kiekie in places). Rimu/hard beech-kamahiforest. Rimu-matai-kahikatea tawapukatea forest.

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
3.	Moderately steep low broad headlands 0-50 m elevation	Siliceous, strongly developed Marlborough Schist	Forest Black beech forest	Forest Rimu/black beech forest
4.	Minor prograding inlet heads, fans, and wetlands [e.g: P27/ 877978, 870935] 0-20 m elevation	Recent alluvium from predominantly schistose rocks, minor swamp and estuarine deposits	Rushland Sea rush-jointed rush rushland with marsh ribbonwood.	Rushland Sea rush-jointed rush rushland with marsh ribbonwood.
5.	Steep coastal cliffs, minor component 0-100 m elevation	Siliceous, strongly developed Marlborough Schist	Shrubland Coastal fringe of rangiora-akiraho-Wharariki-akeake shrubland.	Shrubland Coastal fringe of rangiora-akiraho-Wharariki-akeake shrubland.

A. The Physical Environment

1. Landforms/Geology

Strongly developed schist with pronounced foliation into layers. Schist geology responsible for the blocky nature of hillslope landforms. Minor alluvium and swamp deposits.

Moderately steep to steep Inner Sounds hill slopes. Extensive northwest-oriented faces above a weakly indented coastline in Kenepuru and Mahau Sounds, strikingly contrasted by the deeply incised coastline of headlands and recessed bays in Queen Charlotte Sound. Excessively dissected coastline due to marine submergence. Rare gently-sloped fans at bay heads, and rare alluvial fans (especially Anakiwa, and between Mahau and Kenepuru Sounds).

Wetlands naturally uncommon and confined to alluvial flats at the western, Inner Sounds end of the ecosystem.

A few small islands (Motuara, Allports, Motutapu) and rock stacks.

The eastern end of Portage ecosystem is separated from Stokes ecosystem by a major fault feature.

Slopes particularly prone to slips due to foliated geology, and intense rainfall events.

Significant eg; Mahau Sound head, Ohinetaha Bay and Umungata Streams small to moderate-sized; total lengths generally very short. Generally steep, although significant low-gradient stretches near the coast.

2. Climate and Elevation

Moderately dry to moist, temperate climate. Many areas frost-free. Frosts occasional on less steep sites, especially in sheltered bays. Cold air drainage and ponding is pronounced in inland western parts of the ecosystem and typical of sheltered bays.

Moderate rainfall: 1400-1600 mm. Summer droughts occasional on drier northwest-facing slopes above Kenepuru Sound. Occasional intense rainfall events.

Low elevation: 0-700 m altitude range; mean altitude 200 m.a.s.l.

Low to moderate exposure; varying degrees of shelter from strong winds and storms; bays particularly sheltered.

Moderate maritime influence - surrounded by usually calm seas. Some ameliorating effect on temperature extremes.

3. Water

Some water quality problems in lower altitude areas from septic tanks.

Some streams ephemeral in dry conditions.

B. The Biological Environment

[Part of Sounds Ecological District]

Total land area in Portage Ecosystem is 12,380 ha of which; 32% is in native forest, 51% is in shrubland (both native and exotic), 12% is in plantation forestry and 6% is in pasture and non-woody indigenous cover.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. Predominant Indigenous Vegetation Detailed in Table 7

Originally, predominantly forested, except for rock and beach shoreline fringes, bluffs, and estuarine embayment heads. Small areas of swamp forest on alluvium.

Now, predominantly cleared of original indigenous forest although secondary forest covers significant areas in south-facing bays and headlands in Queen Charlotte Sound as well as islands. Good primary forest at eastern end of ecosystem. Generally, forest less compromised at higher elevations and steeper slopes. Fan and alluvial forest almost entirely gone. Coastal forest almost entirely gone in Kenepuru. Coastal forest well represented on headlands in Queen Charlotte Sound but lost from many bays.

Freshwater wetlands naturally rare in this ecosystem however a few still remain. Swamp forest is all but gone.

Regenerating shrublands of various stages are now a significant component of the landscape, especially above Kenepuru Sound.

2. Communities and Habitats

Rare island communities and biotic assemblages, completely predator-free. Motuara Island is nationally important.

Primary podocarp-broadleaf forest between Ship Cove and Resolution Bay distinctive and regionally outstanding; intact natural sequences from ridge top to sea floor.

Primary coastal forest (eg Kumutoto Bay) regionally important.

Remaining estuarine, freshwater wetland and alluvial communities uncommon, distinctive, vulnerable and regionally rare respectively.

Biotic patterns highly modified but generally able to be interpreted. Complex human-induced patterns. Many long-standing communities connected by regenerating forest and shrublands. South-facing communities generally more intact (less past and ongoing disturbance, greater ability to recover) than north-facing communities.

Dynamics and process functioning generally healthy, although ongoing weed and wild animal threats.

Moderate natural biodiversity aided by the contribution of island biota.

Moderately low productivity partly due to low fertility of highly schistose rock; seasonally limited by drought in places.

Lower gradient streams have potential to support diverse native freshwater fish populations. Recruitment of galaxiids may be sporadic due to distance from open sea.

3. Plants

Rewarewa; hangehange;

Corybas cheesemanii; *Korthalsella salicornioides*; large-leaved milktree; white maire (r).

(r)=rare in the Marlborough Sounds, or nationally threatened.

4. Animals

Weka, banded kokopu, South Island saddleback, South Island robin; Maud Island frog (recently introduced) (r)(e).

(e)=endemic to Marlborough Sounds (r)=rare in the Marlborough Sounds, or nationally threatened.)

C. Priorities and Potential for Restoration

Terrestrial Values

Primary forest now remnant although large areas of secondary forest and regenerating shrublands provide excellent potential for forest restoration.

Maintenance of predator-free nature of islands a high priority.

Priority to restore warm, drier north-facing forests of ecosystem, as well as coastal forests fringing sheltered bays.

Retention and encouragement of restoration of rare and remnant alluvial, freshwater and estuarine communities.

Freshwater Values

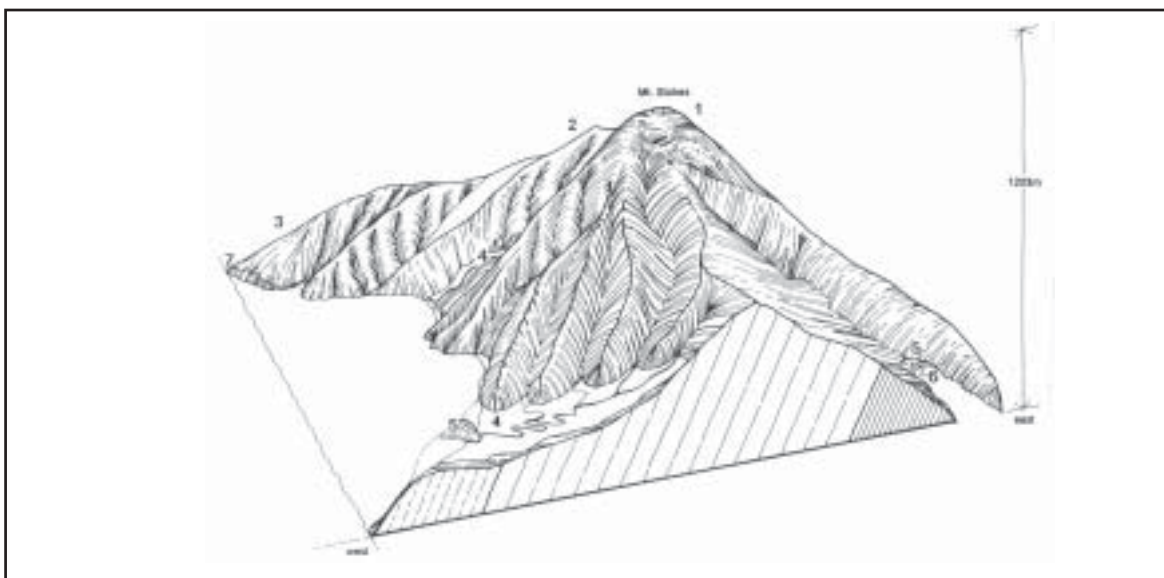
Water quality restoration needed through septic tank management.



7 Stokes

Silver Beech, Stoppy-Stop, *Celmisia macmahonii*, Mohua, Sounds, Wet, Weakly to Strongly Schistose Ecosystem

Very steep to moderately steep, evenly contoured coastal hills and mountain slopes with steep and rolling upper ridge crests and summits feature here and together form the substantial Stokes massif. The coastline is characterised by several large, deeply incised inlets and prominent headlands. At the land-sea interface, confined coastal inlets and undulating to rolling prograding inlet heads are evident with alluvial flats, fans and dunes present. Foliation of schist baserock into layers ranges from weak to strong. There is a great range in height and rainfall gradient from sea level to mountain tops, which are dominating, highly exposed and sometimes covered in snow. Overall, the influence of the sea is generally high as it surrounds the landmass.



**Table 8
Indigenous Vegetation and Landforms - Stokes Ecosystem**

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Strongly rolling to moderately steep broad mountain summits and upland ridge crests 1100-1200 m elevation	Siliceous, weakly to strongly developed Marlborough Schist	Alpine Openlands Shrub-tussock-boulderfield. Shrub-tussock/sedgeland. Shrub-sedge-cushionfield (<i>Carpha alpina</i> , <i>Donatia n-z</i> , <i>Oreobolus pectinatus</i>).	Alpine Openlands Shrub-tussock-/sedgeland. Shrub-sedge-cushionfield (<i>Carpha alpina</i> , <i>Donatia n-z</i> , <i>Oreobolus pectinatus</i>). Shrub-tussockland.
2.	Steep to very steep upper hill and mountain slopes 600-1100 m. elevation	Siliceous, weakly to strongly developed Marlborough Schist	Celmisia Rockland Forest Silver beech forest with leatherwoodstoppy-stop in places. Silver beech-red beech forest with Halls totara, southern rata, toro and toi.	Celmisia Rockland Forest Silver beech forest with leatherwood stoppy-stop in places. Silver beech-red beech forest with Halls totara, southern rata, toro and toi.

