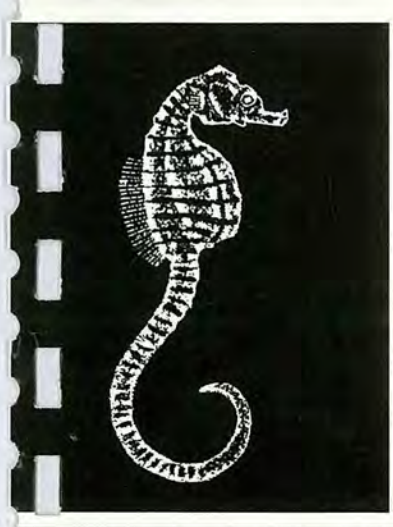

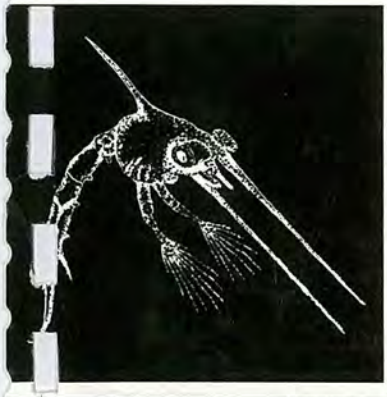

INTERNATIONALLY AND NATIONALLY IMPORTANT COASTAL AREAS FROM KAHURANGI POINT TO WAIMEA INLET, NELSON, NEW ZEALAND

RECOMMENDATIONS FOR PROTECTION

Nelson/Marlborough Conservancy
Occasional Publication No14

CONSERVATION
TE PAPA ATAWHAI

INTERNATIONALLY AND NATIONALLY IMPORTANT COASTAL AREAS FROM KAHURANGI POINT TO WAIMEA INLET, NELSON, NEW ZEALAND: RECOMMENDATIONS FOR PROTECTION

1993

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CONSERVATION
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ABSTRACT

A total of 23 sites ranked on ecological and geomorphic criteria as either international or national were recognised between Kahurangi Point and Waimea Inlet, Nelson. Most sites were located in Golden Bay (12 sites) followed by Tasman Bay (five sites) and West Coast (four sites). Farewell Spit and the Abel Tasman National Park coastline and estuaries were each common to two geographic areas.

Nationally important sites were most common with three areas recognised as having international importance (Farewell Spit and tidal flats, Abel Tasman National Park coastline and estuaries, No-Mans Island in Waimea Inlet). Farewell Spit was recognised as a wetland of international importance by I.U.C.N. The Abel Tasman coast was internationally recognised for its seascapes, internationally recognised for Separation Point bryozoans (invertebrate red data book, I.U.C.N.), and one of the only two known populations of the endangered peppercress *Lepidium banksii*. The third international site (No-Mans Island) located within Waimea Inlet is the only other known location of *Lepidium banksii*. A variety of criteria were fulfilled for the nationally important areas. These ranged from presence of the threatened or rare species (Given, 1981; Bell, 1986), unlogged coastal catchments, spectacular seascapes, and low levels of human modification (high degree of naturalness) (Draft New Zealand Coastal Policy, 1992).

The report introduces the two types of coast (sheltered, exposed) and the need for sound management of these shores. General management principles for these shore types are also included. Data on each coastal area, and specific issues and management recommendations for each site are presented in seven chapters. Each chapter contains sites separated according to degree of exposure and location.

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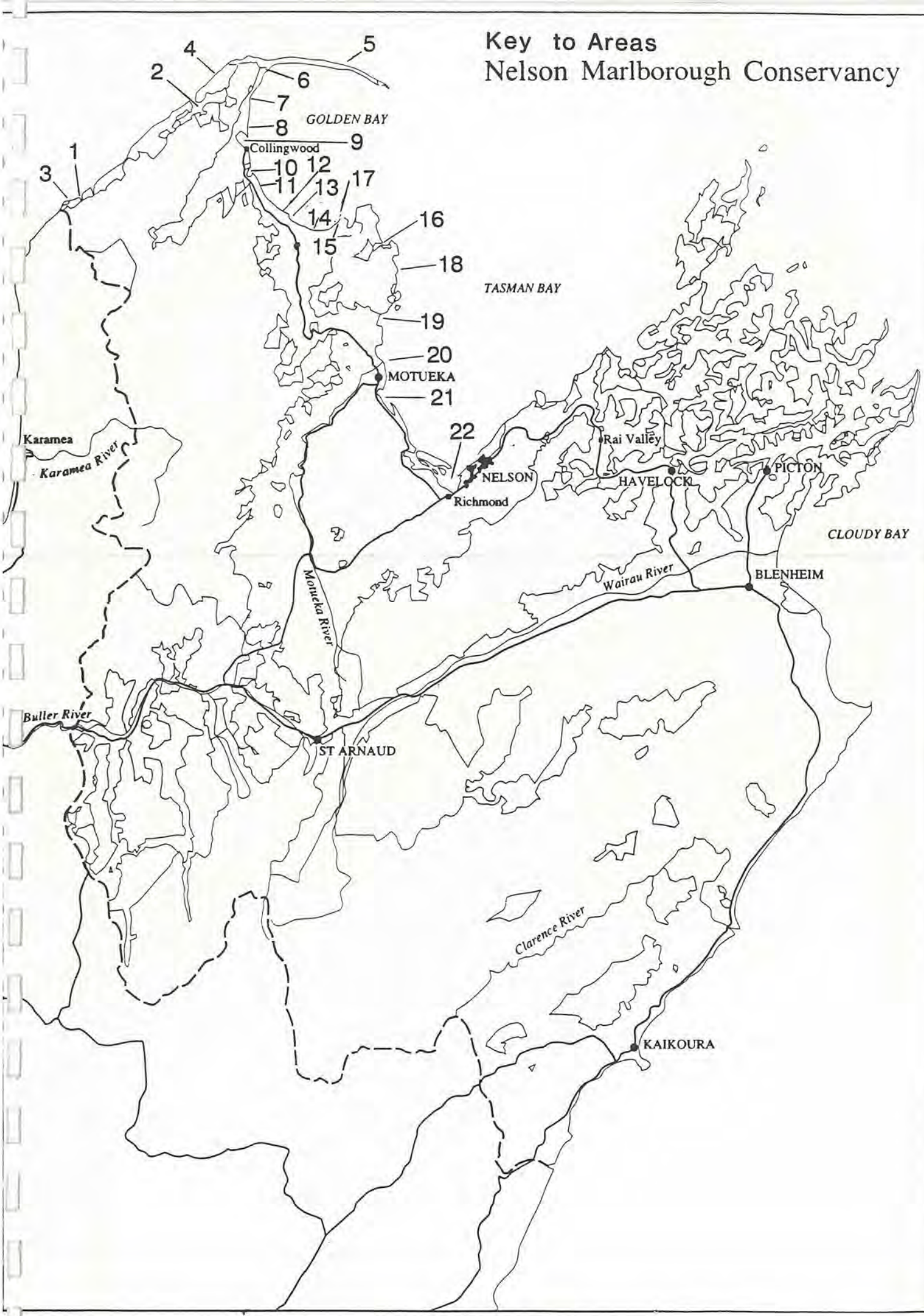
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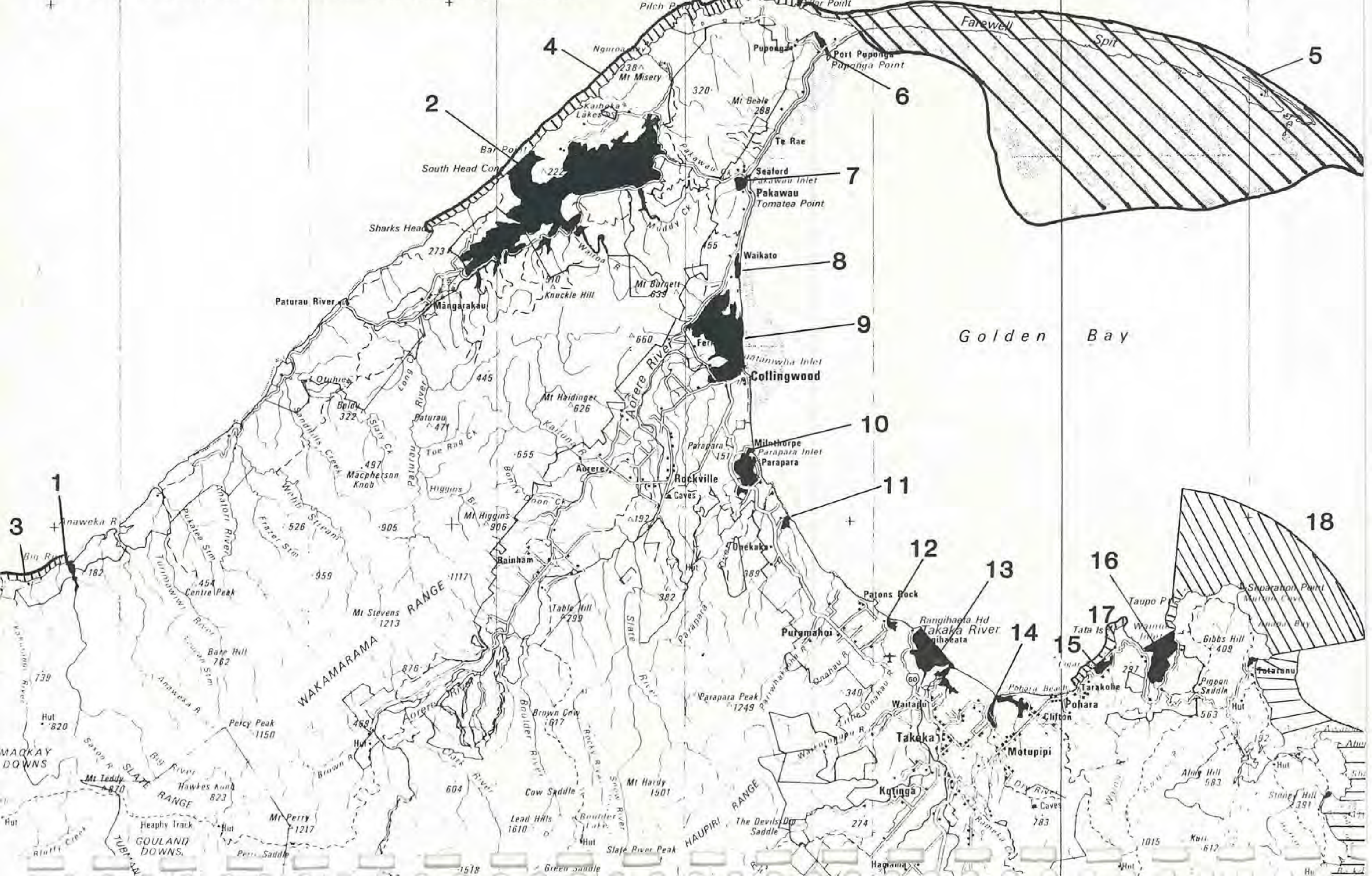

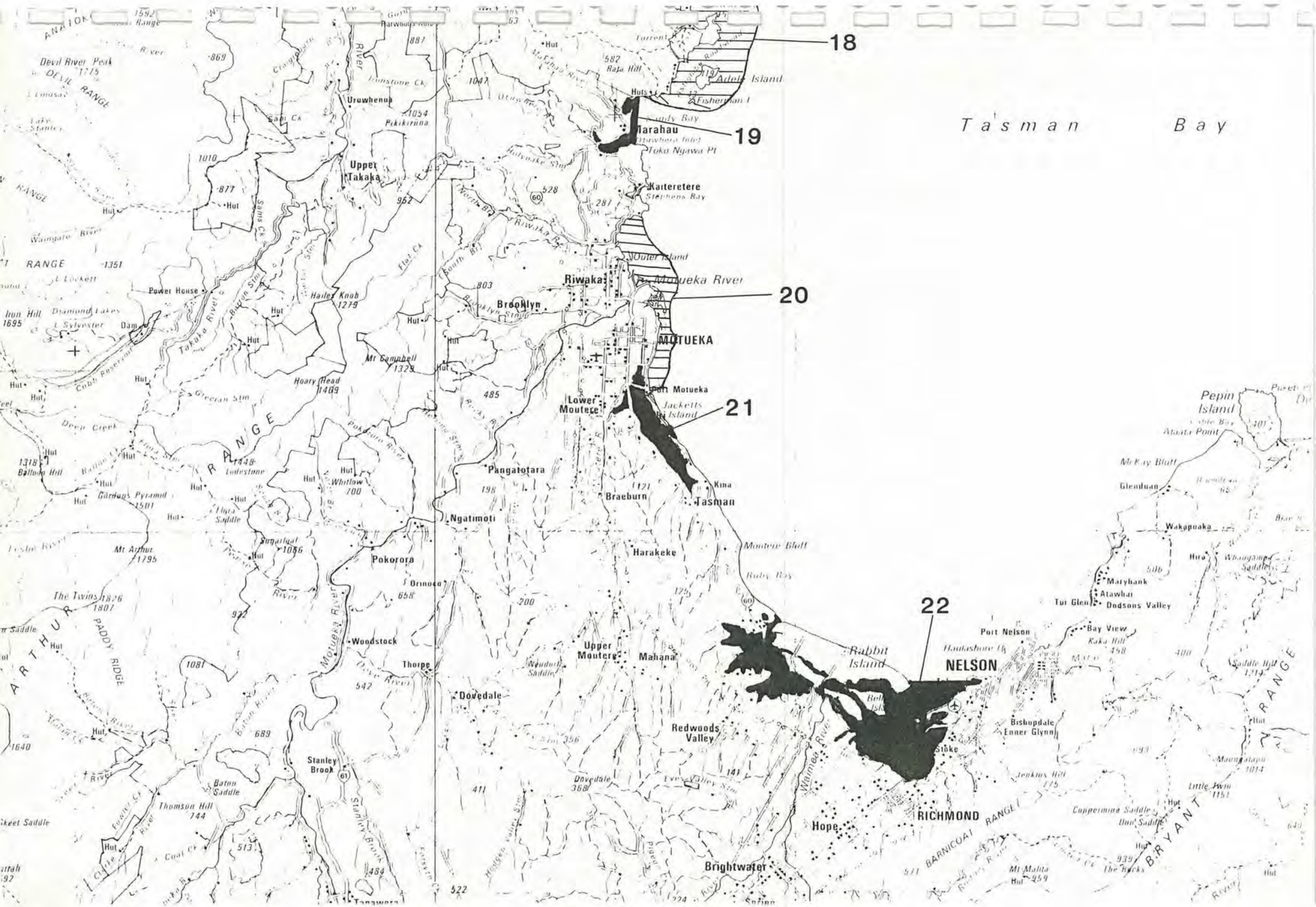

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INTRODUCTION

The information in this document has been compiled for the Tasman District Council for use in preparing the Tasman District Coastal Plan.

The Resource Management Act 1991 (RM Act) requires the Tasman District Council to prepare a Regional Coastal Plan (RCP) for the coastal marine area of its region. The RCP is to be prepared in consultation with the Minister of Conservation and iwi authorities of the region (RM Act, first schedule).

The Minister of Conservation, under Section 68(4) of the RM Act can require the Council to specify (by rules) in their coastal plan, an activity as a restricted coastal activity on the grounds that:

(a) it has or it is likely to have significant or irreversible adverse effects on a coastal marine area; or

(b) it occurs or is likely to occur in an area having significant conservation value.

A restricted coastal activity (RCA) is an activity of a magnitude that the effects could be significant. This document considers (b) above.

The draft New Zealand Coastal Policy Statement, released in September 1992, identified:

(a) the RCA criteria to be identified in Regional Coastal Plans and applied throughout the coastal marine area (NZCP, Schedule 1); and

(b) the criteria for identifying areas of significant conservation value which the Minister of Conservation is to specify in each region, and the proposed RCP will identify these areas (NZCP, Schedule 2, see Appendix 1).

Using the criteria in the draft New Zealand Coastal Policy Statement coastal areas of significant conservation value between mean high water springs and the 12 mile territorial sea limit in the Tasman district were evaluated. Although the criteria allow a wide degree of latitude, only areas with national or international status were considered as having appropriate status for inclusion in this report.

Identification of areas of significant conservation value in the Tasman district was based on "*criteria for identification of areas of significant conservation value*" outlined in Schedule 2 of the draft New Zealand Coastal Policy Statement (Department of Conservation, 1992, see Appendix 1).

The present report evaluates the ecological status of coastal areas into international or national importance.

It should be noted that a strict application of Schedule 2 in the draft NZCPS would have identified the entire Tasman district coastline as having significant conservation value. This would be of minimal use to the Tasman District Council in preparing their RCP. This report, by concentrating on areas of national and international importance (by recognised sources), aims to highlight those areas which have particularly high values.

Evaluation into international or national status was based on:

(a) red invertebrate data book (I.U.C.N.);

(b) conservation status of New Zealand wildlife (Bell, 1986);

(c) wildlife in the Nelson region (Walker, 1987);

(d) the first order coastal resource inventory (Davidson, et al., 1990);

(e) rare and endangered plants of New Zealand (Given, 1981);

(f) threatened plants of New Zealand (Wilson & Given, 1989);

(g) landform inventory (Priestley, 1990); and

(h) geological and landform inventory (Kenny & Hayward, 1993).

Coastal areas not classified as nationally or internationally important often have considerable ecological value. For further information on these coastal areas in Tasman and other parts of the Nelson/Marlborough region, refer to the coastal resource inventory (Davidson, et al., 1990).

Information on coastal landforms (and associated processes) is covered only to the extent possible on the basis of existing information held by the Department of Conservation. This aspect may be adequately covered by other agencies. It is noted that the landform inventory does not cover all sites in New Zealand.

Information on historic places is also covered using existing information only. This information is not, and cannot be, used in ranking sites.

Information on Maori cultural values is not, and cannot be, used by the Department in ranking sites at this stage, as there is no accepted ranking system. The information the Department has on Maori cultural values is included in this report, but should not be taken as an indication of preferences of the tangata whenua. The Department has approached tangata whenua in relation to areas of significant cultural value and we are aware of existing knowledge and databases held by tangata whenua. Further information on Maori cultural values may be available in separate documents at a later date.

Recommended management options are made both in general terms, ie. based on common issues (see chapter 3), and in terms of site specific issues (see chapters 4 to 9). The options are recommendations only and reflect the current knowledge of particular issues and sites. Recommended management options are based on the principle of protecting existing ecological values of these nationally and internationally recognised coastal areas within the Tasman district. Management recommendations do not determine which agency has, or should have, responsibility for particular options.

It is important to note that subtidal information for the Tasman district is very limited. Apart from some specific sites along the Abel Tasman coast (Bradstock and Gordon, 1983; Davidson, 1992), subtidal sites which potentially have value have not been identified in this document. This highlights the need for a precautionary approach in management.

This document is divided into 10 chapters:

- Chapter 1 and 2 deal with the ecological nature of sheltered and exposed shore types and highlights the need for their sound management.

- Chapter 3 identifies general management principles, issues, and options for the areas identified as having national or international importance. This section deals with flora, fauna and habitats, biological and physical processes, water quality, coastal buffers and use.

- Chapters 4 to 10 summarise and justify each area's ecological values, specific issues and specific management recommendations. Chapter 4 covers West Coast estuaries; Chapter 5, West Coast coastline; Chapter 6, Farewell Spit; Chapter 7, Golden Bay estuaries; Chapter 8, Golden Bay coastline; Chapter 9, Abel Tasman National Park coastline and estuaries; and Chapter 10, Tasman Bay estuaries and coast.

The separation of each locality group according to enclosed estuarine or open coast, is not on biological grounds as these areas are often interactive. The division is for the purpose of presenting information in an accessible user friendly fashion.

STUDY AREA

The study area extends from Kahurangi Point on the west coast of the South Island of New Zealand, to the eastern edge of Waimea Inlet, Nelson, with the outer boundary being the 12 mile territorial sea limit. This report deals only with coastal areas within this study area. Two biogeographical areas can be distinguished. The west coast is characterised as an exposed shore influenced by long periods of rough weather. The open coastline of the West Coast has large beaches with low gradients, large dune systems, extensive intertidal rock platforms, subtidal reefs and large sea cliffs. Three estuaries along this coast represent the only sheltered shores. Two of these estuaries are notable for their forested catchments and lack of human development. Little is known of the flora and fauna and habitats of the exposed shores of the west coast, however, the largest estuary on this coast, Whanganui Inlet, has been well studied (Davidson, 1990).

Golden and Tasman Bays are characterised as moderately sheltered shores which seldom receive ocean swells. Instead, strong winds generate short, steep wave conditions which quickly subside as winds abate. Farewell Spit is subject to both conditions as it is a natural barrier between west coast and Golden Bay conditions. Golden Bay is dominated by expansive tidal sand flats interrupted by numerous estuaries. Tasman Bay has shorter and steeper shores in the east, but also has large tidal sand flats in the Motueka area. In Tasman Bay small estuaries are located at Marahau, Otuwhero, Riwaka and Motueka River mouth. Two large estuaries, Moutere and Waimea, have been well studied (Moffat, 1989; Davidson & Moffat, 1990).

Between Tasman and Golden Bay is the Abel Tasman National Park coastline. This coast is dominated by granite rock interrupted by golden sand beaches and 15 estuaries. In a study by Davidson (1992), the coast was recognised as being the largest tidal granite shore in a sheltered situation in New Zealand. Small areas of tidal limestone are also located along this coast (Davidson, 1992).

1. SHELTERED COASTAL ENVIRONMENTS

On the west coast, and Tasman and Golden Bays, sheltered coasts include: estuaries; intertidal flats; harbours; inlets; river mouths; coastal wetlands; and partially enclosed bays.

Physical characteristics of sheltered coasts include:

- the rarity or absence of large waves or swells;
- shallow offshore areas;
- domination by fine sediments;
- tidal and/or freshwater currents;
- mixed salinities including brackish waters.

The biological processes which operate in sheltered coasts have lead to fragile communities and habitats sensitive to disturbance. Examples of these fragile communities include: bryozoan beds (Abel Tasman coast); horse mussel dominated communities; reef fish communities; saltmarsh and herbfields; and particular seaweed beds. Information on the offshore locations of these communities is not well documented.

Sheltered coasts include some of the most biologically productive ecosystems of the world (Knox, 1986). These coasts contain unique communities that provide habitat, spawning or juvenile areas for fish, invertebrates, plants and birds. The extremely high productivity of sheltered coasts relates to the way that they trap nutrients washed in from the sea, as well as from the land upstream (Barnes, 1984; Knox, 1980). These nutrients provide the first link in a food web which involves plants and animals existing within, utilising, and depending upon these coasts, particularly many national and international migratory species.

Sheltered coasts are perhaps one of the systems most utilised and modified by humans (Knox, 1980). Many species of plant and animal found there have been harvested for food and other economic purposes, while many New Zealanders recreate or live in close proximity (McLay, 1976). These environments retain important historical and archaeological heritage.

The linkage between sheltered coastal systems, the adjacent land, its use and upstream catchment use, must be recognised in managing sheltered coasts. Good management of sheltered systems depends on good catchment management.

1.1 NEED FOR MANAGEMENT

There are few unmodified sheltered coasts in New Zealand at present. They are, therefore, threatened habitats with many having a substantial reduction in area, and degradation from siltation, pollution or loss in water quality (Davidson & Moffat, 1990). Infilling, rubbish disposal, sewage disposal, port development, residential subdivision, aquaculture, fishing methods, land practices (such as forestry and fertiliser applications), sediment extraction, and roading have affected sheltered coasts. The impact of modifications on sheltered coasts has often been widespread and long-term. It is essential for statutory planning to reduce any further loss, to enhance or restore the remaining sheltered coastal systems.

The coastal plan should recognise the fragile and vulnerable nature of sheltered coasts and the intense pressure placed on these environments by humans. The plan should emphasise the use and protection of sheltered coasts on a sustainable basis, and recognise that sheltered coasts need to be protected to maintain their own intrinsic values, their use to humans for recreation and economic purposes, as well as their importance as a valuable habitat for many species. The plan should also recognise that areas of coast identified as having international or national importance should be managed to maintain or enhance their ecological values.

2. EXPOSED COASTAL ENVIRONMENTS

Exposed shores are located on the west coast, and include all rocky and soft sediment shores outside estuarine areas.

Physical characteristics include:

- regular exposure to large waves or ocean swells;
- domination by coarse sediments; and
- ocean salinities.

The biological processes which operate on exposed coasts have lead to relatively robust communities and habitats which are subject to disturbance usually through storm events. Examples of these communities include: *Durvilleae* (bull kelp) beds, coarse sand beaches, rocky platforms, particular seaweed beds and sea cliffs.

Exposed coasts of the west coast include some of the most spectacular coastline in New Zealand. Large beaches and extensive reef platforms and sea cliffs are located here. The habitats and associated communities located on this shore type are dramatically different from those found in sheltered shore areas.

2.1 NEED FOR MANAGEMENT

The coastal plan should recognise the rugged and changeable nature of exposed coasts. Change and catastrophic events are a common event with erosion and accretion occurring regularly. Management needs to recognise that interruption of the dynamic processes can have considerable effects which are difficult to accurately predict. Exposed coasts have high seascape values which quickly reduced by poorly designed or inappropriate developments on adjacent land.

3. GENERAL MANAGEMENT PRINCIPLES

Some issues on the Tasman coast are common to many discreet areas. This section lists these issues and recommended management actions across the range of areas described in detail on the site record forms in Chapters 4 to 10. It is recognised that the TDC may be implementing some of these recommendations already and that others may not be strictly a Council responsibility. They are included to provide a comprehensive basis for discussion on the Regional Coastal Plan between the Council and the Department. There is no attempt made here to examine the full range of development activities found on the Tasman coast. The focus is rather on the qualities of the coast that need to be protected.

The issues and recommendations for management are divided into:

3.1 flora and fauna and their habitats;

3.2 physical processes;

3.3 water quality;

3.4 coastal buffers; and

3.5 use.

3.1 FLORA, FAUNA AND THEIR HABITATS

Issues:

Populations of coastal plants, animals and their habitats have been greatly modified by use and development of the coastal environment. Protection of remnant natural areas and the natural biological functioning of coastal ecosystems is fundamental to good coastal management.

Management Recommendations:

Protect rare, unique, vulnerable and representative ecosystems, communities, habitats and species occupying and/or utilising coasts.

Set aside adequate funding to protect and manage areas of national, international, regional or local importance. An ecological inventory could be used to identify, rank and evaluate these areas in need of protection.

Identify and establish effective boundaries/buffer zones related to specific management purposes.

Recognise the importance of primary production sources (eg. saltmarsh) and protect these areas.

Wherever possible, restore selected degraded or damaged coastal systems.

Avoid further loss and/or degradation of coastal habitat and buffer vegetation.

Prevent the release of exotic species which have been shown to compete with natives (eg. ice plant, *Spartina*, Pacific oysters).

Recognise the threat of oil spills to ecosystems, communities, habitats and species on the coast.

Recognise the threat of plastic pollution and encourage clean-up operations.

Devise and implement the control of exotic species which are significant habitat modifiers, eg. *Spartina, Elodea.*

Protect sensitive benthic communities from the effects of damaging fishing practices.

Investigate the impact of Pacific oysters on native communities.

Identify 'key indicator' species in order to monitor water and habitat change/quality.

Avoid draining, infilling or stopbanking coastal wetlands.

Avoid disturbances to areas that are important breeding sites, and migration and dispersal routes for indigenous species.

Recognise the lack of ecological information on subtidal environments and develop strategies to overcome this problem.

3.2 PHYSICAL PROCESSES

Issues:

Physical processes fundamental to the natural functioning of coastal ecosystems have, and are being, disturbed by use and development of the Tasman coast.

Management Recommendations:

Avoid the alteration of the natural flow of freshwater (including groundwater) or saltwater, into and out of coastal water.

Avoid the reduction of naturally occurring dissolved oxygen concentrations caused by both point and non point source discharges into coastal water (especially sheltered shores).

Avoid unnatural alteration of temperature, salinity and circulation patterns in coastal water.

Avoid an increase in the suspended sediment input into coastal water caused by changes in catchment activities or through coastal development.

3.3 WATER QUALITY

Issues:

Degradation of coastal water quality can diminish both human enjoyment of the coast and the natural functioning of coastal ecosystems.

Management Recommendations:

Avoid changes in catchment use that increase the discharge or run-off of nutrients, especially nitrogenous compounds and phosphates, into coastal systems.

Protect water quality from any discharge of persistent toxic substances directly or indirectly into the coastal environment.

Protect water quality from any discharge of untreated sewage into coasts either directly or via their catchment rivers.

Develop strategies to minimise the incidence of toxic substance spill accidents, particularly from shipping and land-based sources.

Monitor coastal waters, sediments, and aquatic species to provide background data on water quality.

Monitor to determine the effects of coastal discharges.

Require the on-land treatment of wastes and wastewater prior to discharge.

Require the on-land disposal of wastes and wastewater whenever possible.

3.4 COASTAL BUFFERS

Issues:

The habitat quality, natural functioning and aesthetic quality of the land/sea boundary is highly dependent on the maintenance of natural vegetation and landforms on the landward margin.

Management Recommendations:

Allow significant modification to the coastal environment only when there are no inland, land-based alternatives with lesser adverse and environmental effect and where a coastal location is required.

Establish protected coastal buffer strips adjacent to a coastal system to allow for the projected rise in sea level, to provide for the natural biological sequence from land to sea, and to buffer the coast from the harmful effects of land use.

Discourage stock grazing and vehicle use at the land/sea interface through fencing and advocacy.

3.5 USE

Issues:

Coasts include highly valued resources. Active use of those resources can adversely effect passive users and future users, and the natural functioning of coastal ecosystems.

Management Recommendations:

Provide public access to coastal systems in a way which ensures minimum impact and provide interpretation facilities that encourage coastal conservation.

Locate industrial development away from sensitive coastal margins.

Safeguard open space values.

Protect sites valued by tangata whenua.

Prevent draining of wetlands.

Give preference to developments which require a coastal location over those that do not.

Close and seal existing rubbish tips located in the coastal environment.

Recognise particular recreational pursuits are not compatible with natural communities, species and habitats.

Provide appropriate zones for those recreational pursuits which compromise natural communities or ecologically important areas.

4. WEST COAST ESTUARIES

4.1 Summary of Values

4.2 Site Data, Issues and Management Recommendations

Big River Estuary
Whanganui Inlet (Westhaven)

4. WEST COAST ESTUARIES

4.1 SUMMARY AND JUSTIFICATION OF ECOLOGICAL VALUES

Two of the three estuaries found from Kahurangi Point to the base of Farewell Spit are included in this report. Whanganui Inlet (Westhaven) and Big River Estuary are of national importance (Davidson, 1990; Davidson et al., 1990; NZCPS, 1992). Both estuaries have little human development and have catchments clad in either unlogged forest (Big River) or in forest in various stages of regeneration. Little information is known about the ecology of Big River Estuary. A full-scale ecological report on Whanganui Inlet identified the inlet as justifying protection as a marine reserve and wildlife management reserve. The formal application and proposal were formally released in June 1993.

Whanganui Inlet is of national status primarily due to its natural character and unmodified catchments (Davidson, 1990; NZCPS, 1992), presence of banded rail (Bell, 1986), large numbers of migratory waders, threatened banded dotterel, Australasian bittern and regionally threatened South Island fernbird (Walker, 1987; Davidson, 1990). It is of national significance as its freshwater catchments are free of salmonid species (Eldon & Ward, 1990).

Big River Estuary is of national significance as its catchment of primarily unlogged northern rata and hard beech (S. Courtney, pers. comm.). The estuary has virtually no human development and all saltmarsh and associated estuarine habitat is intact.

4.2 SITE DATA, ISSUES AND MANAGEMENT RECOMMENDATIONS

Site Name/s: Big River Estuary	**CRI Site No.** 10-001	**Code:** 01

Recorders Name: Shannel Courtney/Kaye Stark

Map No: L25 (m)

Grid Reference: 25475 60485

Date: 26 April 1993

Brief Description of Site: **(West Coast)**

The Big River Estuary is a small (~35 ha) inlet 4 km north of Kahurangi Point. The north side of the estuary is bordered by a sand spit while the south end is bordered by a marine terrace of tertiary siltstones.

Conservation Values:

Natural: All of the Big River catchment, apart from the north-east side behind the sandspit, remains unlogged. Very tall coastal forest fringes the south-west side, comprising mainly northern rata *Metrosideros robusta* and hard beech *Nothofagus truncata*. The forest backdrop gives the estuary a high degree of naturalness (S. Courtney, pers. obs.). The substrate within the estuary varies from soft, muddy sand (north-east) to solid granite gravels.

Big River Estuary supports the rare (Bell, 1986) variable oystercatcher *Haematopus unicolor* and white-fronted tern *Sterna striata* and occasionally godwits *Limosa lapponica baueri* (K. Stark, pers. comm.).

Cultural: Cultural values have not been established. There is no available information. Mitchell and Mitchell (1990) recorded the area having significance to the Maori community.

Historic: One archaeological site has been recorded from the Big River Estuary.

Site Importance: National

Of national importance as it represents a relatively unmodified (no logging) coastal forest with intact, forested catchment continuous with estuarine habitats (S. Courtney, pers. obs.). Populations of the rare (Bell, 1986) variable oystercatcher are present (S. Courtney, pers. obs.). A variety of coastal landforms (including estuary, sandspit and extensive marine terrace) are present.