Landform Components	Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
3. Moderately steep to steep lower hill slopes 0-600 m. elevation	Siliceous, weakly to strongly developed Marlborough Schist	Forest Rimu/hard beech-torokamahi forest with Halls totara, miro. Tawa-mixed broadleaf forest. Kohekohe-mixed broadleaf forest. Mixed broad leaf-mamaku forest. Tauhinu-bracken shrubland.	Forest
4. Undulating terraces, floodplains, fans and associated wetlands and deltas [e.g; P27/980050, 970098] 0-20 m. elevation	Recent alluvium from predominantly schistose rocks	Forest (Kahikatea)/tawa-pukatea forest on alluvium. Kanuka forest on alluvium.	Forest Kahikatea-pukatea-nikau swamp forest. Kahikatea-pukatea-nikau swamp forest.
5. Minor prograding inlet heads and fans [eg; P26/980110, 030165] 0-20 m. elevation	Recent alluvium from predominantly schistose rocks; minor swamp deposits	Forest - Shrubland Kohekohe-mixed broadleaf forest. Kanuka forest on alluvium. Kaikomako-kahikatea-mahoe-tawa forest. Matai-titoki-tawa forest. Marsh ribbonwood shrubland. Manuka-Carex shrub sedgeland.	Forest - Shrubland Matai-titoki-tawa forest. Marsh ribbonwood shrubland. Manuka-cCarex shrub sedgeland. Kahikatea-matai-totara-tawa-titoki forest.
6. Beach ridges and dunes [eg; P26/056202] 0-20 m. elevation	Recent marine sand and gravel		Spinifex-pingao duneland
7. Minor steep to precipitous eroding sea cliffs 0-100 m. elevation	Siliceous, weakly to strongly schistose Marlborough Schist	Horokaka rockland. Silver tussock tussock-loamfield. Taupata-wharariki-tauhinu flax-shrubland	Horokaka rockland. Silver tussock tussock-loamfield. Taupata-wharariki-tauhinu flax-shrubland.

A. The Physical Environment

1. Landforms/Geology

Weakly to strongly developed schists with correlated varying degrees of foliation into layers. Schist geology responsible for the blocky nature of some of the hill and mountain slopes and crests.

Moderate amounts of alluvium.

Ecosystem centred on Mt Stokes massif (1203 m) and the main ridge systems leading off it.

Mostly very steep to moderately steep evenly contoured hill and mountain slopes. Bluff landforms common.

Unlike surrounding ecosystems, the coastline is not excessively dissected but rather moderately to shallowly incised with several large, deeply indented inlets (Port Gore, Anakoha Bay, Endeavour Inlet). A few large and prominent peninsulas and headlands.

Fans and alluvial terraces and floodplains are frequent and well-developed compared with the rest of the Sounds - largely from fluvial deposition off Stokes massif. Some fans truncated by coastal erosion.

Infrequent or minor landforms include inter-tidal flats at the heads of major inlets (eg; Anakoha, Kenepuru), islets (Clark, Ouokaha), beaches, and dunes (Titirangi). Dunes are a regionally important landform.

Nationally important soil sequences in Endeavour Inlet.

Generally large, high gradient streams, mostly originating on Stokes massif. Streams with long, low gradient stretches on fans and alluvial flats. Meandering stream systems some of the most well-developed in the Sounds (eg; Kenepuru Head).

Infrequent coastal and subalpine wetlands.

2. Climate and Elevation

Temperate to cool, moderately dry to wet climate. Temperature inversion and cold air drainage into valleys pronounced. Frosts occasional on gently landforms. Temperate range ameliorated by marine influence by more extreme at higher altitudes. Droughts uncommon.

Wide rainfall range: 1200-2000 mm. Rainfall increasing with increasing altitude. Wet on summits.

Exposed to strong winds and occasional storms but main inlets and Kenepuru Sounds more sheltered. High ridges and summits of Stokes massif very exposed to prevailing westerly winds and storms. Winter snow on massif occasional.

High elevation: 0-1203 m altitude range; mean altitude 400 m.

Maritime influence variable: significant influence where exposed to the north, but moderate influence in more sheltered inlets and calmer waters, especially of Endeavour Inlet and Kenepuru Sound.

3. Water

High water quality in forested catchments and headwaters.

Some degradation in lower gradient stretches as a result of farming activity.

B. The Biological Environment

[Part of Sounds Ecological District]

Total land area in Stokes ecosystem is 27,584 ha of which; 51% is in native forest, 22% is in shrubland (both native and exotic), 51% is in plantation forestry and 3% is in pasture and non-woody native cover.

1. Predominant Indigenous Vegetation Detailed in Table 8

Originally, predominantly forested, except for rock and beach shoreline fringes, coastal and inland bluffs, estuarine embayments, alpine communities, active floodplains and dune systems. Alpine and subalpine communities on Mt Stokes comprise rockland, boulderfield, tussockland, shrublands, and sedgeland and cushion bogs.

Tall alluvial forest is a significant feature of the ecosystem. Upland forests and alpine communities, bluff systems and estuaries are still largely intact. Forests of lower altitude hill slopes and toeslopes, and coastal forests severely compromised - very little of the original forests remain although a significant proportion of this is now secondary forest and regenerating shrublands.

Alluvial communities and estuarine margins are all but gone; indigenous vegetation of dunes gone.

2. Communities and Habitats

Alpine and subalpine communities unique and very distinctive, supporting local endemics, species which occur nowhere else in the Sounds, and species which are otherwise confined to the North Island. The only alpine area in the Sounds

(excluding the Richmond Range) - nationally important.

Remaining alluvial, estuarine, freshwater and dune communities uncommon, distinctive, vulnerable and regionally significant. Although relatively small in extent, they contribute significantly to the biodiversity of the ecosystem.

Some tracts of upland forest distinctive, diverse and vital habitats for nationally threatened species. Distinctive stunted, windshorn forests on exposed ridges and summits.

A few large, nationally important primary coastal and lowland forest tracts remain; they contribute to intact altitudinal sequences from ridgetop to seafloor, (eg; Black Head, Big Bay, Ship Cove).

Unusual coastal shrublands in places, (eg; above Jacksons Head).

Biotic patterns disrupted in most lower altitude and coastal areas; largely intact at higher altitudes. Alluvial patterns largely lost - uninterpretable.

Dynamic process functioning generally healthy except for alluvial sites. Ongoing wild animal and weed threats.

Natural biodiversity high due to range of altitude, landform and habitat types; especially enhanced by alpine communities.

Overall productivity moderately low partly due to infertile schists. Low productivity at high altitudes.

Low gradient stream stretches which are close to the sea provide good habitat for threatened fish. High native fish diversity.

3. Plants

Celmisia macmahonii var. *macmahonii* (r)(s); *Anisotome haastii* var. "Stokes" (r)(s); *Celmisia rutlandii* (r); *Hebe speciosa* (r); Raukawa; toi (*Cordyline indivisa*); *Chionochloa flavescens* ssp. *flavescens* (r); Stoppy-stop (*Olearia colensoi*) (r); *Aciphylla aurea*; *A. Squarrosa*, *Donatia novae-zelandiae* (r); *Carmichaelia odorata*; *Alseuosmia pusilla*.

(r)=rare in the Marlborough Sounds, or nationally threatened. (s)=endemic to Stokes ecosystem.

4. Animals

Mohua (yellowhead) (r); *Powelliphanta 'bicolor'* (r); koaro, banded kokopu (r); lamprey (r).

((r)=rare in the Marlborough Sounds, or nationally threatened.)

C. Priorities and Potential for Restoration

Terrestrial Values

Lowland and coastal primary forest, now largely remnant although areas of secondary forest and regenerating shrublands provide excellent potential for restoration of these communities.

Restoration of alluvial forest, wetland, dunes and estuary fringes a high priority.

Freshwater Values

Some potential to support short jawed kokopu if riparian vegetation of low gradient streams reinstated.

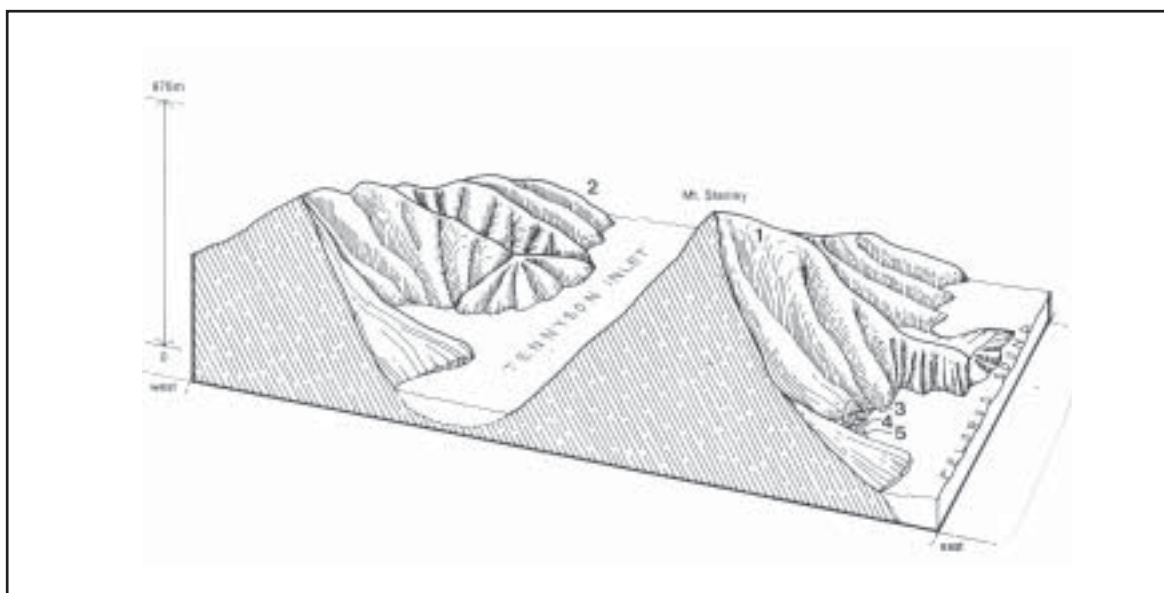
Priority to restore riparian areas for habitat and water quality in lower gradient stretches.