Draft New Zealand Coastal Policy Criteria For Areas of Significant Conservation Value

S 2.3(c) Apart from a small area to the north-east of the sandspit, the Big River catchment is unlogged giving the area a high degree of naturalness.

Human Modification and Human Use: North-east side behind sandspit has been burnt and cleared. A four-wheel-drive track is present.

Existing Protection: Both sides of the estuary are not within North-west Nelson Forest Park. They are privately owned. This level of protection does not adequately protect the pristine nature of this area.

Sources of Information: Information gathered from two private trips to this area (S. Courtney, pers. obs.).

Recorded on Existing Databases: CRI, 1990.
WERI, 1988.

Issues:

Exotic plants, primarily gorse, marram, and other exotic weed species are present around the entire estuary.

Stock, primarily cattle push through the coastal forest of the catchment area, damaging vegetation and pugging the soil structure.

Exotic animals, primarily wild pigs and possums are present throughout the area.

Part of the edge of the estuary is in private ownership.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge.

Revegetate areas where gorse and other weeds have been removed with appropriate native species.

Gradually reduce existing grazing in this area and prevent future grazing.

Control wild pigs and possums in the catchment.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Site Name/s: Whanganui (Westhaven) Inlet	**CRI Site No.** 10-006	**Code:** 02

Recorders Name: Rob Davidson

Map No: M25 (m)

Grid Reference: 24720 60680

Date: 16 April 1993

Brief Description of Site: **(West Coast)**

The sea entrance to Whanganui Inlet is located 19 km south of Farewell Spit on the West Coast of the South Island. The estuary is a barrier enclosed drowned river valley 13 km long and between 2 and 3 km wide. The inlet is the second largest barrier enclosed estuary (2744 ha) in the South Island behind Waimea Inlet, Nelson (3455 ha) and has an internal coastline of ~95 km. Whanganui Inlet is surrounded by forest or pasture. The sheltered waters of the inlet contrast with the rugged, exposed nature of the outer coast. Over 73 streams and small rivers bring fresh water to the inlet, however, the inlet is relatively saline (Davidson, 1990).

The inlet has very high landscape and aesthetic values, this contrasts with most New Zealand estuaries where these values have been compromised by industry, urbanisation, and farming practices.

Conservation Values:

Natural: Whanganui Inlet has a high degree of naturalness. The inlet itself is virtually unmodified by human impact, most saltmarsh and eelgrass beds are intact and marginal vegetation grades into mature forest around much of the inlet. The surrounding landscape and catchments are either forested, regenerating or in pasture. As a result, sedimentation, nutrient regimes, faunal composition and the food chain are operating in a natural state. Because most estuaries in New Zealand have been modified, the whole inlet represents a rare estuarine resource. Areas of particular significance are alluvial forest, zonation from snow covered mountains down to estuarine sand flats, large eelgrass (*Zostera novazelandica*) beds (860 ha), extensive saltmarsh, dune systems, estuarine rock and subtidal sponge gardens in the swift current flow habitat in the entrance. It supports a wide variety of bird species, including migratory waders (Walker, 1987), including the threatened (Bell, 1986) banded dotterel (*Charadrius bicinctus bicinctus*), Australasian bittern (*Botaurus stellaris poiciloptilus*) and banded rail (*Rallus phillppensis assimilis*), as well as the regionally threatened South Island fernbird (*Bowdleria punctata punctata*). The inlet is the only site on the West Coast of the South Island where the banded rail breeds (G. Elliot, pers. comm.). The inlet is an important site for juvenile marine fish (Davidson, 1990) and breeding and adult habitat for freshwater fish (Eldon & Ward, 1990).

Mangarakau Wetland, the largest freshwater wetland in the Nelson/Marlborough region (~350 ha) and ranked as nationally important due to the presence of the threatened (Bell, 1986) Australasian bittern and South Island fernbird, lies adjacent and drains into the inlet.

Cultural: Whanganui Inlet has importance to the Maori. The inlet is regarded as a traditional fishing ground and the adjacent land is an important source of materials including flax (*Phormium tenax*), kiekie (*Frevoinetia baueriana*) and pingao (*Desmoschoenus spiralis*) (Mitchell, 1989). The inlet was part of the 'Greenstone Trail' southward to the West Coast (Park, in prep.).

Maori reserve lands are located north of North Head and at Rakopi. The implied harvesting rights attached to these titles are issues which the Waitangi Tribunal is to be asked to address (J. Mitchell, pers. comm.). There are several waahi tapu and urupa on the inlet.

Historic: The inlet and surrounding land has a rich Maori and European history (Brailsford, 1984; Barne, 1986; Park, in prep.). Eighteen Maori archaeological sites are recorded and three European sites around the inlet. Three pa were known to exist in the inlet in the 1830's. Most European activity around the inlet, was concerned with extraction of timber, flax, gold, and coal. Seven ships were either wrecked or burnt in the inlet (Rushton, 1987). The inlet has high aesthetic and landscape values due to the wilderness atmosphere and spectacular scenery.

Site Importance: National

The inlet is nationally important as it represents a large estuarine system which functions in a natural state (Davidson, 1990). Nationally important for a breeding population of the 'vulnerable' (Bell, 1986) banded rail, banded dotterel and Australasian bittern (Davidson, 1990). The inlet has the only alluvial forest situated adjacent to an estuary in New Zealand (G. Park, pers. comm.).

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S 2.2 A formal application for a marine reserve in the inlet south of Pah Point was notified on 26 June 1993.

A proposal for a wildlife management reserve for the remaining inlet was also released on 26 June 1993.

Much of the land around the inlet is part of the North-west Nelson Forest Park or in reserve status. The Forest Park is currently under application for National Park status.

S 2.3(b) Juvenile flatfish and snapper have been recorded as common in the inlet, but no quantitative data exists (Davidson, 1990).

The freshwater areas adjacent to the inlet represent good adult native fish habitat and spawning areas (Eldon and Ward, 1990).

S 2.3(c) Most catchments are clad in native forest while the tidal flats have remained relatively unmodified (Davidson, 1990).

S 2.4(b) The 'vulnerable' banded rail, banded dotterel and Australasian bittern have been recorded from the inlet (Davidson, 1990).

S 2.4(c) Fifteen species of wader have been recorded from the inlet (second highest in Nelson region) (Davidson, 1990).

In summer, the inlet supports 1,000-2,000 waders (Davidson, 1990).

Approximately 860 hectares of eelgrass beds and 628 hectares of sand/mud substrate are suitable as feeding habitat for waders (Davidson, 1990).

S 2.5 Whanganui Inlet represents one of the few remaining estuaries in New Zealand that has virtually no human impact. It therefore represents a threatened estuarine system of national importance.

S 2.6 The inlet and adjacent coastline and catchments forms a spectacular seascape with the added attraction of a wilderness atmosphere primarily due to its relative isolation and severe weather.

Human Modification and Human Use:

Most of the land on the North and South Heads is farmed. Pah Point to the entrance north-east to Pecks Point is fished regularly by locals. A small boat mooring and wharf area is located at Mangarakau Wharf. Some shore fishing and flounder drag netting occurs in the Rakopi/Wairoa area. The estuary and surrounding forest is utilised by the Maori for flax, kiekie and pingao (Mangarakau and the North Head); and many marine, freshwater and shellfish species (Mitchell and Mitchell, 1990). Some locals gather drift eelgrass which washes up along the high tide zone. Farmers use the estuary to move stock, particularly on the North Head. Windsurfers occasionally use the inlet at high tide near Maori Point.

Existing Protection:

Approximately half of the land around the inlet is part of the North-west Nelson Forest Park. The remaining land is either private land, Crown land or legal road. A road reserve stretches around much of the inlet. The Golden Bay District Scheme recognises a 200 metres coastal zone around the inlet. The inlet was applied for as a marine reserve and wildlife management reserve, on 26 June 1993. Both areas would be administered by the Department of Conservation.

Recorded on Existing Databases:

CRI First Order Inventory, 1990.
WERI, 1988.
HPT County Inventories.

Other Considerations:

There are several waahi tapu and urupa areas around the inlet which the people of the Ngati Rarua, Ngati Tama and Te Atiawa iwi wish to have returned to Maori control and for some better protection than at present (J. Mitchell, pers. comm.).

Issues:

Goats, sheep and cattle regularly enter either conservation land around the inlet or the inlet itself where they graze saltmarsh vegetation.

An illegal rubbish dump is located on conservation land in the south-eastern corner of the inlet.

Drainage of swamps in the White Pine area threatens the survival of this swamp forest.

Clearance of adjacent forest may result in increased sedimentation and erosion.

Structures on or near the estuary margins would lower the natural and scenic values of the estuary.

Management Recommendations:

Recommendations for the management of Whanganui Inlet, based on ecological grounds, are discussed fully in Davidson (1990). In summary, they are:

- recognise the inlet as an area with outstanding natural values;
- seek protection for the natural values of the inlet;
- recognise that the estuarine environment is influenced by the adjacent terrestrial environment;
- prohibit any marine farming;
- local landowners be encouraged to retain scrub and forest remnants in gullies and land adjacent to the estuary;
- the use of underground transmission lines be encouraged and the replacement of existing aerial lines also be encouraged;

- dis-used poles and lines be removed;
- introduced ice plant be eradicated;
- clean up existing illegal rubbish tip in Mangarakau area; and
- control land practices in the adjacent catchments that would potentially influence the estuary.

5. WEST COAST COASTLINE

5.1 Summary of Values

5.2 Site Data, Issues and Management Recommendations

Kahurangi River to Big River
Te Hapu to Fossil Point

5. WEST COAST COASTLINE

5.1 SUMMARY AND JUSTIFICATION OF ECOLOGICAL VALUES

Two separate lengths of exposed West Coast coastline are included in this report. Kahurangi River to the Big River (~5 km in length) and Te Hapu to Fossil Point (~36 km in length) are both considered nationally important coastal areas. Both stretches of coastline have spectacular seascape values, the southern area with wide limestone marine platforms backed by areas of coastal forest, while the northern coast is dominated by vertical sea cliffs and rugged intertidal and subtidal reef systems.

Kahurangi River to Big River is of national status as it represents an area with outstanding coastal landforms, including the only examples of extensive mudstone and sandstone marine terraces outside the Kaikoura area in the Nelson/Marlborough region.

Te Hapu to Pillar Point coastline is of national status as it represents a coastline of outstanding seascape value. It is also the only known locality of the coastal broom, *Cotula colcarea* (Davidson, et al., 1990).

Relatively little ecological information has been collected from this coastline. It is expected that the national status given to these areas in this report will be reinforced once studies are implemented.

5.2 SITE DATA, ISSUES AND MANAGEMENT RECOMMENDATIONS

Site Name/s: Kahurangi River to Big River	**CRI Site No.** 10-003	**Code:** 03

Recorders Name: Geoff Rennison/Kaye Stark

Map No: L25

Grid Reference: 24440 60478

Date: 19 April 1993

Brief Description of Site: **(West Coast)**

This coastal unit, situated on the West Coast of the South Island, extends from the mouth of the Kahurangi River to the mouth of the Big River, some 5 km to the north-east. The coastline is dominated by large, intertidal platforms cut across mudstone and sandstone.

Conservation Values:

Natural: From Big River to east of the Kahurangi lighthouse, wide sand beaches alternate with partly buried rock platforms, with small lagoons impounded by sand bars. Currently a phase of erosion is reducing a series of beach terraces and spreading sandstone cobbles along the platforms (G. Rennison, pers. comm.). Further, eroded platforms are present at the Big River mouth. The south-west half of this area is dominated by a large intertidal rock platform cut in mid-tertiary mudstones and calcareous sandstones. Pointing and pothole fields create a small-scale complexity of shape and erosion patterns, while huge blocks of limestone, some emplaced by earthquake action, litter the upper shores.

Small patches of pingao *Desmoschoenus spiralis* are found just south of Kahurangi Point (S. Courtney, pers. obs.).

Variable oystercatcher *Haematopus unicolor* breed along this section of coastline and white-fronted tern *Sterna striata* and spotted shag *Stitocarba punctatus punctatus* use the area for roosting (K. Stark, pers. obs.).

Cultural: Ngai Tahu, Ngati Tama, Ngati Rarua, and Te Atiawa of Niho, Takarei, Riwai Turangapeke, Te Aupouri Matenga, Henare Te Kena, were the chiefs present in this district during the late 1870's. They feature in the early colonial history of western Golden Bay as the people with whom Europeans had to treat for land purchase.

The outstanding landforms of this coastline give the area extremely high seascape values.

Historic: This coastline was part of the Poutini trail and was used frequently by the Maori people travelling south to collect greenstone (Brailsford, 1984). There are four recorded Maori sites within this area of coastline (S. Walls, pers. comm.). Charles Heaphy and Thomas Brunner were the first Europeans known to make the journey down the coast south of Kahurangi in 1846 (Newport, 1975). The lighthouse was built in 1903 and originally manned by three lighthouse keepers (Newport, 1975).

Site Importance:

National

Known as an area with outstanding coastal landforms, including the only examples of extensive limestone marine terraces in the Nelson/Marlborough region apart from the Kaikoura area (R. Davidson, pers. obs.).

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S 2.2 Land adjacent to the lighthouse is gazetted Conservation Land.

S 2.5 Small patches of the threatened pingao are found just south of Kahurangi Point.

S 2.6 The outstanding landforms of this coastline give the area high seascape values (G. Rennison, pers. comm.).

S 2.8(b) Shore platforms cut in mid-tertiary mudstone and calcareous sandstones dominate the shoreline.

S 2.8(c) Represents the only example of limestone terraces in the Nelson/Marlborough region, apart from the Kaikoura area (R. Davidson, pers. comm.).

Human Modification and Human Use:

The majority of the backshore is grazed and has been developed for farming, with some logging of forest. Kahurangi is an increasingly popular area for land-based recreation, eg. fishing, sightseeing and hunting.

Existing Protection:

Land adjacent to the lighthouse is gazetted Forest Park under Department of Conservation management.

Recorded on Existing Databases:

CRI First Order Inventory, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Other Considerations: This area has had no detailed information or survey work completed.

Issues:

Exotic plants, primarily gorse, marram and other exotic weed species are present along all the margins of the coastline.

Unrestricted grazing around the lighthouse is eroding the sand dune areas and destroying remaining areas of pingao.

Part of the edge of the coast at Big River is in private ownership.

Management Recommendations:

Progressively remove noxious and exotic species from the coastline.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Gradually reduce grazing in this area.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Implement an ecological survey of this coastline.

Site Name/s: Te Hapu to Fossil Point	**CRI Site No.** 10-007	**Code:** 04

Recorders Name: Geoff Rennison/Kaye Stark

Map No: M24

Grid Reference: 24800 60778

Date: 20 April 1993

Brief Description of Site:

(West Coast)

This section of coastline is situated on the West Coast of the South Island (south of Farewell Spit) and extends from Fossil Point in the north-east past Kaihoka Bay to Te Hapu in the south, a distance of ~36 km. This is a dramatic cliffed coastline cut in late Cretaceous Pakawau series conglomerates and quartzose sandstones. Extensive dune formations have locally buried lower relief hills, interrupting drainage and forming lakes and swamps. Beaches of medium sand sediment are located at Whararíki, Greenhills, Nguroa and Kaihoka Bay.

Vegetation along the back shore ranges from lupin *Lupinus arboreus*/marram *Ammophila arenaria* to kanuka *Kunzea ericoides*/broadleaf coastal forest (Whararíki Vegetation, 1985). Sheep and cattle (with some goats) are farmed all along the area bordering this section of coast.

Conservation Values:

Natural: Isolation and fierce sea conditions have limited development along this section of the coastline, resulting in an area with very high natural values. The coastline from Farewell Spit to Kahurangi Point is the only known area for the coastal broom *Cotula calcarea* (S. Courtney, pers. comm.).

Small patches of pingao *Desmoschoenus spiralis* are located at Greenhills and Kaihoka Bay. Whararíki Beach is an important breeding area for white-fronted tern *Sterna striata* and rare international waders have occasionally been recorded from this beach. The Archway Islands offshore of Whararíki Beach are on a breeding area for fur seals *Arctocephalis forsteri*, muttonbirds *Puffinus griseus*, and little blue penguin *Eudyptula minor*.

Crayfish *Jasus edwardsii*, paua *Haliotis iris* and kina *Evechinus chloroticus* beds are found offshore, however, very little is known of the subtidal values of this exposed coastline.

Cultural: The Kaihoka area has special significance to many Maori who descend from the Ngati Rarua, Ngati Tama and Te Atiawa, who conquered the area in the late 1820's. Wakatu Inc. has a sizeable farm block (leased to Mr Ferguson) which is Occupation Reserve, with attached traditional fishing rights on both inlet and outer coast.

Unusual landform features in the form of reefs, caves, arches, pillars and islands are present along the coastline and give the area extremely high landscape and seascape values (Mueller, 1983).

Historic: Evidence of Maori use of the area is found in middens at Cape Farewell and Nguroa Bay. Stone flaking (quartzite) has also been found at Nguroa Bay. A lighthouse is present at Pillar Point. There are nine recorded archaeological sites on this section of coast.

Site Importance: National

This area has not been extensively studied, but has extremely high seascape values. This coast is the only known site of the native broom *Cotula calcarea*.

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S 2.2 The Archway Island and land adjoining the coastline from Pillar Point to south of Greenhills Bay, is Crown land administered by the Department of Conservation.

S 2.4(a) New Zealand fur seals use the Archway Island for breeding and as a haulout area.

S 2.4(b) The threatened reef heron are known to breed in the area (S. Walls, pers. comm.).

S 2.5 Of national importance due to the presence of the threatened reef heron and the only known site of the native broom *Cotula calcarea* (S. Courtney, pers. comm.).

S 2.6 The diverse landform features present along this section of coastline give the area extremely high seascape values (Mueller, 1983).

S 2.8(a) In the Te Hapu to Westhaven South Head area, hard rock strata (limestones mainly) running out from the cliffline at an acute angle form significant reefs which, close to shore, enclose semi-protected waters at low tide. Smaller, more discrete reefs near Whahariki and Nguroa are the eroded remains of stacks (G. Rennison, pers. obs.).

S 2.8(b) Shore platforms are a dramatic and pervasive feature of the entire Te Hapu-Kaihoka shoreline, reaching their best expression at Kaihoka, where the wide platform is cut by deep, parallel guts eroded along major joints in calcareous sandstones. Elsewhere the platform is more deeply dissected, or heaped with giant blocks which have fallen from the clifflines above. Occasional monoliths (grey cliffs) interrupt the regular procession of platforms and small beaches (G. Rennison, pers. obs.).

S 2.8(c) This coastline is listed a landform of national importance (Priestly et al., 1989).

Human Modification and Human Use:

Land behind the coastal forest backshore has been developed for farming. Whararíki Beach is becoming increasingly popular for land-based recreation. This section of coast is important to local recreational fishers for surfcasting and shellfish collection (W. Climo, pers. comm.).

Existing Protection:

The backshore from Pillar Point to south of Greenhills Bay is Crown land administered by the Department of Conservation, awaiting gazettal to Farm Park. A rahui on the commercial harvesting of paua and kina is placed over the coastline between Nguroa and Kaihoka Bays.

Availability of Information:

Detailed information is only available on the landforms in this area.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Issues:

Exotic plants, primarily gorse, marram, and other exotic weed species are present along the entire coastline.

Grazing down to the coast occurs in areas to the south of Puponga Farm Park eroding the sand dune areas and destroying remaining areas of pingao.

Management Recommendations:

Progressively remove noxious and exotic species from the coastline.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Gradually reduce grazing in this area along the coastal fringe of this unit.

Implement ecological survey of this coastline.

6. FAREWELL SPIT AND TIDAL FLATS

6.1 Summary of Values

6.2 Site Data, Issues and Management Recommendations

Farewell Spit and Tidal Flats

6. FAREWELL SPIT AND TIDAL FLATS

6.1 SUMMARY AND JUSTIFICATION OF ECOLOGICAL VALUES

Farewell Spit and adjacent tidal flats represent a land area of 1959 ha, and an intertidal area of 9943 ha. The spit is designated under I.U.C.N. criteria as a wetland of international importance (1971). It is also a landform of international importance (Priestly et al., 1989). It is a habitat for endangered species of plant and is a very important feeding area for international wader species.

6.2 SITE DATA, ISSUES AND MANAGEMENT RECOMMENDATIONS

Site Name/s: Farewell Spit and Tidal Flats	**CRI Site No.** 10-008a	**Code:** 05

Recorders Name: Geoff Rennison/Kaye Stark

Map No: N24

Grid Reference: 25990 60770

Date: 16 April 1993

Brief Description of Site: **(Golden Bay)**

Farewell Spit is New Zealand's longest spit system. It extends eastward for ~30 km (with a total coastline of ~67 km). It is exposed to the Tasman Sea, but sheltered to the south with tidal mudflats extending up to 6 km seaward at low tide. The spit is formed predominantly of quartz sands transported north along the West Coast. Finer sediments originating from Golden Bay rivers are deposited along the inner beach. Land at the base of the spit has been developed for farming. Past burning and grazing have modified the vegetation. The land area is 1959 ha and the intertidal area is 9943 ha.

Conservation Values:

Natural: Farewell Spit is best known as an area for nationally and internationally important wader species. A total of 83 species of wetland bird have been recorded and large flocks of knot *Calidris cannto*, godwit *Limosa lapponica baueri* and South Island pied oystercatcher *Haematopus ostralegus finschi* over winter in the area. The mudflats off the inner beach form a major moulting site for around 12,000 black swan *Cygnus atratus* (Walker, 1987; Byrom & Davidson, 1992). A gannet *Sula bassana serrator* colony is now well established and caspian tern *Hydroprogne caspia*, southern black-backed gull *Larus dominicanus*, red-billed gull *Larus novaehollandiae* and variable oystercatcher *Haematopus unicolor* all breed on the spit. The rare and endangered plants *Euphorbia glauca*, sand daphne *Pimelea arenaria*, pingao *Desmoschoenus spiralis, Spinifex hirsutus* and sand spike rush *Eleocharis neozelandica* are all present in areas (S. Courtney. pers. comm.).

Five distinct land form features can be seen on Farewell Spit:

1. ocean beach, which is cut into a series of banks and channel by tidal action;

2. mobile dune belt ~20 km long and in places, has what some claim to be barchan dunes. This system is almost completely devoid of vegetation;

3. inter-dune hollow areas of flat sand inundated by the highest tides;

4. inner beach dune belt completely vegetated and more irregular in appearance than the mobile dune belt; and

5. intertidal sand plains. A huge area of imperceptibly sloping sand, cut through by meandering channels stretching from the base of zone (4) to below mean low water springs. Some areas contain saltmarsh or eelgrass *Zostera novazelandica*, others are bare sand (Stark, pers. obs.). The Farewell Spit Management Plan (1990) allows for natural processes to occur with minimum intervention.

Cultural: Aesthetic values are high. Farewell Spit is the largest land form of its type in the country and is an outstanding example of the transporting power of the wind and the shaping of loose sediments by currents. There is much evidence of traditional Maori use, ie. utilizing stranded marine mammals, gathering shellfish, hunting birds and flaking quartz and quartzite. Local Maori have a strong spiritual sensitivity and have adopted the traditional name of Onetahua for their marae.

Historic: Historic evidence shows that Farewell Spit was used by the Maori people, although the lack of fresh water supply would have restricted permanent habitation to the base of the Spit. A burial site has been noted in the area (Brailsford, 1981). On Triangle Flat at the base of the Spit, considerable quantities of Maori tools and weapons have been found and it is thought that this was one of the areas where local Maori people made a final stand against the invaders from the North Island in the late 1820's (Newport, 1971). Occupation sites can be found at the Triangle Flat and Fossil Point. Midden sites are located at various points along the length of the Spit. The lighthouse near the tip of the Spit was built in 1870 and manned until 1985. Farewell Spit has been the site of a large number of wrecks, the earliest recorded of which was the Victoria in 1840. Several papers written on the area provide good base data for future work (Court, 1978; Ingram, 1975; Ross, 1975).

Site Importance: International

Farewell Spit is designated under the I.U.C.N. criteria as a wetland of international importance (1971). It is a landform of international importance (New Zealand Landform Inventory, 1989). The endangered (Wilson & Given, 1989) sand spike rush is present (S. Courtney, pers. comm.). The threatened sand spurge is found in association with a group of uncommon (S. Courtney, pers. comm.) dune species.

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S 2.2 Farewell Spit is gazetted a Nature Reserve and the intertidal area is gazetted a wildlife sanctuary, both areas are administered by the Department of Conservation.

S 2.3(c) The intertidal flats of Farewell Spit are of high value because of their relative unmodified state.

S 2.3(d) Farewell Spit is well known as a key site for international migratory waders.

S 2.4(b) The rare variable oystercatcher and the threatened banded dotterel are known to breed on Farewell Spit (K. Stark, pers. comm.). Other wader species are known to periodically use the area (see Jane, 1989 for a complete list).

S 2.4(c) Farewell Spit provides important roosting sites and feeding areas for both national and international wader species.

S 2.5 The rare and endangered *Euphorbia glauca*, sand daphne, *Primelea arenaria, Spinifex nirsulus*, sand spike rush and *Eleocharis neozelandica* are present on Farewell Spit. The threatened banded dotterel and royal spoonbill are found on Farewell Spit. Other rare, threatened or endangered international and national wader species are known to periodically use the area.

S 2.6 The outstanding landform of the Spit and associated intertidal flats give the area extremely high seascape values.

S 2.8(c) Farewell Spit is listed as a landform of international importance (Priestly et al., 1989).

Human Modification and Human Use:

Land at the base of the Spit has been developed for farming. Two concessions to transport visitors to the lighthouse are based at Collingwood. The outer beach of the Spit is popular with locals for fishing. Public entry is restricted to ~3 km from the base of the Spit and this area is popular for shore-based recreation, especially during the summer.

Existing Protection:

The dry land and intertidal flats of Farewell Spit is a Nature Reserve administered by the Department of Conservation under the Reserves Act through a Management Plan (1990). The intertidal zone is also a wildlife sanctuary administered by the Department of Conservation under the Wildlife Act. Classification as a nature

reserve gives the area a high level of protection.

Availability of Information:

A summary of information and references can be found in Jane (1989).

Good general information available.

Recorded on Existing Databases:

CRI, 1990.
WERI (1988).
SSWI (1987).
Geopreservation (1989) New Zealand Landform Inventory.
HPT County Inventories (1990).

Other Considerations:

Some ill-feeling amongst the local community exists over the access restriction to vehicles (especially for fishing activities).

Issues:

Exotic plants, primarily gorse, marram, and other exotic weed species are present along the entire spit altering the growth of native communities. Small patches of *Spartina* occasionally appear along the inner edge of the spit.

Fire is a continual threat to habitat and water quality in the spit area.

Exotic animals, primarily deer, hares and possum are present on the spit are a constant threat to coastal vegetation.

The management plan over the Farewell Spit area does not give the Department of Conservation any control over resource management issues, nor over the adjacent coastal waters and seabed which are part of the same sensitive system.

Management Recommendations:

Progressively remove noxious and exotic species from the spit.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Erect signs at public access point of the spit to highlight the area's fire risk.

Remove or control exotic animals from the spit.

Endorsement of the current protected status of the Spit by not allowing any development which will disturb or adversely effect the Spit area.

A joint management regime for Farewell Spit and the surrounding area may be appropriate.

7. GOLDEN BAY ESTUARIES

7.1 Summary of Values

7.2 Site Data, Issues and Management Recommendations

Puponga Inlet
Pakawau Inlet
Waikato Spits, Inlet and Shell Banks
Ruataniwha Inlet
Parapara Inlet/Sandspit
Onekaka Estuary/Sandspit
Onahau Estuary
Waitapu Estuaries
Motupipi Estuary
Tata Beach Estuary
Wainui Inlet

7. GOLDEN BAY ESTUARIES

7.1 SUMMARY AND JUSTIFICATION OF ECOLOGICAL VALUES

Eleven Golden Bay estuaries are included in this report. They range in size from ~8 ha (Tata Estuary) to the largest, Ruataniwha Inlet at Collingwood (~1610 ha), however, most Golden Bay estuaries are <60 ha in size. All have rivers of varying sizes, the two largest being the Takaka and Aorere Rivers. These estuaries are shallow, quick draining and have a range of sediment sizes from silts and clays, through to pebbles, cobbles and rock. Saltmarsh communities are dominated by sea rush (*Juncus maritimus*), jointed wire rush (*Leptocarpus similis*) and glasswort (*Sarcocornia quinqueflora*). Although all Golden Bay estuaries are surrounded by farmland, little development within the estuaries has occurred. Small wharf areas are located in Puponga, Ruataniwha, Parapara and Waitapu.

All 11 estuaries are considered of national importance due to the presence of the vulnerable (Bell, 1986) banded rail (Davidson et al., 1990). Many also provide habitat for Australasian bittern, South Island fernbird, banded dotterel, caspian tern, variable oystercatcher and marsh crake, all being of important wildlife value. All of these Golden Bay estuaries have a high degree of naturalness due to the lack of extensive human development often associated with estuaries in New Zealand.

7.2 SITE DATA, ISSUES AND MANAGEMENT RECOMMENDATIONS

Site Name/s: Puponga Inlet	CRI Site No. 10-009	Code: 06

Recorders Name: Kaye Stark

Map No: M24 (m)

Grid Reference: 24875 60760

Date: 26 April 1993

Brief Description of Site: **(Golden Bay)**

Puponga Inlet is an elongate estuary ~40 ha in area, located at the base of Farewell Spit. The entrance to the estuary is narrow and a causeway provides vehicle access to the Spit. Wave platforms of the erosion resistant Farewell formation extend into the estuary along the north-eastern edge with cliffs of the much younger Westhaven group rising steeply behind. Sediment ranges from rounded pebbles/cobbles at the mouth of the inlet, through to fine sands and mud at the head of the estuary.

A second causeway divides the south-western portion of the estuary. The estuary is surrounded by regenerating coastal forest and manuka to the north-east, a flax/raupo swamp at the head of the estuary, manuka/gorse scrub to the west and the small settlement of Port Puponga on the south edge of the entrance.

Conservation Values: **Natural:** Little development along the backshore give the area a high degree of naturalness. The inlet and associated flax/raupo swamp provide important habitat for a variety of estuarine and wetland species, including the threatened (Bell, 1986) banded rail *Rallus philippensis assimilis*. Australasian bittern *Botaurus stellaris poiciloptilus* and South Island fernbird *Bowdleria punctata punctata* are also present. Waterfowl are common and a white heron *Egretta alba modesta* periodically feeds in the area. Giant bully (*Gobiomorphus gobiodeo*) and inanga (*Galaxias maculatus*) have been recorded from the head of Puponga Estuary (K. Stark, pers. comm.).

An example of the natural sequence of saltmarsh vegetation fringes the estuary including *Juncus maritimus, Leptocarpus similis, Sarcocornia quinqueflora, Selliera radicans* and patches of *Plagianthus divaricata*. The wave platforms and associated cliffs along the north-eastern shore are geologically important and are also of important landscape value (G. Rennison, pers. comm.). There are few areas in Golden Bay where wave platforms extend into an estuarine environment (G. Rennison, pers. comm.).

Cultural: A small area of Maori reserve land is located at the settlement of Puponga (Mitchell & Mitchell, 1990). Three recorded archaeological sites at Abel Head are recorded on the CRI site record form entitled 'Puponga to Pakawau Coastline'.

Historic: Evidence of a tramway, built in 1901, to service the Puponga coal mine, can still be seen in the south-western corner of the estuary, beyond the small causeway. The remains of a wharf and three derelict boats are evident at the estuary mouth.

Site Importance: National

Breeding site for the nationally threatened species (Bell, 1986): banded rail and bittern.

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S 2.3(b) The small stream entering the head of the estuary provide habitat for whitebait species.

S 2.3(c) Little development along the backshore gives the area a high degree of naturalness.

S 2.4(b) Breeding site for the nationally threatened species banded rail and Australasian bittern.

S 2.5 Breeding site for the nationally threatened species banded rail and bittern.

Human Modification and Human Use: Land at the south side of the estuary mouth has been developed for housing. Two causeways cross the estuary, providing vehicle access to Farewell Spit and to Whatariki. Occasional whitebaiting occurs in the stream at the head of the estuary.

Existing Protection: The area surrounding the housing at Port Puponga is designated road reserve with a small piece of esplanade reserve at the southernmost point of the estuary mouth. The north-eastern edge and the head of the estuary is designated Farm Park under Department of Conservation control. Total area of Puponga Farm Park is 1,037 ha. The northern and western borders are protected by Puponga Farm Park administered by the Department of Conservation.

Recorded on Existing Databases:	CRI, 1990. WERI, 1988. SSWI, 1987. HPT County Inventories, 1990.
Other Considerations:	This area has been written up as a separate unit from Farewell Spit and the Puponga/Pakawau coastline, but the conservation values of the three areas are very much interrelated.

Issues:

Small patches of *Spartina* periodically appear in the north-eastern portion of the estuary. Blackberry is present on all margins of the estuary altering the growth of native edge communities. Gorse is present along most of the estuary edge.