8 Nydia

Red Beech, Supplejack, Filmy Ferns, Kakariki, Inner Sounds, Wet, Non to Weakly Schistose Ecosystem

Steep to moderately steep terrain is typical of this system with slopes plunging at similar angles into the sea. Small inlets and bays nestle within a range of fine fingers and broad headlands. Within these sheltered valleys lie fans and wetlands accumulating on the alluvium washed down from the non-schistose sedimentary strata and weakly developed schists. Elevation here is moderately high with high rainfall at the tops. Being Inner Sounds, it is relatively sheltered and enjoys a moderate maritime influence. Original forest covers much of the northern part of the ecosystem.



**Table 9
Indigenous Vegetation and Landforms - Nydia Ecosystem**

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Steep to very steep upper hill and mountain slopes 600-976 m elevation	Siliceous, Pelorus Group sedimentary rocks and weakly developed Marlborough Schist	Forest Red beech-silver beech forest with kamahi and soft tree fern (<i>Cyathea smithii</i>). Silver beech-southern rata cloud forest on crest.	Forest Red beech-silver beech forest with kamahi and soft tree fern (<i>Cyathea smithii</i>). Silver beech-southern rata cloud forest on crest.

Landform Components	Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2. Moderately steep to steep lower hill slopes 0-600 m elevation	Siliceous, Pelorus Group sedimentary rocks and weakly developed Marlborough Schist	Forest Rimu/hard beech forest with kamahi, toro, ponga, and abundant scarlet rata vine. Black beech-ponga-mingi-mingi forest on headlands. Tawa-pukatea-mixed broadleaf forest with nikau, kiekie, supplejack, puka, kawakawa. Rimu-miro-tawa-hinau-mixed broadleaf forest (mahoe, pigeonwood, putaputaweta, mamaku, supplejack, kiekie). Manuka Manuka scrub (with emergent pines in places). Kanuka scrub & forest with ponga & mixed secondary broadleaf species. Fernland Bracken fernland (where most recently burnt).	Forest Rimu/hard beech forest with kamahi, toro, ponga, and abundant scarlet rata vine. Black beech-ponga-mingimingi forest on headlands. Rimu-miro-tawa-hinau-mixed broadleaf forest (mahoe, pigeonwood, putaputaweta, mamaku, supplejack, kiekie).
3. Undulating terraces, floodplains, fans and associated wetlands and deltas [e.g; P27/750966] 0-20 m elevation	Recent alluvium from predominantly sedimentary and schistose rocks		Forest Kahikatea-pukatea-tawa-nikau forest.
4. Minor prograding inlet heads and fans and wetlands [eg; P27/758030, Nydia Bay; P26/736116, Tuna Bay] 0-20 m elevation	Recent alluvium from predominantly sedimentary and schistose rocks; minor swamp deposits	Forest Tawa-pukatea-mixed broadleaf forest with nikau, kiekie, supplejack, puka, kawakawa. Kahikatea-pukatea-tawa-nikau forest. Kanuka scrub and forest with ponga and mixed secondary broadleaf species. Scrub Manuka scrub (with emergent pines in places). Flax - Shrubland Toetoe - <i>Coprosma propinqua</i> - manuka-harakeke wetlands at bay heads.	Flax - Shrubland Toetoe - <i>Coprosma propinqua</i> - manuka-harakeke wetlands at bay heads. Forest Kahikatea-pukatea-tawa-nikau forest. Matai-rimu-hinau-tawa forest.
5. Estuaries and tidal flats [eg; P27/763963] 0-3 m elevation	Recent fluvial and estuarine deposits	Oioi rushland. Sea primrose herbfield. Coastal shrub daisy-tauhinu-manuka estuarine shrubland	Oioi rushland. Sea primrose herbfield. Coastal shrub daisy-tauhinu-manuka estuarine shrubland

A. The Physical Environment

1. Landforms/Geology

Sedimentary strata and weakly developed schists. Small deposits of alluvium. Mostly very steep to moderately steep Inner Sounds hill and mountain slopes. Infrequent bluffs.

Moderately dissected coastline with numerous large, deeply indented inlets, especially Tennyson Inlet and Nydia Bay. Numerous large and prominent headlands.

A few islands, islets and stacks.

Rare peninsula landform resulting from an earthflow at head of Nydia Bay.

Fans and alluvial terraces, floodplains, coastal wetlands, beaches and estuaries are infrequent and limited in extent, being confined to heads of major inlets - relatively well-developed compared to the rest of the Sounds.

Generally large, high gradient streams with long, low gradient stretches on fans and alluvial flats.

2. **Climate and Elevation**

Temperate to cool temperate, moderately moist to wet climate. Temperature inversion and cold air drainage into valleys pronounced. Frosts occasional on gentle landforms. Temperate range ameliorated by marine influence. Droughts very uncommon.

Rainfall range: 1600-2000 mm. Especially wet inland at higher altitudes. Occasional intense rainfall events.

Low to moderate exposure. Various degrees of shelter from strong winds and occasional storms, but bays of main inlets and particularly sheltered. High ridges and summits of very exposed to prevailing westerly winds and storms. Winter snow on summits rare.

Moderately high elevation: 0-1040 m altitude range; mean altitude 400 m.

Moderate maritime influence - surrounded by relatively calm, Inner Sounds waters.

3. **Water**

High water quality in forested catchments and headwaters.

Some degradation in lower gradient stretches as a result of farming activity. Also water quality problems in coastal areas from septic tanks.

B. **The Biological Environment**

[Part of Sounds Ecological District]

Total land area in Nydia ecosystem is 66,985 ha of which; 69% is in native forest, 4% is in shrubland (both native and exotic), 12% is in plantation forestry and 15% is in pasture and non-woody native cover.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. **Predominant Indigenous Vegetation Detailed in Table 9**

Originally, predominantly forested, except for rock and beach shoreline fringes, estuarine embayments, active floodplains, coastal wetlands, shrublands and herbfields, and rock stacks. Tall alluvial forest was a significant feature of the ecosystem.

Upland forest communities and estuaries are still largely intact.

Original forest on lower altitude hillslopes and toeslopes, and coastal forests are largely intact in Tennyson Inlet, and Nydia Bay to Fairy Bay, but mostly gone from elsewhere in the ecosystem. Lowland and coastal forests replaced by limited secondary forest and regenerating shrublands.

Alluvial communities, including wetlands and estuarine margins, are all but gone from the larger alluvial areas; small areas of alluvial forests and beach communities still intact in Tennyson Inlet and Nydia Bay.

Island with forest and shore shrubland and herbfields.

2. Communities and Habitats

Remaining alluvial, estuarine, and freshwater communities uncommon, distinctive, vulnerable and regionally significant. Although relatively small in extent, they contribute significantly to the biodiversity of the ecosystem.

Some tracts of upland forest are vital habitats for nationally threatened species. Distinctive stunted, windshorn forests on exposed ridges and summits.

Tennyson Inlet and Nydia Bay support some of the largest tracts of lowland and coastal forests in Marlborough; largely intact altitudinal sequences of primary forest from ridgetops to seafloor - nationally important.

Biotic patterns largely intact at higher altitudes and partially so in lower altitude and coastal areas. Alluvial patterns very incomplete - difficult to interpret.

Natural process functioning and dynamics generally healthy except for alluvial areas and estuarine margins. Ongoing wild animal and weed threats.

Natural biodiversity moderate; enhanced by coastal, non-forest and alluvial communities.

Overall natural productivity moderate. Low productivity at high altitudes. High estuarine and alluvial productivity.

Low gradient stream stretches which are close to the sea provide good habitat for threatened fish. Moderate to high native fish diversity.

3. Plants

Ramarama; scarlet rata vine; supplejack; pukatea; kiekie; *Collospermum hastatum*; gully treefern (*Cyathea cunninghamii*) (r); hangehange.

(r)=rare in the Marlborough Sounds, or nationally threatened.

4. Animals

Powelliphanta 'obscura' (r); koaro, banded kokopu; spotted shag.

(r)=rare in the Marlborough Sounds, or nationally threatened.

C. Priorities and Potential for Restoration

Terrestrial Values

High level of intactness in higher altitude areas and around Tennyson Inlet, Mt Stanley and Nydia to Fairy Bays. Lowland and coastal communities elsewhere a priority for restoration - areas of secondary forest and regenerating shrublands provide excellent potential for this.

Restoration of alluvial forest, coastal wetlands, and estuary fringes a high priority.

Maintaining absence of major predators on Tennyson Inlet islands.

Freshwater Values

Priority to restore riparian areas for habitat and water quality in lower gradient stretches.



9 Pelorus

Kahikatea, Rimu, Beeches, Alpine Tussocks, Kaka, Robin, Inland Western, Wet, Non to Weakly Schistose Ecosystem

A collection of massive mountains, very steep dissected hills and large valley systems are the predominant feature of this land ecosystem. Sedimentary strata and weakly developed schists make up the very steep to moderately steep inland hills and mountains with substantial amounts of colluvium and alluvium coating the lower slopes and valley floors. The narrow floodplains between the ranges having had a constant progression of river courses snaking across the surface, have built up a series of sinuous undulating terraces with layers of fans building up on the surface, themselves being cut into by subsequent rivers and streams. Towards the sea, narrow tidal flats mix the fresh and saline waters, deltas trying to constantly claim land back from the sea. Elevation is generally high and rainfall very high with snow on the tops in winter and the valley floors exhibiting extreme bitter frosts; there is very little maritime influence. Extensive forest tracts.

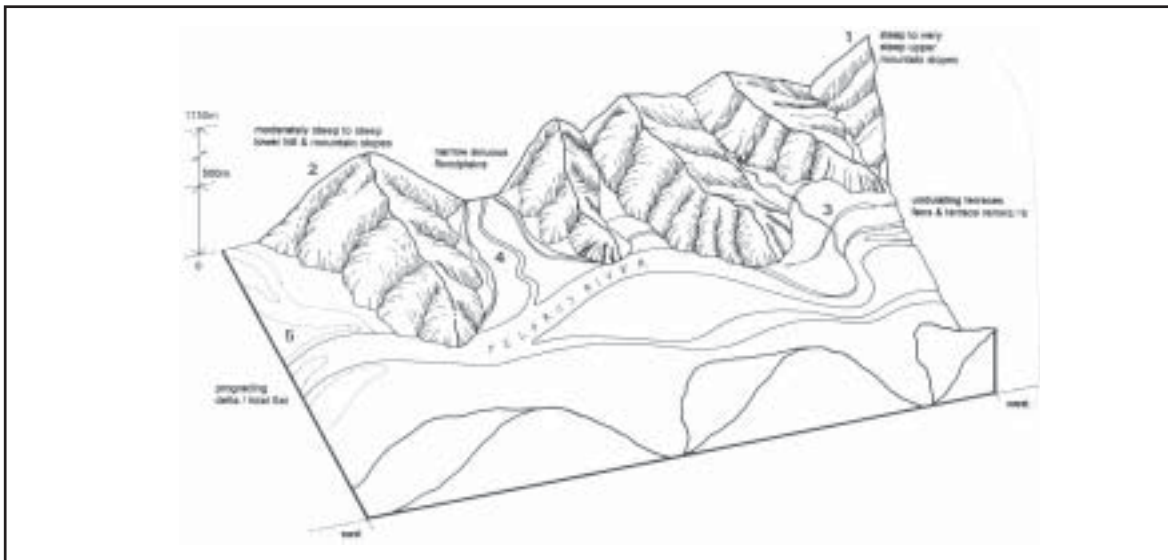


Table 10
Indigenous Vegetation and Landforms - Pelorus Ecosystem

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	Steep to very steep upper hill and mountain slopes 700-1756 m elevation	Siliceous, Pelorus Group sedimentary rocks and weakly developed Marlborough Schist	<p>Alpine Openlands Mid-ribbed snow tussockland. Carpet grass turf land. Coprosma-hebe subalpine shrubland. Cushion-herb-rockland.</p> <p>Forest Mountain beech forest (treeline). Red-silver -mountain beech forest. Red beech-silver beech-kamahi forest.</p>	<p>Alpine Openlands Mid-ribbed snow tussockland. Carpet grass turf land. Coprosma-hebe subalpine shrubland. Cushion-herb-rockland.</p> <p>Forest Mountain beech forest (treeline). Red-silver- mountain beech forest. Red beech-silver beech-kamahi forest.</p>

Table 10 (cont) Indigenous Vegetation and Landforms - Pelorus Ecosystem				
Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2.	Moderately steep to steep lower hill and mountain slopes 0-700 m elevation	Siliceous, Pelorus Group sedimentary rocks and weakly developed Marlborough Schist	Forest Hard beech forest with rimu emergent, kamahi, ponga. Mixed broadleaf forest. Tawa forest with mixed broadleaf species. Hard beech-silver beech forest.	Forest Hard beech-silver beech forest. Hard beech forest with rimu emergent, kamahi, ponga. Rimu/tawa-mixed broadleaf forest.
3.	Undulating terraces, fans and terrace remnants 5-150 m elevation	Pleistocene alluvium from predominantly sedimentary and schistose rocks	Forest and Treeland Rimu-totara-matai-black beech-tawa forest. Black beech-matai forest. Rimu/black beech forest. Silver beech-black beech-rimu forest.	Forest and Treeland Rimu-totara-matai-black beech-tawa forest. Black beech-matai forest. Rimu/black beech forest. Silver beech-black beech-rimu forest.
4.	Narrow sinuous floodplains 5-20 m elevation	Recent alluvium from predominantly sedimentary and schistose rocks	Forest Lowland ribbonwood-kowhai treeland. Kahikatea-matai forest. Totara-matai forest. Shrublands and herbfields Riparian flood zone shrublands and herbfields.	Forest Kahikatea-matai-totara forest. Lowland ribbonwood-narrow-leaved lacebark-kowhai forest. Cabbage tree-harakeke tree-flaxland. Shrublands and Herbfields Riparian flood zone shrublands and herbfields.
5.	Prograding delta/tidal flat [eg; P27/720930] 0-3 m elevation	Recent fluvial and estuarine deposits	Lowland ribbonwood-kowhai treeland. Oioi rushland. Marsh ribbonwood coastal shrubland.	Lowland ribbonwood-kowhai treeland. Oioi rushland. Marsh ribbonwood coastal shrubland.

A. The Physical Environment

1. Landforms/Geology

Sedimentary strata and weakly developed schists with some foliation into layers; significant areas of colluvium, alluvium and estuarine deposits. Minor swamp deposits (Ronga Valley).

Extensive, very steep to moderately steep inland hill and mountain slopes and summits; many kilometres of wide, well-developed terrace systems, fans and floodplains with excellent swale and bar development in places; large delta and tidal flats. Well-developed strath terraces where rivers have cut down through bedrock, as at Pelorus Bridge.

Ecosystem centred on the Pelorus and lower Wakamarina catchments from the crest of the Richmond Range to the sea at Havelock.

Alpine landforms non-glacial. Extensive mountain bluffs and very steep faces as a result of the orientation and tectonic folding of schists.

Occasional swamps on alluvial terraces against toeslopes, and on floodplains.

Rare coldwater springs.

Regionally important geological features: Pelorus River delta system.

Large river catchment and tributaries with a range of river types including:

- Steep-gradient, dendritic watercourses in the upper Pelorus;
- Deep entrenched meander system in the middle Pelorus;
- Floodplain meanders where the river terraces are aggrading in the mid-Rai; and
- A low gradient shallow, straight-sided type in the lower Pelorus and Wakamarina.

Terraces generally have fertile soils, especially on low terraces and where fresh silts are being deposited.

2. Climate and Elevation

Cool temperate to cold, moist to wet climate. Winter frosts typical - severe on valley floors. Temperature inversion and cold air drainage and ponding into valleys very pronounced. Wide annual temperature range. Little or no ameliorating effects from the sea. Droughts uncommon. Very high incidence of valley fog. Warm summer temperatures in sheltered valleys.

Relatively high rainfall: 1600-2000+ mm Highest at Pelorus and Wakamarina headwaters. Occasional very intense rainfall events.

Frequent flooding of terraces characteristic of the Rai and lower Pelorus catchments. Water ponding in swales is common.

Valleys sheltered from strong winds and storms. High ridges and Richmond Range very exposed to prevailing westerly winds and storms. Winter snow on Richmond Range frequent.

Other than estuary and delta areas, no maritime or coastal influence.

High elevation: 0-1756 m altitude range; mean altitude 480 m.

3. Water

Excellent water quality (especially clarity) in Pelorus headwaters. Generally degraded in all lower reaches, (especially from eutrophication) particularly in Rai River, as a result of intensive agriculture.

B. The Biological Environment

[Part of Pelorus Ecological District]

Total land area in Pelorus ecosystem is 66,985 ha of which; 69% is in native forest, 4% is in shrubland (mainly exotic), 12% is in plantation forestry and 15% is in pasture and non-forest native cover.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. Predominant Indigenous Vegetation Detailed in Table 10

Originally all forested except for discrete high altitude alpine areas, tidal flats and estuaries, riparian communities with the flood zone of the main rivers, active floodplains and deltas, a few valley non-forest wetlands, some bluff communities and slip sites.

Alpine and extensive mountain and upland hill country communities still largely intact. Lowland forest in the mid to upper Pelorus valley still largely intact. Lowland hill country in the Rai and lower sections of the Pelorus and Wakamarina, especially lower hillslopes, greatly compromised. Alluvial forest almost entirely gone. All low altitude non-forest communities variously altered and diminished, especially on active floodplains and deltas.

2. Communities and Habitats

Lowland podocarp-beech and mixed broadleaf forests in the lower altitude parts of the mid and upper Pelorus catchment (<600m), one of the largest lowland forest tracts in Marlborough - regionally important. A major national stronghold for hard beech. A major tract of upland beech forest. Stunted, windshorn forests on exposed ridges and summits.

Remnant alluvial communities regionally important including fertile podocarp and mixed broadleaf low terrace and floodplain forests and less fertile podocarp-beech high terrace forests. Very distinctive communities, especially deciduous kowhai-ribbonwood-lacebark forests, and tall mixed podocarp forests. Vital habitat for a wide range of species largely confined to fertile alluvial natural areas including nationally threatened species.

Riparian communities very distinctive, especially flood zone shrublands and herbfields on bedrock and river silts.

Alpine communities highly distinctive, and unique to North Marlborough due to suite of localised endemic species and presence of otherwise North Island species - nationally significant.

Estuarine communities extensive, very distinctive, and provide important habitats - regionally outstanding.

Overall, very high natural biodiversity due to wide range of altitude, landforms and water regimes - alluvial and alpine areas especially significant. Alluvial biodiversity vulnerable to loss.