Rubbish is occasionally illegally dumped in the south-western corner of the estuary.

The entire catchment has a high fire risk threatening both the water quality and scenic values of the area.

Management Recommendations:

Monitor Puponga Inlet regularly for the presence of *Spartina* and poison where necessary.

Progressively remove all gorse and blackberry from the estuary edge.

Revegetate areas where gorse and blackberry has been removed with appropriate native species.

Erect signs to highlight the area's fire risk.

Site Name/s: Pakawau Inlet	**CRI Site No.** 10-011	**Code:** 07

Recorders Name: Kaye Stark

Map No: M25 (m)

Grid Reference: 24820 60610

Date: 1 April 1993

Brief Description of Site: **(Golden Bay)**

Pakawau Inlet (~60 ha) is located on the northern side of the small township of Pakawau. The seaward third of the estuary consists of mixed pebbles and cobbles, giving the area a relatively stable channel at the mouth. The remaining area is dominated by fine sands with mud and silt toward the saltmarsh edge. A wide band of saltmarsh vegetation extends around the western and southern edge of the estuary backing onto stands of manuka *Leptospermum scoparium* and small raupo *Typha orientalis* swamps.

The sandspit, originating from the south, has been modified by farming practices with housing at the southern end. The main Collingwood to Puponga road extends north along the inner edge of the spit and a short bridge crosses at the estuary mouth. The surrounding area is farmed and much of the catchment is regenerating native forest and pine plantation.

Conservation Values:

Natural: Although surrounded by farmland, the estuary itself has high natural value and is representative of estuaries in Golden Bay. The threatened (Bell, 1986) banded rail *Rallus philippensis assimilis* is present, as are spotless crake *Porzana tabuensis plumbea* and South Island fernbird *Bowdleri punctata punctata* (G. Elliot, pers. comm.). A high tide roost for both national and international wader species is located on the outer beach (K. Stark, pers. obs.). The three main streams entering the estuary provide habitat for whitebait species.

Cultural: Pakawau Inlet marks the northernmost point of the Poutini coastal trail by which Maori people travelled south in search of greenstone (Brailsford, 1984).

Historic: An occupation site is located on the north side of the estuary and middens are located on the tip of the sand spit. The Pakawau pa site is believed to be Wiremu Kingi Te Koihua's main defensive position for the area Ruataniwha to Te Rae in the time of the 1827 to 1832 conquests (Mitchell, pers. comm.). Wairemu Kingi Te Koihua was the chief of the Te Atiawa, his son, Hemi Kuku ('James Cook') provided a Ngai Tahu slave, Tau, as a guide/ porter to Brunner and Heaphy on their 1845 exploration of westland.

Site Importance:

National

Nationally important due to presence of the threatened (Bell, 1986) banded rail.

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S 2.3(b) Whitebait species use the three main streams entering the estuary.

S 2.4(b) The threatened species banded rail is present in the estuary.

S 2.4(c) An important roost for both international and national wader species is located on the outer beach of the estuary mouth.

S 2.5 The threatened (Bell, 1986) banded rail is present in the estuary.

Human Modification and Human Use:

The sandspit has been modified for farming, housing and road development. A major drain extends through the western and south-western corners of the estuary. The outer coastline is popular for both land and water-based recreation and the estuary itself is popular for whitebaiting. A road bridge crosses the narrow estuary mouth.

Existing Protection:

Two small pieces of Crown land on either side of the estuary mouth are administered by the Department of Conservation. A narrow strip of land from the base of the spit to Tomatea Point is Local Purpose Reserve administered by the Tasman District Council. A Rahui exists on the commercial gathering of shellfish along the outer coast of the sandspit between mean high water spring and mean low water spring.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Issues:

Exotic plants, primarily gorse and blackberry are present on all margins and islands of the estuary. Pine trees are present on the islands within the estuary. A range of exotic weed species are present on the rock wall causeway along the road edge of the estuary.

Part of the western portion of the estuary is in private ownership.

Fencing along parts of the western, southern and northern edges of the estuary is either inadequate or non-existent.

Rubbish is often dumped into the edge of the estuary along the road causeway.

Several large drains have been dug through the wetland and estuary area at the head of the estuary.

Management Recommendations:

Progressively remove noxious and exotic weed species from the estuary edge and islands.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Either purchase or covenant the area of estuarine habitat still in private ownership.

Either purchase, covenant or use the Resource Management Act to create a buffer zone of protected land around the entire estuary.

Fence edge area to prevent stock movement into estuary.

Inform local residents that it is illegal to dump rubbish into an estuary and enforce as required.

Fill in drains at the estuary head to restore original water flow pattern of this area.

Site Name/s: Waikato Spits, Inlet and Shell Banks	**CRI Site No.** 10-013	**Code:** 08

Recorders Name: Kaye Stark

Map No: M25 (m)

Grid Reference: 24828 60642

Date: 1 April 1993

Brief Description of Site:

(Golden Bay)

Waikato Inlet is a small elongate estuary (~30 ha) located ~1 km north of Ruataniwha Inlet. Spits originating at the northern and southern ends of the estuary shelter an area of mixed shell and medium sand, changing to mud/silt at each end of the estuary. The outer beach is relatively narrow (~35 metres) and steeper than adjoining beaches and is subject to periodic erosion (Auckland University, 1975). Although the estuary itself has a high degree of naturalness, both spits have been modified - the northern spit (Totara Avenue) by housing development.

Conservation Values:

Natural: While both sandspits have been modified, the estuary has a high degree of naturalness and is representative of small estuaries in Golden Bay. The western edge of the estuary has a fringe of *Leptocarpus/Juncus* saltmarsh. Tall sand hummocks and shell banks scattered throughout the estuary are vegetated primarily with *Sarcocornia guinqueflora*. Banded rail *Rallus philippensis assimilis* breed in the northern corner of the estuary (Elliot, pers. comm.) and the shellbanks are an important breeding area for banded dotterel *Charadrius bicinctus bicinctus*, variable oystercatcher *Haematopus unicolor*, caspian tern *Hydroprogne caspia* and occasionally for white-fronted tern *Sterna striata*. The shell banks also form an important high tide roost - part of a network of roosts in Golden Bay used by both national and international waders. Examples of mature and regenerating coastal totara *Podocarpus totara* forest are found on the northern spit. The estuary sandspits and shell banks are all recognised as fragile environments vulnerable to fluctuating sea levels and human use and are vital for the continued survival of inlet behind. The shellbanks represent one of only two shellbank estuarine areas in Golden Bay (CRI, 1990).

Historic: A pa, middens and find spots are recorded in the archaeological inventory at Waikato. This site is an important archaeological site. Pipis and cockles are part of the traditional fishery along the outer coast,but not within the inlet (Mitchell & Mitchell, 1990). Wiremu Kingi Te Koihua was the chief of Waikato Pa at the time of European settlement. He features frequently in the early 'contact history' of the area. He accompanied James Mackay on his journey of exploration to the West Coast in 1857.

Site Importance:

National

Nationally important as a site for the threatened (Bell, 1986) banded rail, banded dotterel and caspian tern. The shell banks are important high tide roosts for both national and international wader species and are an unusual landform in Golden Bay (K. Stark, pers. obs.).

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S 2.2	The entire northern spit is surrounded by an area gazetted Esplanade Reserve. A small area on the seaward base of the northern spit is gazetted Recreation Reserve.
S 2.4(b)	Nationally important as a site for the threatened banded rail, banded dotterel and Caspian tern.
S 2.4(c)	An important roost for both national and international wader species is located on the shellbanks.
S 2.5	Nationally important as a breeding area for the threatened banded rail, banded dotterel and Caspian tern.
S 2.8(c)	The shellbank area is an unusual landform in Golden Bay (K. Stark, pers. obs.).

Human Modification and Human Use:

A road extends centrally along the northern spit, providing access to the beach and to numerous baches. In the past, the southern spit has been planted in pines and although the area has since reverted to marram grass, a few wilding pines still remain. In the past, a small causeway was built in the northern half of the estuary to prevent high water entering land on the base of the northern spit. This has proved largely ineffectual and appears to have little or no effect on the estuary. The area is popular for both land and water-based recreation. Westhaven shellfish occasionally harvest the small cockles at the mouth of the estuary for later reseeding into their license area.

Existing Protection: An Esplanade Reserve: surrounds the entire northern spit although most of the reserve has eroded away. A small Recreation Reserve is located at seaward base of northern spit. A rahui area is located on the outer coastline of northern spit between mean high water mark and a line parallel 300 metres seaward. The Ngati Tama, restriction suggested consists of no commercial fishing of shellfish. A voluntary protected area exists over the shellbanks and is enforced by local residents who block access to vehicles using barriers.

Recorded on Existing Databases: CRI, 1990.
HPT County Inventories 1990.

Issues:

The majority of the hard rock protection work along the outer edge of the northern spit appears to add to rather than alleviate the erosion problem of the residential area. Protection works along the inner edge of the northern spit has reduced saltmarsh/reed habitat and altered the natural character of that area.

Exotic plants primarily patches of gorse and blackberry are present on all margins and islands of the estuary altering the growth of native edge communities. Pine trees are present on the southern spit. A range of exotic species are present on protection works on the northern spit.

Inadequate fencing at the southern end of the estuary allows stock periodic access to this area.

Vehicles access in this area damages the shellbanks and disturbs birds.

Dogs are free to range throughout the estuary disturbing roosting birds and destroying nests.

Local residents often dump garden rubbish into the edge of the estuary along the inner edge of the northern spit.

Management Recommendations:

Replace existing rock wall protection on the outer edge of the northern spit with appropriately designed protection works.

Existing protection work along the inner edge of the northern spit be removed.

Progressively remove noxious and exotic species from the estuary edge and islands.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Fence southern areas of estuary to prevent stock movement onto the estuary and sandspit.

Inform local residents that it is illegal to dump rubbish into an estuary and enforce as required.

Prohibit vehicle access to shellbank and estuary area.

Prohibit dogs from the shellbank and estuary area.

Site Name/s: Ruataniwha Inlet	**CRI Site No.** 10-014	**Code:** 09

Recorders Name: Geoff Rennison/Kaye Stark

Map No: M25 (m)

Grid Reference: 24820 60610

Date: 1 April 1993

Brief Description of Site: **(Golden Bay)**

This estuary (north of Collingwood) encompassing some 1,610 ha of mudflat, saltmarsh and wetland, and is fed by Golden Bay's largest river (Aorere). Several large barrier spits project southwards creating a relatively stable area in the north. The Aorere delta to the west cuts the lower lying land into a series of islands. There is a huge sediment supply from the river in time of flood and intertidal banks appear to be growing.

The majority of the surrounding land is farmed with the township and small commercial port of Collingwood located at the south-eastern end of the estuary on a spit. The whole inlet is undergoing regular change in response to river action and spit erosion/accretion.

Conservation Values: **Natural:** Several examples of zonation sequences from coastal forest through saltmarsh to mudflat are present along the western edge, and although farmland is present, the majority of the hill country catchment, particularly to the west, has native forest or regenerating forest cover, giving the area a backdrop with a high degree of naturalness.

The mudflats are important feeding areas for both national and international wader species, with paddocks further up the Aorere Valley providing high tide roosts for these birds, especially during the high spring tides when many of the coastal roosts are under water. Banded rail *Rallus philippensis assimilis* (G. Elliot, pers. comm.), Australasian bittern *Botaurus stellaris poiciloptilus* and South Island fernbird *Bowdleria punctata punctata* are present along the edge of the estuary. Royal spoonbill *Platalea leucorodia regia* occasionally overwinter near the main channel.

The barrier spits projecting to the south are unusual, representing a net southward drift of sediments in the local system rather than the typical clockwise sediment movement noted for Golden Bay (Muir, 1979).

The Aorere River and delta are important habitat and a migratory route for whitebait species. Fish species present at the head of the estuary include long-finned eel *Anguilla dieffenbachi*, short-finned eel *Anguilla australis* and inanga *Galaxias maculatus*.

Cultural: Sherwood Roberts, who visited the site of present day Collingwood in 1856, mentions the remains of a strongly fortified pa, but at the time it was deserted, falling into decay and strongly tapu (Newport, 1971). The exact location of the pa site is unknown. He also mentions a small Maori settlement at Wapping Point (tip of the southern sandspit) and it was here that a large whare was set aside for use as a church for the earliest missionaries in the area (Newport, 1971). Historic photos show that the land where this settlement stood has since eroded into the sea. It should be noted that reliable roading was not established until early this century and that until that time the coastal waters were the 'roads' of Golden Bay.

Historic: Europeans settled in the area from the 1840's and Collingwood, or Gibbstown as it was then known, became an Official Port of Entry in 1858 (Newport, 1971). Gibbstown boomed following the discovery of gold in the district in 1857 (Newport, 1971). However, a fire in 1859 practically destroyed all the town buildings and as by this time the initial boom had passed and trade declined, a smaller township was built (Newport, 1971). A series of fires over the years have removed most of the evidence of these times.

Another township known as Ferntown was built on the northern side of the Aorere River. Once again, little remains of the town that. During its heyday it rivalled present day Collingwood in size. Initially, coal mining was the main attraction of the area and a tramway ran from the nearby mine to a wharf in the centre of town. After mining activity dwindled in the late 1880's, timber milling on the Aorere River flats became the major industry. A flaxmill was also in business at Ferntown until 1904 (Newport, 1971).

Seven Maori sites have been identified within the estuary to date (S. Walls, pers. comm.). They include an extensive area of occupation located on the northern tip with the remains of oven stones, middens and living areas.

Site Importance: National

Nationally important due to the presence of the 'threatened' (Bell, 1986) species, banded rail, Australasian bittern (G. Elliot, pers. comm.) and Royal spoonbill. Represents the largest enclosed estuarine area in Golden Bay.

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S 2.3(b) All the streams and rivers entering the estuary provide habitat for whitebait species.

S 2.4(b) Nationally important as a habitat for the threatened species banded rail, bittern and royal spoonbill.

S 2.4(c) The mudflats are important feeding areas for both national and international wader species.

S 2.5 Nationally important due to the presence of the threatened species banded rail, bittern and Royal spoonbill.

S 2.8(c) The barrier spits projecting to the south are unusual, representing a southward drift of sediments in the local system rather than the typical clockwise sediment movement noted for Golden Bay (Muir, 1979).

Human Modification and Human Use:

The township of Collingwood has modified the southern sandspit. Rock wall protection extends around the southern sandspit and up the southern bank of the river. Collingwood is a commercial port and used regularly by fishing boats, mainly during the scallop season. The Collingwood motorcamp is located on reserve land at the tip of the southern spit. A boat ramp is present in this area. A pine plantation and airstrip are present on the northern sandspit. Roading is present along the north-western and southern fringes of the estuary. The estuary is popular as a launching area for water-based recreation, particularly fishing. The Aorere River mouth to above the main road bridge is a very popular area for whitebaiting. Commercial aquaculture (Pacific oyster spat collection) is carried out in the Inlet.

Existing Protection:

Part of the area south of the main road bridge has recently been purchased by the Department of Conservation. A 4 ha remnant lowland totara forest stand (*Podocarpus totara*) on one of the delta islands has QEII Open Space Covenant protection.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
Geopreservation, 1989.

Other Considerations: As yet no detailed biological or archaeological survey of this estuary and surrounding land has been completed. Considering the conservation values of this area, a comprehensive survey of the inlet should be a priority in Golden Bay.

Issues:

Exotic plants, primarily gorse, blackberry and willow are present on all margins and islands of the estuary altering the growth of native edge communities. Pine trees, and the logging of the pine trees, present on the northern spit decreases the stability of parts of this area and interferes with the natural scenic quality of the estuary.

Gradual illegal infilling of the estuary occurs along the north-western edge of the estuary.

Most of the edge of the estuary is in private ownership.

Inadequate fencing in parts of the estuary allow stock periodic access to this area.

Gradual channelling, by landowners, of the small streams entering the estuary along the north-western edge has increased the rate of silt building up in the adjoining estuary.

Leachates from the Collingwood rubbish dump may enter the estuary via Burton Ale stream.

Oxidation ponds for the Collingwood sewage scheme are located in the estuary catchment.

Small oil and fuel spills occasionally occur at the Collingwood wharf located in the south of the estuary.

Haphazard rock and other inappropriate protection work along the residential area of the southern spit is not in keeping with the scenic integrity of an estuary.

Rubbish dumped in the past, adds to the unsightly mess along the inner edge of the southern sandspit.

Illegal floodgates inhibiting the passage of whitebait species are present in the western portion of the estuary.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge and islands.

Prohibit the planting and logging of pine trees on the northern spit.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Inform local landowners and Tasman District Council staff that it is illegal to reclaim land within an estuary without a resource consent from the Tasman District Council and enforce as required.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Fence remaining unfenced boundaries of estuary to prevent stock movement onto the estuary and sandspit.