Biotic patterns and sequences, dynamics and process functioning largely intact at higher altitudes, but severely compromised throughout most of the lower hillslopes, and almost lost in alluvial areas. Highly fragmented and very difficult to interpret alluvial patterns. Inter-tidal patterns well-preserved but sequences through to alluvial communities largely gone. Many Sounds species reach their inland limits in this ecosystem.

Natural productivity variable, ranging from high in alluvial and inter-tidal communities and decreasing to low in alpine communities.

Generally, a low abundance of native fish and a limited whitebait fishery. Trout fishery present.

3. Plants

Alpine: *Brachyglottis* 'Richmond' (n); *Ourisia* 'Richmond' (r)(n); *Leucogenes leontopodium*; *Celmisia cordatifolia* (r)(n); *Exocarpus bidwillii*; *Celmisia rutlandii* (n); *Hebe rigidula* (n); *Celmisia macmahonii* var. *hadfieldii* (n); *Coprosma serrulata* (r).

Alluvial/riparian: *Scutellaria novae-zelandiae* (r); *Coprosma rubra* (r); lowland ribbonwood (r); kowhai; *Teucrium parvifolium* (r); *Leptinella nana* (r); *Poranthera microphylla* (r); *Australina pusilla* (r); *Alseuosma pusilla*; *Korthalsella lindsayi* (r); swamp mahoe; *Brachyglottis traversii* (r); *Olearia*

cheesemanii (r); *Muehlenbeckia ephedroides* (r); *Mazus radicans* (r); scrambling fuchsia (r); *Diplazium australe* (r); *Hebe rigidula* (n); *Glossostigma elatinooides*; *Hydrocotyle hydrophila* (r), *Melicytus 'Tinline'* (r).

Estuarine: oioi; marsh ribbonwood; coastal shrub daisy, *Korthalsella salicornioides* (r); *K. clavata* (r).

Forest: *Hebe divaricata*; *Chionochloa cheesemanii*; *Melicytus lanceolatus*; ramarama; *Pittosporum divaricatum* (r).

[(n)=endemic to North Marlborough (r)=rare in the Marlborough Sounds, or nationally threatened.]

4. Animals

Kakariki (yellow-crowned parakeet); blue duck; South Island robin; falcon; South Island kaka; short-jawed kokopu (r); *Powelliphanta 'consobrina'* (r); native slugs (*Pseudaneitea papillata*, *Athoracophorus bidenticulatus*).

[(r)=rare in the Marlborough Sounds, or nationally threatened.]

C. Priorities and Potential for Restoration

Terrestrial Values

High restoration priority for all alluvial communities, especially low terrace and floodplain forests. These communities are almost regionally extinct and remnants highly vulnerable to a wide range of threats. Potential for reintroduction of alluvial species that have become regionally extinct.

Potential for delta restoration to enhance estuarine margins, delta shrubland and forest communities, and whitebait spawning habitat.

Priority to create corridor to link Sounds ecosystems with inland parts of North Marlborough.

Regenerating shrublands provide excellent potential for lowland forest restoration.

Freshwater Values

Restore buffers and in other ways mitigate threat to freshwater wetlands. Recognise the importance of dynamic river processes such as flooding and erosion/deposition in maintaining alluvial landforms and the functioning of alluvial natural areas.

Riparian management to improve water quality is a very high priority for maintenance of valued recreational trout fishery.

Maintenance and improvement of fish passage is important for both trout and native fisheries.

Maintenance of adequate stream and river flow is a key issue on this zone, as demand for agricultural water exists.



10 Kaituna

Papauma, Kamahi, Karearea, Inland Eastern Moist to Wet, Strongly Schistose Ecosystem

Immense, broad, steep to moderately steep mountainous schist slabs with even contours and regular, minimally dissected structure are a dominant feature of this system. The grain of the land is moderately to strongly schistose with material being transported downwards as colluvium and alluvium, in some areas building up an ever-coalescing series of fans between the spurs. Elevation is high with an associated high rainfall. As the landmass only just touches the sea, the moderating effect of the sea on climate is minor. Snow is often found on these ranges and there are inhospitable frosts in the main valleys during winter. At the point where the land briefly merges with the warm waters, tidal flats and deltas provide a tentative interface and further up the valleys series of terraces remain as a legacy from the meandering rivers. Forests clothing upper slopes and ridges.

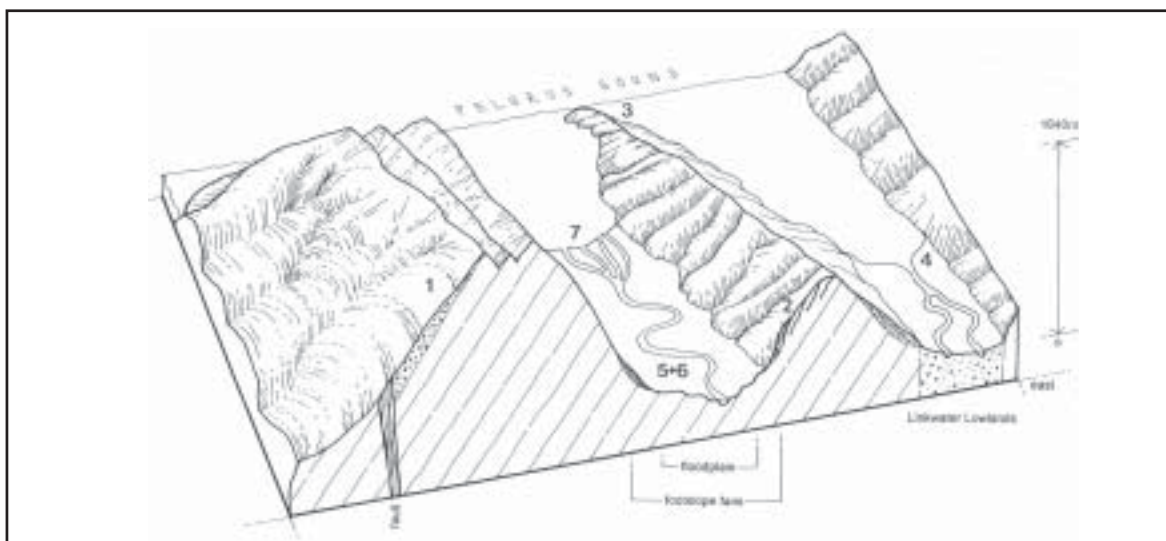


Table 11
Indigenous Vegetation and Landforms - Kaituna Ecosystem

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1.	<p>Steep to very steep upper hill and mountain slopes [includes some large scale slab failures] 700-1641 m elevation</p>	<p>Siliceous, strongly developed Marlborough Schist</p>	<p>Alpine Grasslands Carpet grass turfand (Mt Fishtail). Mid-ribbed snow tussock (Mt Fishtail). Alpine herb-rockland (Mt Fishtail). Forest Silver beech forest with <i>Olearia lacunosa</i>, <i>Chionochloa cheesemanii</i> (forest snow tussock). Red beech forest with putaputaweta, silver beech, southern rata, Halls totara. Silver beech-red beech forest with Halls totara.</p>	<p>Alpine Grasslands Carpet grass turfand (Mt Fishtail). Mid-ribbed snow tussockland (Mt Fishtail). Alpine herb-rockland (Mt Fishtail). Forest Silver beech forest with <i>Olearia lacunosa</i>, <i>Chionochloa cheesemanii</i> (forest snow tussock). Red beech forest with putaputaweta, silver beech, southern rata, Halls totara. Silver beech-red beech forest with Halls totara.</p>

Table 11 (cont)
Indigenous Vegetation and Landforms - Kaituna Ecosystem

Landform Components		Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2.	Moderately steep to steep lower hill and mountain slopes [includes some large scale slab failures] 0-700 m elevation	Siliceous, strongly developed Marlborough Schist	Forest Hard beech-kamahi-ponga forest with some rimu. Black beech forest with mingimingi, shining karamu. Mixed broadleaf forest with mahoe, fivefinger, tree fuschia, wineberry, putaputaweta. Tawa-titoki-white maire forest. Rimu-black beech forest. Manuka-kanuka scrub. Tawa forest with mixed broadleaf species mainly mahoe. Scrub and Tussockland Tauhinu scrub. Manuka-kanuka scrub. Silver tussockland.	Forest Hard beech-kamahi-ponga forest with some rimu. Rimu-black beech forest.
3.	Moderately steep low broad headlands 0-50 m elevation	Siliceous, strongly developed Marlborough Schist	Forest Black beech-kowhai-akiraho forest (Mahakipawa coastal fringe). Black beech forest with mingimingi, shining karamu.	Forest Black beech-kowhai-akiraho forest (Mahakipawa coastal fringe). Rimu-black beech forest.
4.	Broad undulating terraces, floodplains and fans [eg; P27/840900] 0-20 m elevation	Recent and Pleistocene alluvium from predominantly schistose rocks	-	Forest Kahikatea-pukatea swamp maire forest. Kahikatea forest. Matai-totara-mixed broadleaf forest. Harakeke-cabbage tree flax-treeland.
5.	Narrow undulating terraces and footslope fans [Kaituna Valley] 5-120 m elevation	Pleistocene alluvium from predominantly schistose rocks	Forest Rimu-black beech forest	Forest Rimu-black beech forest. Totara-matai-white maire forest. Kahikatea-matai-tawa forest.
6.	Narrow sinuous floodplains 5-20 m elevation	Recent alluvium from predominantly schistose rocks -	-	Forest Kahikatea forest. Lowland ribbonwood-matai-totara-kowhai forest. Kahikatea-matai-tawa forest.
7.	Prograding delta/tidal flat [eg; P27/745910] 0-3 m elevation	Recent alluvial and estuarine deposits	Oioi rushland	Shrubland and Rushland Oioi rushland. Marsh ribbonwood-coastal shrub daisy-coprosma-tauhinu estuarine shrubland. Forest and Treeland Kowhai-narrow-leaved lacebark, lowland ribbonwood forest.