Inform local landowners and Tasman District Council staff that it is illegal to change the flow of water through their property without a resource consent from the Tasman District Council and enforce as required.

Replace existing rock wall protection on the outer and inner edges of the southern spit with appropriately designed protection works.

Remove old rubbish from the estuary side of the southern spit.

Revegetate the riparian margins of southern spit with appropriate native species to improve the landscape appeal.

Seal the Collingwood rubbish dump to prevent leachates entering the watercourse.

Monitor Burton Ale Stream regularly so that the presence of both leachates and sewage can be quickly identified and action taken.

Recognise potential threat of oil and fuel spill through monitoring and preparation of contingency plan for Collingwood wharf.

Provide unimpaired passage of native fish from the estuary into adjacent streams.

Site Name/s: Parapara Inlet/Sandspits	**CRI Site No.** 10-015	**Code:** 10

Recorders Name: Geoff Rennison/Kaye Stark

Map No: M25 (m)

Grid Reference: 24835 60535

Date: 13 April 1993

Brief Description of Site:

(Golden Bay)

Parapara Inlet (~200 ha) is located ~5 km south of Collingwood. The inlet cuts into old gravel terraces from an ancestral Aorere/Parapara River. The modern Parapara River, entering at the head of the estuary, is now the main source of sediment in the area. On the north-western shore a limestone band is exposed and freshwater springs bubble up through the mudflats nearby. Sandspits to the north and south enclose the inlet from the open sea.

Distinct habitat zones are present, ranging from sand dune to rocky platform to saltmarsh and wetland (Knox, et al., 1977). The southern end of the estuary has been bisected by a causeway. An inadequate culvert hampers normal tidal movement. The surrounding hill catchment is predominantly pakihi scrubland with some pine forest to the north.

The housing subdivisions of Milnthorpe and Parapara are located to the north and south of the inlet respectively.

Conservation Values:

Natural: Although the southern end of the estuary has been modified, Parapara Inlet stands out in Golden Bay as having an unusually high diversity of fauna. The rare alga *Aglothamnion* sp. is found along the rocky intertidal area to the north (Knox, et al., 1977). The tip of the southern sandspit is an important high tide roost for both national and international wader species. Banded dotterel *Charadrius bicinctus bicinctus*, Caspian tern *Hydroprogne caspia* and variable oystercatcher *Haematopus unicolor* breed in this same location. Banded rail *Rallus philippensis assimilis* and South Island fernbird *Bowdleria punctata punctata* are present (G. Elliot, pers. comm.), and a white heron *Egretta alba modesta* is a regular resident during the winter months. Parapara River and the wetlands beyond the causeway provide habitat for whitebait species (N. Deans, pers. comm.). Tuatua *Paphies subtriangulata* beds are found along the outer beach (University of Auckland, 1975). The saltmarsh along the western verge is notable as it contains large patches of the saltmarsh ribbonwood *Plagianthus divaricatus* (Knox, et al., 1977). The limestone outcrops and associated platforms are an unusual landform feature in Golden Bay, as are the freshwater springs (G. Rennison, pers. comm.).

Cultural: The Parapara River was a major obstacle in the completion of the Takaka to Collingwood main highway and before the causeway and bridge were built, many lives were lost at this crossing (Newport, 1971). The difficulties of crossing the Parapara River were well known to the Maori people and a legend was built around it. According to the legend, the Taniwha Te Kaiwhaiaruaka lived in the river and ate travellers. It was finally destroyed by a skilful warrior, Potoru, aided by some 300 warriors of various tribes (Newport, 1971). The land forms, saltmarsh and variety of fauna give this estuary a high seascape value. Maori reserve lands are located around the south-western edge of Parapara estuary (Mitchell, et al., 1990).

Historic: The southern spit was used by Maori people in prehistoric times for gardening. Midden sites along the spit have been studied and range from 150-700 years old (McFadgen, et al., 1979). The paramount Ngati Tama Chief made Parapara his home until 1836, when he left the women and children of his iwi and departed on is ill-fated raid into southern Ngai Tahu lands. Many local Maoris believe that on special occasions the cries of his people can still be heard lamenting his death (Mitchell, pers. comm.). The area is known for its gold-bearing rivers and since 1850, several attempts have been made to dredge gold from the river and the estuary (Newport, 1971).

Site Importance; National

Of national importance due to the presence of a collection of threatened (Bell, 1986) species, including banded dotterel, caspian tern and banded rail, as well as white heron and variable oystercatchers (G. Elliot, pers. comm.). The rare alga *Aglothamnion* sp. is found here (Knox, et al., 1977).

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S 2.2 Land adjoining the estuary on the tip of the southern sandspit is gazetted Conservation Land administered by the Department of Conservation.

S 2.3(b) The streams entering the estuary provide habitat for whitebait species.

S 2.4(b) Of national importance due to the presence of banded rail, banded dotterel, Caspian tern and the endangered white heron.

S 2.4(c) An important high tide roost for both national and international wader species is located on the tip of the southern sandspit.

S 2.5 Of national importance due to the presence of banded rail, banded dotterel, Caspian tern and the endangered white heron.

Human Modification and Human Use:

Land toward the base of the southern sandspit and on the terraces to the north of the estuary has been developed for housing. The northern sandspit and dune system has been revegetated using experimental exotic and native species, a partially Department of Conservation funded project with scientific and horticultural implications for restoration of pakihi soils. A small, but popular camping spot is located by the inlet near the northern spit and another picnic area approximately two-thirds of the way down the southern spit.

Parapara is a commercial port and the wharf is used regularly, however, access is only available near the top of the tide for larger boats. Permanent boat mooring is located near the Parapara River bridge. A causeway divides the southern end of the estuary. Gravel, under licence, is removed from a channel near the Parapara River. The area is popular for both land and water-based recreation with whitebaiting important during the season.

The tuatua *Paphies subtriangulata* beds along the outer beach are important to the Maori community. Flax *Phormium tenax* is gathered around the margins of the estuary (Mitchell & Mitchell, 1990).

Existing Protection:

Land on the tip of the southern sandspit is reserve administered by the Department of Conservation. A Local Purpose Reserve administered by the Tasman District Council extends along the outer beach of the southern spit to the end of the housing. North of the estuary is the Milnthorpe Revegetation Project administered by the Department of Conservation. The area inside a straight line between Parapara Beach Road and Tukurua Point and mean high water spring is subject to a Rahui on the commercial collection of shellfish.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Issues:

Patches of gorse and blackberry are present on all margins and islands of the estuary.

Inadequate fencing around the spit allows stock periodic access to the area.

The entire catchment has a high fire risk threatening both the water quality and scenic values of the area.

The culvert draining the south-western portion of the estuary is inadequate for the amount of water draining through it. This has resulted in a increased silt loading within the estuary above the causeway and has modified the habitat considerably.

Small oil and fuel spills occasionally occur at the wharf located in the north of the estuary.

The majority of the edge of the estuary, excluding the sandspits, is in private ownership.

The south-west catchment area is in production forestry which will eventually be logged. Unless carefully controlled, this may lead to increased siltation in the estuary.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge and islands.

Revegetate areas where noxious and exotic species have been removed, with appropriate native species.

Erect signs to highlight the area's fire risk.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Fence spit area to prevent stock movement into the estuary.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Increase width of the existing culvert or install several more culverts along causeway to return a more natural tidal regime to the estuary area above the causeway.

Place strict conditions on the harvesting of trees in the catchment area to minimise run-off into the estuary, eg. buffer zones.

Site Name/s: Onekaka Estuary/Sandspit	**CRI Site No.** 10-016	**Code:** 11

Recorders Name: Geoff Rennison/Kaye Stark

Map No: M25 (m)

Grid Reference: 24858 60507

Date: 13 April 1993

Brief Description of Site:

(Golden Bay)

Onekaka Estuary and associated sandspits are located 13 metres north-west of Takaka. Onekaka Estuary (~24 ha) is flanked by several levels of terraces that form part of an extensive gravel sheet from the base of Parapara Peak and adjacent high country. Small sandspits are located at the entrance of the estuary with low gravel ridges behind.

Rounded pebbles and cobbles are present at the inlet entrance, but the major portion of the estuary sediment is fine sands and mud. The estuary has a wide band of saltmarsh vegetation, particularly toward its head.

The estuary was modified by the Onekaka Iron Works earlier this century, but has since returned to a relatively natural state. Dairy farming to the estuary edge occurs along the southern margin. A few houses are present mainly in the north.

Conservation Values:

Natural: Onekaka Estuary is a representative example of small estuaries in Golden Bay. South Island fernbird *Bowdleria punctata punctata* are present in the surrounding manuka *Leptospermum scoparium* scrubland and the Onekaka Wharf is a roost for several species of shag, gulls, Caspian tern *Hydroprogne caspia* and white-fronted tern *Sterna striata*. Waterfowl are present toward the head of the estuary. Banded rail *Rallus philippensis assimilis* is present near the mouth of the estuary.

Cultural: Rocky reefs supporting a range of shellfish and kai moana available to Maori people in the past are still popular today, with harvesting by both Maori and Pakeha.

Historic: The coast between Tukurua Point and the southern arm of Onekaka Estuary has four recorded archaeological sites. In pre-European times the haematite found in this area was used by Maori for making paint (Jefferies, 1932). Hidden sites are located on the tips of both spits. Rich iron ore deposits attracted much attention in the early part of this century, culminating in the formation of the Onekaka Iron and Steel Company in 1920. In late 1923 or early 1924, the company built a wharf 230 feet long, extending out

into the open sea. A long approach was also built running across the inlet to the wharf. The following year a tramway was laid along this approach. At the height of its production, the plant provided employment for around 150 people, but a slump in prices and overseas competition forced the company into receivership in 1931 (Fahy, 1992). The remains of the wharf and tramway can be seen at Onekaka. Maori Occupation Reserves in the area stem from family ties with Pirika who was the Chief at Tukurua.

Site Importance:

National

Of national importance due to the presence of the threatened (Bell, 1986) banded rail and Caspian tern (K. Stark, pers. obs.). Locally important as the site of the old Iron and Steel Company, and of historical and cultural significance to Maori.

Draft New Zealand Coastal Policy Criteria For Areas of Significant Conservation Value

S 2.2 Land adjoining the coast on the northern sandspit is gazetted Recreation Reserve.

S 2.3(b) The streams entering the estuary provide habitat for whitebait species, including the rare short-jawed kokopu *Galaxias postvectis* (N. Deans, pers. comm.).

S 2.4(b) Of national importance due to the presence of the threatened species banded rail and banded dotterel.

S 2.5 Of national importance due to the presence of the threatened species banded rail and banded dotterel.

Human Modification and Human Use:

Land along the northern estuary shore has been modified by roading and an associated small causeway crosses the estuary near the northern spit. A camping area is located on the northern spit and adjacent to this is a launching site for small boats. A number of small boats are moored in this same area. Channel markers are present at the mouth and a major power cable passes overhead at this same point. The area is used, mainly by local residents, for both land and water-based recreation, eg. set netting, swimming, dog exercising, yachting, canoeing and nature rambling. Harakeke (*Phormium tenax*) is gathered from swamps at Tukurua and Little Kaituna.

Existing Protection:

The tip of the northern spit is a Recreation Reserve administered by the Department of Conservation. The open coastline to the north of the inlet is protected by a Rahui that prohibits the commercial harvesting of shellfish. Protection of the estuary from farm animals is inadequate.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Other Considerations:

An increasing usage by locals and holiday-makers will probably bring pressure on marine life on these important rocky reef areas.

Issues:

Exotic plants primarily patches of gorse and blackberry are present on all margins and islands of the estuary.

The majority of the edge of the estuary is in private ownership.

Local residents often dump garden rubbish into the edge of the estuary along the road causeway.

The installation of a small causeway near the northern spit appears to have caused considerable siltation behind.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge and islands.

Revegetate areas where noxious and exotic species have been removed, with appropriate native species.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Inform local residents that it is illegal to dump rubbish into an estuary and enforce as required.

Increase width of the existing culvert or install several more culverts along causeway to return a more natural tidal regime to the estuary area above the causeway.

Site Name/s: Onahau Estuary	**CRI Site No.** 10-018	**Code:** 12

Recorders Name: Kaye Stark

Map No: N25

Grid Reference: 24910 60452

Date: 19 April 1993

Brief Description of Site: **(Golden Bay)**

Onahau Estuary (~33 ha) is protected from the sea by a narrow sandspit extending from the east. Saltmarsh merges into freshwater swamp at the head of the estuary and a fringe of manuka *Leptospermum scoparium* surrounds the majority of the estuary.

Conservation Values:

Natural: The Onahau sandspit is an important high tide roost for both national and international wader species. The nationally threatened (Bell, 1986) banded rail *Rallus philippensis assimilis* (G. Elliot, pers. comm.), is present, as are South Island fernbird *Bowdleri punctata punctata*, and marsh crake *Porzana pusilla affinis*. Kina (*Evechinus chloroticus*) beds are present on either side of the estuary mouth.

Cultural: Until the inland road was built, earlier this century, Onahau Estuary marked the beginning of the coastal route for travel between Takaka and Collingwood.

Historic: The area has a rich Maori history. In addition to the on-site archaeological remains, dozens of artifacts have been found along the beaches or unearthed during farming operations nearby (S. Walls, pers. obs.).

Site Importance: National

Of national importance for the presence of the threatened (Bell, 1986) banded rail and the regionally threatened (Bell, 1986) South Island fernbird (G. Elliot, pers. comm.). Historically and culturally important to Maori (J. Mitchell, pers. comm.).

Draft New Zealand Coastal Policy Criteria For Areas of Significant Conservation Value

S 2.2	A narrow strip of land from the head of the estuary to Rangihaeata Head is gazetted Esplanade Reserve.
S 2.4(b)	Of national importance as a habitat for the threatened species banded rail.
S 2.4(c)	The sandspit is an important roost for both national and international wader species.
S 2.5	Of national importance for the presence of the threatened species banded rail.

Human Modification and Human Use:

Land adjacent to the coastline has been developed for farming. Although not as popular as nearby Patons Rock, the area is used for both land and water-based recreation with some whitebaiting in the small streams entering the head of the estuary. Two houses are located immediately adjacent to the estuary. A boat regularly moors within the estuary.

Existing Protection:

A narrow strip of land from the head of the Onahau Estuary around the coast and including the sandspit to Rangihaeata Head, is protected. All the land is administered by the Tasman District Council. A rahui exists on the commercial harvesting of shellfish from the west side of Patons Rock to the north side of the Onahau Estuary.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1989.
HPT County Inventories, 1990.

Issues:

Exotic plants primarily patches of gorse pines and blackberry are present on all margins and islands of the estuary altering the growth of native edge communities.

A small area on the north-western edge of the estuary is in private ownership.

Inadequate fencing along the north-western edge allows stock periodic access to the estuary.

An illegal access has been put through saltmarsh vegetation on the western edge of the estuary.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge and islands.

Revegetate areas where noxious and exotic species have been removed with appropriate native species.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Fence north-western edge of to prevent stock movement into the estuary.

Remove illegal access on western edge of estuary to prevent further damage to saltmarsh vegetation in this area.

Site Name/s: Waitapu Estuaries	**CRI Site No.** 10-019	**Code:** 13

Recorders Name: Geoff Rennison/Kaye Stark

Map No: N25 (m)

Grid Reference: 24950 60427

Date: 12 April 1993

Brief Description of Site:

(Golden Bay)

This complex delta and estuarine system, ~360 ha in area, extends from Rangihaeata Head in the west to Soper's Hill in the east. High ground flanking the delta is either palaeozoic schists (Bird's and Soper's hills) or tertiary sediments at Rangihaeata. Alluvial flats form the rest of the periphery, cut into islands of saltmarsh by the river's tributaries. There are extensive sandspits and sand-dune systems to the north-west. The beaches are composed of fine sediments, have low gradients and apart from a small section at the base of Rangihaeata Head, are very stable (Muir, 1979). A small beach settlement is located at the base of Rangihaeata Head and the majority of the remaining backshore is developed for farming.

Conservation Values:

Natural: Although this estuary has had more development and human modification than most other estuaries in Golden Bay, it retains areas with important natural values. A small stand of coastal totara (*Podocarpus totara*) forest grading into saltmarsh is found between the old main Takaka River channel and the present channel. Cattle egret *Bubulcus ibis* and occasionally Royal spoonbill *Platalea leucorodia regia*, overwinter near the main channels and the saltmarsh edge is used by banded rail *Rallus philippensis assimilis*, Australasian bittern *Botaurus stellaris poiciloptilus*, marsh crake *Porzana pusilla affinis* and South Island fernbird *Bowdleria punctata punctata* (K. Stark, pers. obs.). Extensive cockle *Chione stutchburyi* beds are present throughout the mudflat. The Takaka River is important for whitebait species.

Cultural: A number of chiefs were prominent in this district, including Rauhihi, Te Aupouri Matenga, Meihana. One chief, Te Kawau, was jailed by the New Zealand Company for refusing to accept that his land and its coal resource had been sold - a special constabulary of approximately 20 men sailed from Nelson to subdue Te Kawau.

Historic: A burial site and numerous midden and occupation sites confirm that this area had high usage by the Maori. Like Ruataniwha in the north, Waitapu estuary was the centre of European development in the Takaka District. In 1864, a wharf was built at Waitapu. The original wharf at Waitapu, located at the end of the mudflats, was separated from shore during high tide and it was not until the 1870's that a road and rock wall causeway was built to the wharf. A light railway extended out onto the wharf after 1881 (Beyond the Marble Mountain, 1948). In 1882 another wharf was built at Rangihaeata (Beyond the Marble Mountain, 1948).

Site Importance:

National

Of national significance due to presence of threatened (Bell, 1986) species banded rail, Australasian bittern and Royal spoonbill. Historically important for its long and well documented European history (Halket-Millar, 1948). Archaeological sites (including a urupa) indicate high use by the Maori.

Draft New Zealand Coastal Policy Criteria For Areas of Significant Conservation Value

S 2.2	Land adjoining the estuary at Fellows Creek is gazetted a Local Purpose Reserve.
S 2.3(b)	The estuary, small streams and rivers entering the estuary, provide habitat for whitebait species.
S 2.4(b)	Of national significance due to the presence of the threatened species banded rail, Australasian bittern and Royal spoonbill.
S 2.5	Of national significance due to the presence of the threatened species banded rail, Australasian bittern and Royal spoonbill.

Human Modification and Human Use:

The majority of land adjacent to the estuary has been developed for farming. Some housing, however, is located to the east of Rangihaeata Head. A causeway extends to the Waitapu Wharf to the east of the Takaka River cut. The area is a commercial port with Talleys Processing Plant located adjacent to the wharf.

During the early 1980's, the Catchment Board, intending to divert the river, carried out minor excavation and constructed a stopbank. These works had the effect of diverting the main flow of the Takaka River from its original course eastward and out at Rangihaeata Head to a course a direct route out to sea. This has resulted in higher salinity in the original channel and as a consequence, the majority of the mature vegetation in the area has died.

Aerial photos suggest small reclamations have occurred. Waitapu Wharf is used as a base for both fishing and pleasure boats. The Takaka River is important for whitebaiting.

Existing Protection:

The small remnant of coastal totara forest is administered by the Department of Conservation and protected under the Golden Bay District Plan (Tasman District Council). A small piece of Local Purpose Reserve administered by the Tasman District Council is located adjacent to Fellows Creek near the causeway to the wharf.

Availability of Information:

European history in the area is well documented, but very little information on Maori history in known.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Issues:

A multitude of noxious and exotic plant species are present on the margins, islands and spits of the estuary. These include gorse, blackberry, willow, sycamore and old mans beard. All alter the growth of native edge communities in this habitat type.

The majority of the edge of the estuary is in private ownership.

Inadequate fencing in parts of the southern and eastern edges allow stock periodic access to the area.

Small oil and fuel spills occasionally occur at the Waitapu wharf located in the south of the estuary.

A fish processing plant is located at the end of the causeway in the southern area of the estuary. Rubbish associated with the plant is periodically found in the estuary.

Haphazard rock and other inappropriate protection work along the residential land at the northern end of the estuary is not in keeping with the scenic integrity of an estuary and appears to add to, rather than alleviate, the erosion problem in this area.

Illegal floodgates are present in the western and southern portions of the estuary.

During the early 1980's the Catchment Board carried out some work at the river mouth. The main flow of the Takaka River has now diverted directly out to sea. This has altered natural flows and salinities in the original channel and as a consequence much of the mature exotic vegetation in the area has died.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge, islands and spit.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Fence remaining unfenced boundaries of estuary to prevent stock movement onto the estuary and sandspit.

Replace existing rock wall protection in the residential area with appropriately designed and effective means of protection works.

Recognise potential threat of oil and fuel spill through monitoring and preparation of contingency plan for the Waitapu wharf.

Monitor rubbish around the fish processing plant and enforce regulations as required.

Remove illegal floodgates from the western and southern portions of the estuary.

Investigate feasibility of returning all or part of the river flow to it's original pattern.

Site Name/s: Motupipi Estuary	**CRI Site No.** 10-019	**Code:** 14

Recorders Name: Geoff Rennison/Kaye Stark

Map No: N25 (m)

Grid Reference: 24970 60413

Date: 24 April 1993

Brief Description of Site:

(Golden Bay)

This moderately sized estuary (~40 ha) is located ~5 km north-east of Takaka. High ground flanking the delta is either palaeozoic schists or tertiary sediments. Alluvial flats form the periphery cut into islands of saltmarsh by river tributaries. A sandspit extends westward at the mouth and the estuary itself is divided into two distinct 'tongues'. The majority of the backshore is developed for farming.

Conservation Values:

Natural: Although this estuary has had more development and human modification than most others in Golden Bay, it still retains high natural values. High tide roosts for both national and international wader species feeding on the mudflats are located on either side of the Motupipi Estuary mouth. The saltmarsh edge is used by the highest number of banded rail (*Rallus philippensis assimilis*) in any estuary in Golden Bay (G. Elliot pers. comm.). Marsh crake *Porzana pusilla affinis* and fernbird *Bowdleria punctata punctata* are also recorded from the estuary (K. Stark, pers. obs.). Extensive cockle *Chione stutchburyi* beds are present throughout the mudflat. The Motupipi River is important for whitebait species.

Cultural: A number of chiefs were prominent in this district, including Rauhihi, Te Aupouri Matenga, Meihana. One chief, Te Kawau, was jailed by the New Zealand Company for refusing to accept that his land and its coal resource had been sold - a special constabulary of approximately 20 men sailed from Nelson to subdue Te Kawau.

Historic: A burial site and numerous midden and occupation sites confirm that this area had high usage by the Maori. The first European settlers to the area in 1942 landed at a pa near the Motupipi River containing 200-300 people (Beyond the Marble Mountain, 1948). Like Ruataniwha in the north, Motupipi estuary was the centre of European development in the Takaka District. Trading between Nelson and the area began as early as 1841, with small quantities of lime and coal taken from the seashore at Motupipi and flax picked up at irregular intervals by small boats with their headquarters at Nelson. Most of the trade was from

Motupipi where vessels anchored offshore while cargo was ferried from land in rowing boats. This continued until about 1863, by which time the saw mills in the Takaka Valley were operating and it was decided that more permanent facilities were required (Beyond the Marble Mountain, 1948). In 1864 a wharf was built at Motupipi. In the early days a ship yard was located a little way up the Motupipi River and many small sailing craft and larger ketches were built there. Clifton, located on the east side of the Motupipi Estuary, is the site of the first European cemetery in the district (Beyond the Marble Mountain, 1948).

Site Importance:

National

Of national significance due to presence of 'threatened' (Bell, 1986) species banded rail. The highest number of banded rails for any estuary in Golden Bay (G. Elliot, pers. comm.). Historically important for its long and well documented European history (Halket-Millar, 1948). Archaeological sites indicate high use by the Maori.

Draft New Zealand Coastal Policy Criteria For Areas of Significant Conservation Value

S 2.2 Both sides of the estuary mouth are gazetted Local Purpose Reserve.

S 2.3(b) The streams and rivers entering the estuary are important for whitebait species.

S 2.4(b) The estuary is a habitat for high numbers of the threatened banded rail (G. Elliot, pers. comm.).

S 2.4(c) An important roost for both national and international waders is located at the estuary mouth.

S 2.5 High numbers of the threatened banded rail are present within the estuary (G. Elliot, pers. comm.).

Human Modification and Human Use:

The majority of land adjacent to the estuary has been developed for farming. A causeway separates a small section of saltmarsh from the main Motupipi Estuary. The Takaka (Rototai) rubbish dump is located on reclaimed land on the western edge of the estuary. From aerial photos it can be seen that considerable reclamation has occurred. The Motupipi River is important for whitebaiting.

Existing Protection:

A Local Purpose Reserve administered by the Tasman District Council is located on both sides of the estuary mouth.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Issues:

Exotic plants primarily gorse and other exotic weed species are present on all margins of the estuary altering the growth of native edge communities.

Gradual unauthorised infilling, by landowners, of the estuary occurs along the southern edge in the western tongue of estuary.

The majority of the edge of the estuary is in private ownership.

Inadequate fencing in both the east and western tongues of estuary allow stock periodic access into the saltmarsh area.

Gradual channelling of the small streams, by landowners, along the western edge has increased the rate of silt building up in the adjoining estuary.

It appears that leachates from the Takaka rubbish dump may enter directly into the estuary.

Rubbish is often dumped along the western edge of the estuary.

Illegal floodgates are present in the western portion of the estuary.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Inform local landowners and Tasman District Council staff that it is illegal to reclaim land or to dump rubbish within an estuary without a resource consent from the Tasman District Council and enforce as required.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Fence remaining unfenced boundaries of estuary to prevent stock movement onto the estuary and sandspit.

Inform local landowners and Tasman District Council staff that it is illegal to change the flow of water through their property without a resource consent from Tasman District Council and enforce as required.

Remove rubbish from the estuarine area.

Close down, seal and landscape the Takaka rubbish dump into an environmentally safe site.

Test to establish background levels for the Motupipi estuary for the presence toxic leachates.

Remove illegal floodgates from the western and southern portions of the estuary.

Site Name/s: Tata Beach Estuary	**CRI Site No.** 10-022	**Code:** 15

Recorders Name: Kaye Stark

Map No: N25

Grid Reference: 24025 60430

Date: 19 April 1993

Brief Description of Site: **(Golden Bay)**

This small estuary (~8 ha) is located immediately behind the settlement of Tata Beach. Sediments are granite alluvium derived from the steep hill catchment to the east. A small amount of saltmarsh vegetation is present around the fringe of the estuary.

Conservation Values:

Natural: Banded rail *Rallus philippensis assimilis* (G. Elliot, pers. comm.) and South Island fernbird *Bowdleri punctata punctata* are present along the western edge of the estuary and a small number of waders feed along the main channel.

Cultural: The number of Maori archaeological sites suggests that this area has important traditional values.

Historic: One archaeological site has been recorded within the estuary itself, however, another 10 sites are present in the general area.

Site Importance: National

Presence of the threatened (Bell, 1986) banded rail gives this area national importance.

Draft New Zealand Coastal Policy Criteria For Areas of Significant Conservation Value

S 2.2 A narrow strip of land surrounding the Tata tombola and the small sandspit is gazetted Local Purpose Reserve.

S 2.4(b) Of national importance due to the presence of the threatened species, banded rail (G. Elliot, pers. comm.).

S 2.5 Of national importance due to the presence of the threatened species, banded rail (G. Elliot, pers. comm.).

Human Modification and Human Use:

The beach connecting Tata headland to the mainland has been extensively modified for housing, as has the backshore of Ligar Bay. Roading extends along the backshore from Ligar Bay to the head of Tata Estuary. The entire catchment has been burnt and the hills behind Tata Beach are planted in pine. Small amounts of the south-western side of the estuary have been reclaimed by the adjoining landowner.

Existing Protection:

A narrow strip of land surrounding the Tata tombolo and the small sandspit separating the estuary from Ligar Bay is Local Purpose Reserve administered by the Tasman District Council.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Issues:

Exotic plants primarily patches of gorse and blackberry are present along eastern margin and tip of the estuary spit altering the growth of native edge communities.

The eastern edge of the estuary is in private ownership.

Inadequate fencing along the eastern edge allows stock complete access to the estuary east of the road.

Gradual unauthorised infilling, by the landowner, occurs along the eastern edge of the estuary.

Local residents often dump garden rubbish into the edge of the estuary along the inner edge of the spit.

Much of the Reserve land along the inner edge of the spit has been "*taken over*" by local residents who have developed it as an extension of their own properties.

The steep catchment area, in deeply weathered granites, to the south-east of the estuary has been planted in pine trees. The future harvesting of these trees may lead to increased erosion of the hillside and consequently a large influx of sediment into the estuary itself.

Management:

Progressively remove noxious and exotic species from the estuary edge.

Revegetate areas where noxious and exotic species have been removed with appropriate native species.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Fence eastern edge to prevent stock movement into the estuary.

Inform local landowners and Tasman District Council staff that it is illegal to reclaim land within an estuary without a resource consent from the Tasman District Council and enforce as required.

Inform local residents that it is illegal to dump rubbish into an estuary and enforce as required.

Resurvey Esplanade Reserve land along inner edge of spit and revegetate with appropriate native species.

Prohibit the use of steep granite catchments for forestry.

Site Name/s: Wainui Inlet	**CRI Site No.** 10-023	**Code:** 16

Recorders Name: Geoff Rennison/Kaye Stark

Map No: N25 (m)

Grid Reference: 25052 60430

Date: 7 February 1990

Brief Description of Site:

(Golden Bay)

Wainui Inlet (~275 ha) (Davidson, 1992) is located at the northern entrance to the Abel Tasman National Park. It is carved into deeply weathered granite at a time of lower sea level and now partly filled with recent alluvium. The estuary has a large barrier spit, found to the east of the entrance and to the west a triangular area of alluvium. The Wainui River produces a steady supply of course granite sediment. Flat land surrounding the estuary is farmed and the hill country catchment is regenerating native forest and scrub. There are a few houses on the west side and east side of the bay.

Conservation Values:

Natural: The native corkwood whau *Entelea arborescens* is found adjacent to the estuary in the east. A high tide roost for both national and international wader species is located either on the tip of the Wainui sandspit or on intertidal banks at the mouth of the river.

The saltmarsh and mudflats in the lee of the sandflat are the most important overwintering site for banded dotterel *Charadrius bicinctus bicinctus* in Golden Bay outside of Farewell Spit. Banded rail *Rallus philippensis assimilis* (G. Elliot, pers. comm.), marsh crake *Porzana pusilla affinis*, South Island fernbird *Bowdleria punctata punctata* and penguin *Eudyptula minor variabilis* breed in remnant coastal vegetation surrounding the estuary and on both headlands.

The backdrop of national park forest and regenerating native vegetation give this bay a high degree of naturalness, which will increase over time.

Historic and Cultural: Evidence of Maori occupation is found throughout the area. Wainui River was used by Maori from the Taupo Point Pa for gathering eel, as was the inlet for flounder (Brailsford, 1981). Taupo Point to the north is tapu.

An excellent account of Wainui Bay during early European development is given in a booklet by M. Robertson, son of the first European settler to Wainui Bay (Robertson, 1972).

Wainui Bay and headlands have high seascape values.

Site Importance:

National

Of national importance due to concentration of the threatened (Bell, 1986) species banded rail and banded dotterel, as well as the regionally threatened South Island fernbird (Walker, 1987).

Draft New Zealand Coastal Policy Criteria For Areas of Significant Conservation Value

S 2.2 The eastern headland and sandspit are gazetted National Park.

S 2.4(b) Of national importance due to the presence of the threatened species banded rail and banded dotterel (Walker, 1987).

S 2.4(c) An important roosting area for both national and international wader species.

S 2.5 Of national importance due to the presence of the threatened species banded rail and banded dotterel (Walker, 1987).

Human Modification and Human Use:

The head of the estuary has been developed for dairy farming. The Tui community is located on land to the east of the estuary. The estuary marks the beginning of the coastal track for Abel Tasman National Park. Aerial photos suggest some reclamation of the estuary edge has occurred. The paua *Haliotis iris* beds on the western headland of Wainui Bay are important to the Maori community. There are mussel farms on the east side of Abel Tasman Point.

Existing Protection:

The eastern headland and sandspit is part of the Abel Tasman National Park administered by the Department of Conservation.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Other Considerations:

Revegetation of the sandspit, using native species, is currently being undertaken by the Department of Conservation.

Issues:

Exotic plants primarily gorse, blackberry and other exotic weed species are present on all the margins of the estuary altering the growth of native edge communities.

Most of the edge of the estuary is in private ownership.

Local farmers use the estuary for stock movement.

Illegal floodgates are present in the western portion of the estuary.

The entire catchment has a high fire risk threatening both the water quality and scenic values of the area.

Mussel farms are located off the eastern headland of the estuary and diminish the scenic quality of the area.

Management Recommendations:

Progressively remove noxious and exotic species from the estuary edge and islands.

Revegetate areas where gorse and other weeds have been removed with the appropriate native species.

Purchase, covenant or use the Resource Management Act 1991 to create a buffer zone of protected land around the entire estuary.

Fence remaining unfenced boundaries of estuary to prevent stock movement onto the estuary and sandspit.

Remove illegal floodgates from the southern portion of the estuary.