A. The Physical Environment

1. Landforms/Geology

Moderately to strongly developed schists with pronounced foliation into layers.

Significant amount of alluvium and colluvium between mountain and hill blocks.

Very steep to moderately steep, structurally controlled, hill and mountain slopes. Schist geology and its orientation is responsible for the blocky, evenly contoured nature of mountain slope landforms, less dissected topography (cf. adjacent Pelorus ecosystem) and the significant slope difference between the north and south facing slopes. Bluffs especially frequent on south faces.

Alluvial terraces and fans are well-developed, especially in the Kaituna Valley.

Significant floodplain and delta/tidal flat landforms at the mouth of the Kaituna and heads of Grove and Mahakipawa Arms. Linkwater alluvium, deposited largely from hill country to the south, has infilled the seafloor, separating Queen Charlotte and Pelorus Sounds.

Kaituna terraces formed by Pelorus River when it flowed south into the Wairau River.

A coastline of shallow indented bays and few prominent headlands.

Regionally important geological features: Kaituna river terraces and delta; Linkwater alluvial flats; Ada Creek schist geological contact.

2. Climate and Elevation

Temperate to cool, moist to wet climate. Winter frosts typical - severe on valley floors. Temperature inversion and cold air drainage into valleys pronounced. Wide annual temperate range, especially in inland valleys - some ameliorating effects from the sea in the northern parts of the ecosystem. Summer droughts occasional. Frequent valley fog.

Relatively high rainfall: 1500-2000 mm. Highest in Wakamarina headwaters. Occasional intense rainfall events. Valleys sheltered from strong winds and storms. High ridges and Richmond Range very exposed to prevailing westerly winds and storms. Winter snow on Richmond Range frequent.

Limited maritime and coastal influence (Mahakipawa and Grove Arms).

High elevation: 0-1641m altitude range; mean altitude 450 m.

3. Water

High water quality in forested catchments and headwaters.

Some degradation in lower gradient stretches, especially Kaituna River, as a result of intensive agriculture.

B. The Biological Environment

[Part of Pelorus, Para and Sounds ecological districts]

Total land area of Kaituna ecosystem is 35,259 ha of which; 50% is in native forest, 11% is in shrubland(both native and exotic), 11% is in plantation forestry and 28% is in pasture and non-woody native cover.

(Note: Percentages based on interpretation of 1990 satellite images.)

**1. Predominant Indigenous Vegetation
Detailed in Table 11**

Originally all forested except for discrete high altitude alpine areas, tidal flats, estuaries and deltas, some valley non-forest wetlands, some riparian and bluff communities, and slip sites.

Alpine and large tracts of mountain and upland hill country communities still predominantly intact. Lowland hill country forests and coastal communities greatly compromised - no original forest remaining. Some of this is now secondary forest and native shrublands.

Alluvial forests are almost entirely gone - includes swamp forests, fertile mixed podocarp and mixed broadleaf low terrace forests, and less fertile podocarp-beech high terrace forests. All low altitude non-forest communities variously altered and diminished, especially estuarine fringes, deltas, riparian communities and wetlands.

2. Communities and Habitats

Alpine communities highly distinctive, and unique to North Marlborough due to suite of localised endemic species, species which occur nowhere else in North Marlborough, and species which are otherwise confined to the North Island - nationally significant.

Moderately large tracts of upland beech forest - stunted and very windshorn on exposed ridges and summits.

Lowland hillslope forests uncommon and regionally significant for inland distributions of warm, northern species, and regionally rare species.

Remnant alluvial and estuary fringe communities regionally important (including treelands). Very distinctive, highly productive communities, especially tall mixed podocarp forests and swamp forests. Many species for which alluvial habitat is vital are now locally extinct.

Large estuarine communities, very distinctive, highly productive, and provide important habitats.

Overall, moderately high natural biodiversity due to wide range of altitude and landforms - alpine areas especially significant. Alluvial biodiversity largely lost.

Biotic patterns and sequences, dynamics and process functioning largely intact at higher altitudes, but severely compromised and fragmented throughout most of the lower hillslopes, and lost in alluvial areas - uninterpretable. Inter-tidal patterns well-preserved but sequences through to alluvial communities largely gone.

Natural productivity variable, ranging from high in alluvial and inter-tidal communities and decreasing to low in alpine communities. Highly schistose rocks relatively infertile.

Generally, a low abundance of native fish and a limited whitebait fishery. Trout fishery present.

Freshwater quality, processes and riparian habitat is significantly compromised in some waterbodies, particularly Kaituna River. Limited native fishery values. Trout fishery present.

3. Plants

Celmisia hieraciifolia; *Olearia lacunosa* (r); *Brachyglottis* 'Richmond' (n); hangehange; white maire (r); kowhai, swamp maire (r); orange mistletoe (r).

(r)=rare in the Marlborough Sounds, or nationally threatened. (n)+ endemic to North Marlborough

4. Animals

Rifleman; karearea (New Zealand falcon) (r); brown creeper; *Powelliphanta* 'consobrina'(r); *P. 'bicolor'*(r).

(r)=rare in the Marlborough Sounds, or nationally threatened.

C. Priorities and Potential for Restoration

Terrestrial Values

High restoration priority for all alluvial communities - almost regionally extinct, and remnants have doubtful long-term viability. Highly vulnerable to a wide range of threats. Potential for reintroduction of alluvial species that have become locally extinct.

Potential for delta restoration to enhance estuarine margins, delta shrubland and forest communities, and whitebait spawning habitat.

Lowland forest largely gone from ecosystem. Regenerating shrublands provide excellent potential for lowland forest restoration.

Freshwater Values

No native riparian communities remaining. Riparian restoration, including ungrazed buffer strips, a major priority in rivers, streams and drains, especially Kaituna River. Appropriate drain management needed.

Maintenance of instream flows to provide for life-supporting capacity of streams as demand for irrigation water exists.



11 Robertson

Mamaku, Horopito, Ruru, Moist, Non to Weakly Schistose Ecosystem

Very steep to moderately steep schist lumps, with a minor sedimentary contribution to the layering, comprise the hill and mountain building blocks of this land ecosystem. The rock structure is either non or only weakly schistose with colluvium and alluvium merging on the lower slopes and valley floors. Between the broad shoulders of the land lie a series of coastline fans and inlet heads particularly indented. Elevation is fairly high with a moderate rainfall and overall, only a moderate maritime influence. High exposure and infrequent snow fall around the tops. Large forest tracts on mountain flanks.

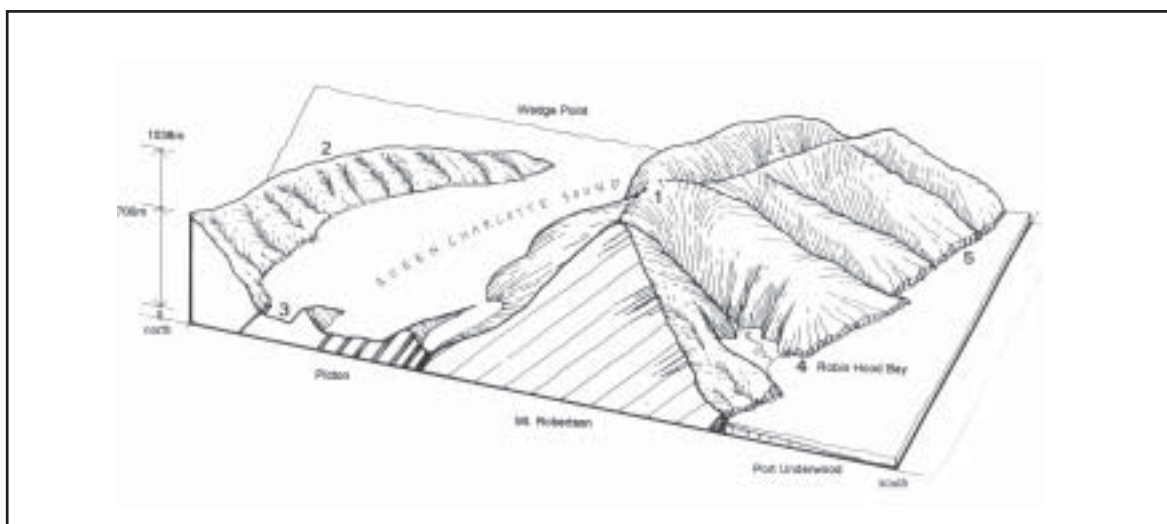


Table 12
Indigenous Vegetation and Landforms - Robertson Ecosystem

Landform Components	Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
1. Steep to very steep upper hill and mountain slopes 600-1036 m elevation	Siliceous, weakly developed Marlborough Schist	Forest Red beech-silver beech-kamahi with horopito, mountain fivefinger, soft tree fern, broadleaf, and hupiro (stinkwood). Silver beech forest with southern rata and Halls totara.	Forest Red beech-silver beech-kamahi with horopito, mountain fivefinger, soft tree fern, broadleaf, and hupiro (stinkwood). Silver beech forest with southern rata and Halls totara.

Landform Components	Geology	Remnant Native Vegetation	Past and Potential Native Vegetation
2. Moderately steep to steep lower hill and mountain slopes 0-600 m elevation	Siliceous, weakly developed Marlborough Schist	Forest Hard beech-black beech forest with emergent rimu, and kamahi, ponga, scarlet rata vine, heketara, crown fern. Mixed broadleaf forest of mahoe, wineberry-mamaku, fivefinger, putaputaweta, tutu. Tawa forest in gullies & flats with emergent podocarps in places (rimu, kahikatea) & pukatea, nikau, mahoe, pigeonwood, pate. Black beech forest. Pukatea-tawa-mahoe-mixed broadleaf forest.	Forest Hard beech-black beech forest with emergent rimu, and kamahi, ponga, scarlet rata vine, heketara, crown fern. Pukatea-tawa-mahoe-mixed broadleaf forest. Rimu/black beech forest.
3. Undulating terraces fans and floodplains 0-30 m elevation	Recent alluvium from predominantly schistose rocks, swamp deposits		Forest Matai-totara-kahikatea-tawa-titoki-white maire forest. Kahikatea-narrow leaved lacebark-lacebark forest.
4. Prograding inlet heads 0-10 m elevation	Recent alluvial and estuarine deposits	Forest Swamp maire-mixed broadleaf forest.	Forest Kahikatea-swamp maire forest. Matai-totara-kahikatea-tawa-titoki forest.
5. Steep rocky shorelines 0-100 m elevation	Siliceous, weakly developed Marlborough Schist	Scrub and Shrubland Rangiora-fivefinger-akiraho-akeake-wharariki forest. Mamaku-tauhinu-ngaio-taupata. Forest and Scrub Taupata shrubland.	Forest, Scrub and Shrubland Rangiora-fivefinger-akiraho-akeake-wharariki forest. Mamaku-tauhinu-ngaio-taupata. Forest and Scrub Taupata shrubland.

A. The Physical Environment

1. Landforms/Geology

Weakly developed schist with limited foliation; minor sedimentary strata. Infrequent but moderately large areas of alluvium and colluvium (Picton, Waikawa, Robin Hood Bay).

Ecosystem centred on the Mount Robertson-Piripiri massif (1036 m) and the main ridge systems leading off it.

Mostly very steep to moderately steep hill and mountain slopes. Bluff landforms occasional.

Excessively dissected coastline into small bays and headlands. A few deeply indented inlets (Picton Harbour, Waikawa and Whatamango Bays) and prominent peninsulas (eg; The Snout).

Fans and alluvial terraces and floodplains are infrequent but generally substantial and well-developed compared with the rest of the Sounds - largely from fluvial deposition off Robertson massif, but also apparently fault-related.

Major faults through Picton and Waikawa.

Infrequent or minor landforms include inter-tidal flats at the heads of major inlets (eg; Whatamango Bay), islets (Mabel), rock stacks and beaches.

Generally large, high gradient streams, mostly originating on Robertson massif. Streams with long, low gradient stretches on fans and alluvial flats. Streams meandering on some of the larger, flatter terraces.

2. Climate and Elevation

Temperate to cool, moist climate. Temperature inversion and cold air drainage into valleys pronounced. Light winter frosts frequent on gentle landforms; some frost-free areas. Temperate range ameliorated by marine influence but more extreme at higher altitudes. Droughts very uncommon.

Rainfall range: 1200-1600 mm increasing with increasing altitude and distance from the coast.

Generally sheltered from strong winds, especially in the main inlets, but Port Underwood bays exposed to southerlies. High ridges and summits of Robertson massif very exposed to winds from all directions. Winter snow on massif infrequent and ephemeral.

Relatively high elevation: 0-1036 m altitude range; mean altitude 350 m.

Maritime influence variable; significant influence where exposed to the south, but moderate influence in more sheltered inlets and calmer waters, especially Picton and Waikawa.

3. Water

High water quality in forested catchments and headwaters.

Some degradation in lower gradient stretches; significant alteration (especially channelisation) to in-stream habitat and water quality in urban parts of Waitohi and Waikawa Streams.

B. The Biological Environment

[Part of Para and Sounds Ecological District]

Total land area of Robertson ecosystem is 11,151 ha of which; 70% is in native forest, 9% is in shrubland (both native and exotic), 13% is in pasture and 8% is in plantation forestry.

(Note: Percentages based on interpretation of 1990 satellite images.)

1. Predominant Indigenous Vegetation Detailed in Table 12

Originally, predominantly forested, except for rock and beach shoreline fringes, coastal shrublands, coastal and inland bluffs, estuarine embayments, active floodplains and dune systems.

Tall alluvial forest was once a significant feature of the ecosystem.

Upland forests, bluff systems and estuaries are still largely intact.

Lowland hillslope forest intact in upper reaches of some main valleys (eg; Waitohi, Graham and Stace Rivers), but severely compromised on most slopes facing the coast, especially north faces.

Scrub (with extensive wilding pines) and second growth forest covering much of lowland hill slopes.

Some coastal shrublands still existing.

Almost no coastal forest remaining; few alluvial communities and estuarine margins remaining. Stace River alluvial remnants still relatively large.

2. Communities and Habitats

Upland forest tracts intact (some exceptionally so) and vital habitats for nationally threatened species. Distinctive stunted, windshorn forests on exposed ridges and summits. Good understorey structure in places.

Tracts of primary lowland hill slope forests still quite extensive - regionally important. Nationally important where they are a vital habitat for nationally threatened species.

Remaining alluvial, estuarine, and freshwater communities uncommon, distinctive, vulnerable and regionally significant. Although relatively small in extent, they contribute significantly to the biodiversity of the ecosystem.

Alluvial forest and shrubland communities are some of the most extensive in the Sounds; almost extinct in Marlborough and support regionally threatened species - regionally outstanding.

Coastal shrublands, distinctive Sounds vegetation, which reach their southern limit at Rarangi.

Biotic patterns largely intact at higher altitudes and partially so at lower altitudes. Coastal natural patterns largely lost and difficult to interpret. Intact altitudinal sequences gone.

Natural process functioning and dynamics generally healthy for upland and some lowland areas but largely broken down for coastal and alluvial areas. Also, ongoing wild animal and weed threats; major in places.

Natural biodiversity moderate; enhanced by coastal, non-forest and alluvial communities.

Overall natural productivity moderate. Low productivity at high altitudes. High estuarine and alluvial productivity.

Extremely high freshwater values in southern catchments (eg; Stace River). Excellent access and extensive low gradient stretches provide vital habitat for a very diverse native fishery, including threatened species.

3. Plants

Pimelea gnidia (r); *Hoheria angustifolia* (r); *Euphrasia cuneata*, swamp maire (r); *Hoheria populnea* var. *lanceolata* (r); *Melicytus obovatus*; pingao; *Ileostylis micranthus* (r); *Cyrtostylis reniformis* (r); *Pseudopanax colensoi*.

(r)=rare in the Marlborough Sounds, or nationally threatened.

4. Animals

Powelliphanta 'bicolor' (r); Eastern Sounds carabid beetle (*Megadromus* sp.) (r)(e); *Wainuia urnula nasuta* (r); lamprey; dwarf galaxias; short-jawed kokopu; banded kokopu; native slug (*Pseudaneitea gravisulca*) (r) (e).

(r)=rare in the Marlborough Sounds, or nationally threatened.

(e)=endemic to Marlborough Sounds

C. Priorities and Potential for Restoration

Terrestrial Values

Restoration priority for coastal (including wetland and estuarine fringes), and lowland communities - areas of secondary forests and regeneration shrublands provide excellent potential for this, as long as invasive weeds are controlled, especially banana passion vine and old mans beard.

Maintenance and restoration of alluvial forest communities a high priority.

Freshwater Values

Maintenance and enhancement of riparian areas along low gradient streams between coast and hillslopes to improve habitat and water quality.

Management to safeguard existing riparian margins, especially from the effects of forestry, important in low gradient stretches.

Maintenance of instream flows for life-supporting capacity of streams.

A Marine - Eastern Cook Strait and Outer Queen Charlotte Sound

Collective Characteristics:

Mainly Exposed

Very exposed; clear, cold oceanic waters; strong currents; rich reef communities; kelp beds; sandy sediments off-shore.

A. The Physical Environment

1. Form/Geology

Steeply sloping shores with bedrock and boulder reefs extending into relatively deep water dominate the near-shore environment. Pea gravel beaches also occur. Sandy sediments extend off-shore, with surface corrugations and ripples in exposed places.

2. Dynamic Features and Processes, Including Climate

Large southerly swells drive directly onto the exposed eastern shores, creating a very high energy coastline. Arapawa Island provides some protection to the northern entrance to Queen Charlotte Sound.

3. Water

Generally high water clarity, especially around Arapawa Island.

Cold oceanic waters derived from the Southern Current.

Strong tidal currents, especially off headlands, off-shore rocks/islands and near the entrance to Tory Channel.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Luxuriant beds of large brown seaweeds, mostly on exposed shores often extending into relatively deep waters. Kelps *Durvillea* spp. and *Lessonia variegata* are key species. *Macrocystis* beds occur in Outer Queen Charlotte Sound. Diverse and productive reef communities.

Sessile filter feeding animals thrive, particularly in areas of strong tidal currents.

Other notable species include the pin-cushion seastar (*Eurygonias hyclocantus*) and girdled wrasse (*Notolabrus inscriptus*).

B Marine - D'Urville Island - Northern Cook Strait

Collective Characteristics:

Mainly Exposed

Exposed; clear, cool oceanic waters; strong currents; off-shore reefs, stacks and islands; rich reef communities; bryozoan and horse mussel beds; massive tube worm colonies.

A. The Physical Environment

1. Form/Geology

Exposed shores are distinguished by their steeply sloping shores with extensive bedrock and boulder reefs extending into relatively deep water. The area is generally noted for the presence of numerous off-shore reefs, stacks and islands. Gravels and sands predominate off-shore of western D'Urville Island. Large sand masses occur off-shore in the larger outer bays, but mud/silt/shell remains the predominant soft bottom habitat elsewhere. A relatively narrow cobble (and in places bedrock) reef generally fringes the shores of the sheltered bays and inlets.

2. Dynamic Features and Processes, Including Climate

Moderate to, in places, high exposure, though the large bays and inlets of the Outer Sounds and D'Urville Island offer a reasonable degree of protection from the open sea.

3. Water

Clear oceanic waters with relatively low sedimentation levels.

Relatively cool oceanic waters, particularly east of D'Urville Island.

High current areas off headlands and between land masses. Moderate to high tidal range.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Near-shore and off-shore reefs support rich and abundant reef communities. Luxuriant stands of macro-algae extend into relatively deep water but some exposed water varieties (eg; *Durvillea spp*, *Lessonia variegata*) are noticeably absent.

High diversity of fish and invertebrate species.

The occurrence of large off-shore areas dominated by bryozoan corals and horse mussels are distinctive features of the area. The more sheltered bays and inlets support fewer conspicuous reef dwelling species and considerably less macro-algael cover.

Coastal wetlands at heads of major bays and inlets.

C Marine - Port Underwood

Collective Characteristics:

Mainly Sheltered

Sheltered, turbid, shallow waters; extensive mud bottom with narrow cobble fringe; conspicuous marine life generally sparse; off-shore red algae beds; massive tube worm colonies.

A. The Physical Environment

1. Form/Geology

Dominated by extensive and uniform mud/silt habitat. A narrow (20-50m) cobble reef fringes much of the shore. Most of the Port is relatively shallow (<20m).

2. Dynamic Features and Processes, Including Climate

Relatively sheltered, especially from ocean swells to the south.

3. Water

Turbid waters and high sedimentation levels. Moderate currents in the outer regions of the Port. Generally sheltered from ocean swells.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Generally low diversity and abundance of conspicuous macro organisms on mud habitat, though off-shore red algae beds are a key feature in some bays. *Macrocystis pyrifera* and *Ecklonia radiata* are the predominant seaweed species near-shore. Enormous tube worm mounds (*Galeolaria hystrix*) at two headlands along the south-eastern coast are notable features; these are by far the largest known colonies in Nelson and Marlborough. Port Underwood is also a rock lobster nursery and was historically a Southern Right Whale calving area.

D Marine - Tasman Bay/Admiralty Bay

Collective Characteristics:

Mainly Sheltered

Turbid, warm waters; open to the sea, but relatively sheltered; limited reef zone and conspicuous marine life generally sparse; sediments off-shore.

A. The Physical Environment

1. Form/Geology

Relatively narrow near-shore bedrock/cobble reef zone, with sand beaches often located at the heads of bays. Extensive areas of sand/shell in places close to shore, replaced by silts in deeper off-shore areas.

2. Dynamic Features and Processes, Including Climate

Generally open to the sea, yet still sheltered from large oceanic swells.

3. Water

Moderate sedimentation and turbidity levels.

Relatively warm coastal waters derived from the D'Urville current and Tasman Bay.

Large tidal range exposing a wide inter-tidal zone at low water. Very strong currents in the vicinity of French Pass, though low to moderate elsewhere.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Notable for a low biomass and diversity of macro-algae which are restricted to a narrow band immediately below low water. Sub-tidal reefs relatively barren, though there is often a high diversity of fish and encrusting animals in outer rocky areas compared to other sheltered shores in the Sounds. Key indicator organisms are the barnacle *Balanus vestitus* east of French Pass, and *Stegnaster inflatus* which is particularly common in the west.

Whangarae Estuary within Croisilles Harbour is relatively unmodified and the only spit formed estuary in the Sounds.

C. Potential for Restoration

Restoration of riparian habitat.

E Marine - Middle Pelorus

Collective Characteristics:

Mainly Sheltered

Waters relatively sheltered, turbid and warm; mostly muds with conspicuous sparse marine life and fringed by narrow cobble reef.

A. The Physical Environment

1. Form/Geology

Typically a narrow (20-50m) near-shore rubble reef grading into sand/shell and mud habitats with increasing depth and distance from shore. Extensive and uniform areas of mud/silt extend beyond the near-shore zones across most of the Sound's seafloor.

2. Dynamic Features and Processes, Including Climate

Relatively sheltered, with limited wave fetch in most places; Tawhitinui Reach is the major exception to this rule.

3. Water

Moderate to high sediment loadings, especially towards the inner Pelorus. Waters are generally clearer beyond Tawero Point.

Relatively warm waters, particularly towards the inner Pelorus.

Moderate tidal range, with noticeable currents along the main channels and off headlands.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Low diversity and coverage of macro-algae (dominated by *Carpophyllum* spp. and *Cystophora* sp.) generally confined to a narrow zone immediately below the low water mark. Reefs appear relatively barren, with encrusting and mobile invertebrates the dominant organisms. Conspicuous surface organisms are relatively uncommon over the mud/silt bottom, though in places where environmental conditions are favourable, species such as horse mussels, scallops, brachiopods, bryozoans and hydroid trees occur, sometimes in high densities. Few and relatively small inter-tidal wetlands at the heads of large bays and inlets.

C. Potential for Restoration

Restoration of riparian habitat.

F Marine - Inner Pelorus Sound

Collective Characteristics:

Mainly Sheltered

Shallow and very sheltered; turbid warm waters; very tidal with extensive mudflats; cockle beds; expansive saltmarsh; birdlife common.

A. The Physical Environment

1. Form/Geology

Kaituna estuary dominates the head of Pelorus Sound with extensive tidal mudflats extending out to beyond Mahakipawa Arm. Mahau and Kenepuru Sounds are fringed by a very narrow cobble reef, with mud/silt habitat predominant beyond. Much of the area is tidal or very shallow.

2. Dynamic Features and Processes, Including Climate

Very sheltered.

3. Water

The area is strongly influenced by the Pelorus and Kaituna Rivers, resulting in a very high turbidity and sedimentation levels. Relatively poor water quality as a result of catchment management and specific discharges in the vicinity of Havelock.

Relatively warm waters with reduced salinities, particularly at the head of Pelorus Sound or during floods.

A moderate tidal range exposes extensive tidal flats in the inner reaches of the Sound. Tidal currents are strong along the main channel.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Kaituna Estuary, and neighbouring Mahakipawa Arm and Kaiuma Bay form a complex estuarine system supporting extensive and productive saltmarsh and invertebrate communities. Dense cockle beds (inter-tidal and sub-tidal) occur at various locations. The general area is important as a nursery and feeding ground for coastal fish, as well as habitat for various wildlife species. The introduced and invasive cord grass *Spartina* is a dominant feature of the Kaituna Estuary. The cobble reefs and sub-tidal mud habitats beyond the inner estuarine areas generally support a low diversity and abundance of macro-invertebrates.

C. Potential for Restoration

Restoration of riparian habitat.

Water quality.

Spartina control.

G Marine - Tory Channel

Collective Characteristics:

Mainly Sheltered

Sheltered; clear, cool waters; strong currents; narrow cobble fringe bordered by clean sands in channel; kelp and sea lettuce.

A. The Physical Environment

1. Form/Geology

Relatively narrow cobble (and in places bedrock) reef fringes the shore, with clean current swept sand/shell along the edge of the main channel. Larger bays and inlets are dominated by mud/silt habitat.

2. Dynamic Features and Processes, Including Climate

Very sheltered.

3. Water

Clear, cool oceanic waters enter Tory Channel from Cook Strait resulting in low turbidity and sedimentation levels.

Very strong tidal currents sweep along the main open ended channel. The tidal range, however, is relatively small.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Stands of the kelp *Macrocystis pyrifera* fringe the shoreline along much of the main channel, distinguishing Tory Channel from most other sheltered locations in the Sounds. Dense beds of other macro-algae (mostly sea lettuce) also occur in areas less exposed to the current. Other seaweeds are generally confined to a narrow fringe below the low water mark similar to other sheltered areas of the Sounds. Reef areas otherwise support an array of invertebrate marine life typical of sheltered areas of the Sounds.

Near-shore communities very depressed where exposed to the effects of wakes from some large vessels.

C. Potential for Restoration

Remedy or mitigate any adverse effects of ship operations.

H Marine - Queen Charlotte Sound

Collective Characteristics:

Mainly Sheltered

Sheltered; waters relatively clear and cool; narrow cobble reef fringe generally with fine sediments and sparse conspicuous marine life beyond; brachiopods and red algae beds.

A. The Physical Environment

1. Form/Geology

A narrow (20-50m) rubble/cobble near-shore reef typically grades into sand/shell and mud habitats with greater depth. Mud dominates deeper off-shore areas.

2. Dynamic Features and Processes, Including Climate

Relatively sheltered, with limited wave fetch in most places.

3. Water

Low to moderate turbidity and sedimentation levels; noticeably clearer than Pelorus Sound. No major rivers discharge into the Sound.

Relatively cool waters, especially in the vicinity of Tory Channel and beyond.

Relatively small tidal range resulting in a comparatively narrow inter-tidal zone. Strong currents occur at the entrance to Tory Channel and at Pattens Passage and Pickersgill Passage. Moderate currents can occur elsewhere off headlands and between land masses.

B. The Biological Environment

Distinctive Biota, Communities and Habitats

Natural Biodiversity, Productivity and Biotic Patterns

Low diversity and coverage of macro-algae usually confined to a narrow zone immediately below the low water mark. Encrusting and mobile invertebrates dominate reef areas. Conspicuous surface species are uncommon over the sand/shell and mud habitats, though in places where environmental conditions are favourable, species such as horse mussels, scallops, brachiopods and bryozoans occur, sometimes in high densities. Inner Sound distinguished by extensive red algae beds. *Neothyris lenticularis* (a rare brachiopod) is a distinctive inhabitant of inner Queen Charlotte Sound and East Bay. Elephant fish spawning grounds occur in a number of the inner bays. Few and relatively small estuarine wetlands at the heads of major bays and inlets.

Near-shore marine communities very depressed where exposed to the effects of wakes from some large vessels.

C. Potential for Restoration

Remedy or mitigate any adverse effects of ship operations.

Spartina control.