No further permits for aquaculture be issued in this headland area.

Current mussel farming leases not be renewed on the grounds that seascape values of the bay are lowered by the presence of farms in a highly visible location.

8. GOLDEN BAY COASTLINE

8.1 Summary of Values

8.2 Site Data, Issues and Management Recommendations

Pohara to Abel Tasman Point

8. GOLDEN BAY COASTLINE

8.1 SUMMARY AND JUSTIFICATION OF ECOLOGICAL VALUES

The length of coastline from Pohara to the Abel Tasman Point (~ 11 km) is the only open coast from Golden Bay included in this report. This coastline is dominated by limestone substrate in the form of reefs, cliffs, towers and rock pedestals.

The Pohara to Abel Tasman Point coastline is of national importance due to the presence of the vulnerable sea spurge (Wilson & Given, 1989) and the outstanding seascapes present including a tombolo, wave cut platform, caves, arches and representative examples of sheltered shore granite and limestone substrates (Davidson, 1992; Davidson & Chadderton, in press).

8.2 SITE DATA, ISSUES AND MANAGEMENT RECOMMENDATIONS

Site Name/s: Pohara to Abel Tasman Point	**CRI Site No.** 10-021-22	**Code:** 17

Recorders Name: Kaye Stark

Map No: N25

Grid Reference: 24010 60423

Date: 13 April 1993

Brief Description of Site:

(Golden Bay)

This section of coastline extends from the eastern end of Pohara Beach to the headland on the west side of Wainui Inlet, a distance of ~11 km. The coastline cuts into massive limestone and is highly scenic in character. Huge limestone blocks litter the shore with steep to vertical cliffs, towers and rock pedestals immediately behind. The construction of two very large harbour walls and the Tarakohe Cement Works half way along this section of coast, has altered the seascape of the area. The limestone rocks are bounded by fine and medium sands and this level beach extends ~300 metres seaward at low tide (Muir, 1979). Remnant coastal forest clings to the cliffs all along the back shore.

Tata Beach extends south-west from granite cliffs to a former island (now a headland) of granite. The beach is steeply sloping and backed by low dunes. Both Ligar Bay and Tata Beach have been developed for housing, with farming and forestry activities on other land adjacent to this coast.

Conservation Values:

Natural: A *Pimelea longifolia* var. with narrow leaves is found in this area (S. Courtney, pers. comm.), along with the vulnerable sea spurge (*Euphorbia glauca*). The various cliffs and blocks of limestone are roosts for spotted shag *Stictocarbo punctatus punctatus* and white-fronted tern *Sterna striata*. Little blue penguin *Eudyptula minor variabilis* are known to breed along the backshore. Limestone is a rare shore type in Nelson/Marlborough. Tata Beach is a tombolo. There is a small, discontinuous wave platform around Abel Tasman Point and the area has caves and arches. The area has representative examples of granite and limestone rock (Davidson, 1992).

A small pod of Hectors dolphin *Cephalorhynchus hectori* are often seen at the entrance to the Tarakohe harbour. A pair of reef heron *Egretta sacra sacra* are noted as breeding in the area (Walker, 1987).

Cultural: The mussel and kina beds found along this section of coast are important to the Maori community. The mana of Pohara, Ligar Bay, Tata area was largely with Te Aupouri Matenga and his cousin, Tamati Pirimona Marino (both of Collingwood and Tai Tapu). A subordinate chief, Te Kawau, was often resident spokesman for the people and he appears in various diaries and journals of surveyors and settlers. The pa sites of this coastal area were important 'first-warning' stations in the defence of the whole bay. The area has Maori burials, of spiritual significance. A memorial column commemorating Abel Tasman's visit to Golden Bay in 1642 is located overlooking Ligar Bay. This section of coastline has high seascape values, marred only by the Tarakohe Harbour and cement works.

Historic: Twelve archaeological sites are recorded from this section of coastline. The monument commemorating Abel Tasman's visit in 1642 is of national importance, though the actual location of the spot where Maori and European first met is in some doubt (Dennis, 1985).

Site Importance: National

Nationally important for the presence of the vulnerable (Given, 1989) sea spurge and the threatened (Bell, 1986) reef heron. Outstanding landscape/seascape features are present, landforms include tombolo, wave cut platform, caves, arches and examples of both granite and limestone rocky shores (G. Rennison, pers. comm.; Davidson, 1992).

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S 2.4(b) The threatened reef heron are known to breed in the area (Walker, 1987).

S 2.5 Nationally important for the presence of the vulnerable sea spurge and the threatened reef heron.

S 2.6 Outstanding seascape features are present, including wave cut platforms, coves and arches.

Human Modification and Human Use:

The Tarakohe Cement Works opened in 1909 was, at its closure in 1988, the biggest industry and employer in Golden Bay (Newport, 1975). Tarakohe is the only harbour in Golden Bay usable in all weather and tide conditions. It provides safe mooring for fishing and pleasure boats and the two boat ramps are used regularly. Two large causeways extend seaward for approximately 500 metres, protecting the commercial port of Tarakohe.

The beach connecting Tata headland to the mainland has been modified for housing, as has the backshore of Ligar Bay. Roading extends along the backshore from Ligar Bay to the head of Tata Estuary. The entire catchment has been burnt and the hills behind Tata Beach are planted in pine. Tata Beach is popular during the summer for water-based recreation. The steep nature of the beach means it can be used by boats at all stages of the tide. Mussel *Perna canaliculus* and undersize paua *Haliotis iris* beds to the north-east of Tata Beach and on the Tata Islands are important to the Maori community.

Existing Protection:

Abel Tasman Head has a privately negotiated protection covenant. A narrow strip of land surrounding the Tata tombolo and the small sandspit separating the estuary from Ligar Bay is Local Purpose Reserve administered by the Tasman District Council. The Tata Islands are gazetted as part of the Abel Tasman National Park under Department of Conservation control.

The small headland separating Tarakohe from Ligar Bay is gazetted as part of the Abel Tasman National Park under Department of Conservation control.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, 1990.

Issues:

Exotic plants primarily gorse, banana passionfruit and other exotic weed species are present along all the margins of the coastline altering the growth of native edge communities.

Oil and fuel spills occasionally occur at the Tarakohe wharf located at the south- western end of the unit.

Untreated sewage from the residential sector at Pohara valley enters the coastal area via Pohara Valley Stream.

Management Recommendations:

Progressively remove noxious and exotic species from the coastline.

Revegetate areas where gorse etc., has been removed with appropriate native species.

Recognise potential threat of oil and fuel spill through monitoring and the preparation of contingency plan for Tarakohe wharf.

Implement sewage scheme for Pohara Valley to ensure that no untreated sewage enters Pohara Valley stream, or the coastal marine area.

Monitor Pohara Valley stream regularly so that the presence of coliforms can be quickly identified and action taken.

9. ABEL TASMAN NATIONAL PARK COASTLINE AND ESTUARIES

9.1 Summary of Values

9.2 Site Data, Issues and Management Recommendations

Abel Tasman National Park Coastline and Estuaries

9. ABEL TASMAN NATIONAL PARK COASTLINE AND ESTUARIES

9.1 SUMMARY AND JUSTIFICATION OF ECOLOGICAL VALUES

The Abel Tasman National Park coastline is renowned for its attractive combination of coastal vegetation, sandy estuaries, golden sand beaches and sculptured granite headlands. These qualities have made the Abel Tasman coast one of New Zealand's most outstanding and popular natural areas. A recent ecological study of intertidal and subtidal areas adjacent to the park recognised the coast as being unique in New Zealand (Davidson, 1992). The coast represents New Zealand's largest and most northern area of sheltered granite coastline. Granite has a major influence on the communities found along the park (Davidson & Chadderton, in press).

There are 15 estuarine areas located along this coast. They are excellent examples of unmodified estuaries and provide important habitat for various wetland birds, notably banded rail and fernbird.

Scattered along the coast are a variety of marine communities which are of biological interest. These include the internationally recognised coral-like bryozoans (Separation Point), localised areas of limestone, high current habitat, and rhodolith and horse mussel beds (Bradstock and Gordon, 1983; Davidson, 1992).

9.2 SITE DATA, ISSUES AND MANAGEMENT RECOMMENDATIONS

Site Name/s: Abel Tasman National Park Coastline and Estuaries	**CRI Site No.** 10-024	**Code:** 18

Recorders Name: Rob Davidson

Map No: N26 (m)

Grid Reference: 25150 60320

Date: 16 April 1993

Brief Description of Site: **(Tasman/Golden Bay)**

The Abel Tasman National Park is located ~35 km north-west of Nelson and separates Tasman and Golden Bays. The Abel Tasman National Park coastline, including estuaries and islands, stretches 91.6 km from Wainui Bay in the north to Sandy Bay in the south. The Park encompasses 15 estuaries and seven islands (Tata (2), Tonga, Pinnacle, Adele, Fisherman, Ngaio). The remaining coast is composed of sandy beaches, granite rock or limestone rock (Taupo Point, Tata Islands, Memorial). A small piece of National Park is also located at Ligar Bay where the Abel Tasman monument is sited. The National Park extends 2.41 km out to sea, however, does not extend below mean high water. This means only beaches, rock reefs and islands above mean high water are bounded within the Park. The National Park boundaries are set by notice in the gazette under the National Parks Act.

Numerous freshwater streams and rivers flow through the Park and into estuaries and inlets along the coast. The largest of these are the Falls River, Wainui River, Awaroa River, Torrent River and Marahau River.

The Abel Tasman National Park has been modified above and below the water. On land the natural values are improving through regeneration and this has made the botanical aspects of the Park very popular. Underwater, most edible species are in very low numbers and some species are absent from much of the Park (Davidson, 1992). Whole communities (rocky and soft bottom) have been modified especially the Torrent Bay corals which have been virtually destroyed (Saxton, 1980). The time required for these communities to recover if fishing were restricted is impossible to assess and is probably a long term proposition. The matter of lost fishing rights through 'pressured' land sales to the Crown is to be addressed before the Waitangi Tribunal (J. Mitchell, pers. comm.).

Conservation Values:

Natural: The land along the Abel Tasman coastline is still recovering from a century of massive modification (Lands & Survey, 1976). Much of the natural values of this coastline have been lost or severely damaged (Saxton, 1980). The Separation Point 'corals' are dominated by two species of bryozoan with another 92 species recorded (Bradstock & Gordon, 1983). This area is an important juvenile fish area and supports a high diversity of invertebrates. Taupo Point, Tata Islands and Abel Tasman memorial are the only sections of coastline along the Park where limestone is located, elsewhere granite dominates. A breeding colony of New Zealand fur seal *Arctocephalis forsteri* is located at Tonga Island. Hectors dolphins *Cephalorhynchus hectori* are occasionally recorded along the Park (J. Preece, pers. comm.). One of the only two populations of the endangered peppercress plant *Lepidium banksii* is recorded north of Totaranui (S. Courtney, pers. comm.). The coastline of the Abel Tasman is composed of granite rock and golden beaches with regenerating bush as a backdrop of high seascape value.

Cultural: Archaeological evidence of Maori occupation along the Abel Tasman coastline attests to the importance of the area to the Maori particularly in winter months (Barber, in prep.). Marine and freshwater fish, shellfish, birds, fruit and vegetables grown in gardens would have supplied a variety of food.

Maori of the 1840's still occupied numerous kainga around the coast, and several of these sites were surveyed out as Maori Occupation Reserves. Some remained as Maori lands until the 1860's when the then owners agreed to sell to the Crown for the National Park.

The Abel Tasman coast is regularly walked by people from all over New Zealand and the world. Most comment on the aesthetic and landscape values of the area. Education centres at Totaranui and Marahau make extensive use of the surrounding area.

Historic: Approximately 43 archaeological sites are recorded along the Abel Tasman coastline. The most notable areas of Maori occupation being Taupo point, Wainui, Totaranui and Awaroa Inlet. Numerous European sites are also located along the coastline, the most notable being the remains of a granite quarry at Tonga Roadstead and the remains of a coastal scow venture in Awaroa Inlet. Remains of mining operations are also located along the coast. On 19 December 1642 four of Abel Tasman's crew were killed when a party of eight canoes approached their ships the Heemskerk and Zechaen near Whariwharangi Beach (Dennis, 1985). A memorial commemorating Abel Tasman's visit is located near Tarakohe. The Abel Tasman coastline was first charted by Dumont D'Urville in 1827.

Site Importance: International

The Separation Point bryozoan 'corals' are internationally recognised (Invertebrate Red Data Book, I.U.C.N.). This site has several small populations of the endangered (Bell, 1986) coastal peppercress (S. Courtney, pers. comm.). It is nationally significant for the presence of the threatened (Bell, 1986) banded rail (*Rallus philippensis assimilis*) and reef heron (*Egretta sacra sacra*), also the regionally threatened fernbird *Bowdleria punctata punctata*. Of importance is the international recognition of the attractive landscape/seascape.

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S 2.2 The National Park extends inland from mean high water mark and includes reefs and islands to 2.41 km offshore.

Awaroa Head to Mosquito Bay (to 1 nautical mile offshore) is currently under application as a marine reserve (Department of Conservation, 1993).

Separation Point is closed to trawling, Danish seining, and dredging (Mace, 1981). There is no commercial scallop or oyster fishing on the landward side of a line running from Foul Point to Fisherman Island.

A rahui is in place from Totaranui to Awaroa Head; Boulder Bank to Adele Island; and Guilbert Point to Tokongawha Point.

S 2.3(c) The Abel Tasman coastline encompasses 15 estuaries with catchments which, although modified in the past, are now successfully regenerating.

S 2.4(a) A breeding colony of New Zealand fur seal is located at Tonga Island, and a haulout site at Separation Point.

S 2.4(b) The Abel Tasman coastline is habitat for the threatened (Bell, 1986) banded rail and reef heron, and the regionally threatened fernbird.

S 2.5 As for 2.4(b), several 'at risk' birds are present.

One of only two populations of the endangered peppercress plant is recorded north of Totaranui (S. Courtney, pers. comm.).

The Separation bryozoan 'corals' are internationally recognised (Invertebrate Red Data Book, IUCN).

S 2.6 The Abel Tasman coastline; granite rock, golden beaches, and regenerating bush backdrop is recognised for its landscapes/seascapes world wide.

Human Modification and Human Use:

The land along the coast has been logged, burnt or farmed in the past and is now mostly regenerating. Wilding pines are throughout the Park. A small causeway is located in Sandy Bay. Most of the bays in the Park are used as recreational boat harbours, the largest being Torrent Bay, Bark Bay and Totaranui. Up to 21 boats per night had been recorded using Torrent Bay with up to 50,000 day user visitors each year (B. Clough, pers. comm.). Most beaches are heavily used by trampers and boat users. Approximately 21,000 overnight and 28,000 day visitors entered the Park in the 1991-92 season (L. Higgison, pers. comm.). Traditional Maori gathering sites for flax (*Phormium tenax*) and Pingao (*Desmoschoenus soiralis*) are around Awaroa.

Fishing pressures have significantly modified the intertidal and subtidal fauna of the Abel Tasman coastline (Davidson, 1992). This has been through over-fishing and mechanical disturbance by dredges and trawls.

Existing Protection:

National park extends 2.41 km offshore and down to mean high water, 22,000 ha approximately. Separation Point is closed to trawling, danish seining and dredging (Mace, 1981). Totaranui to Awaroa Head; Boulder Point to Adele Island; and Gilbert Point to Tokongawha Point is a Rahui. No commercial scallop or oyster fishing on the landward side of a line running from Foul Point to Fisherman Island.

Existing protection is totally inadequate to protect values below the high tide mark. Awaroa Head to Mosquito Bay is currently proposed as a marine reserve (Taylor, 1992; Department of Conservation, 1993).

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
HPT County Inventories Waimea County, 1985.

Issues:

As many as 100,000 people visit the Park each year. Many gather shellfish (eg. mussels: *Perna canaliculus* and *Mytilus edulis aoteanus*), however, recreational and commercial fishers have had by far the biggest impacts on the coastal environment (Davidson, 1992). Approximately 160 km^2 of coral was destroyed by commercial fishermen using chains towed behind boats (Saxton, 1980, Bradstock & Gordon, 1983), while nearly all of the Park has been either dredged for scallops (*Pecten novaezelandiae*), netted for fish or potted for crayfish (*Jasus edwardsii*). Recreational fishers have undoubtedly had an impact as up to 100 runabouts leave Kaiteriteri every day in the summer months, many of which fish along the park (J. Preece, pers. comm.).

Various areas of biological interest have been identified from subtidal areas along the Park (Davidson, 1992). Nets occasionally capture little blue penguins (*Eudyptula minor*). Many of these are vulnerable to fishing practices such as dredging and trawling. Fire is perhaps the greatest threat to the terrestrial area. Pines (mostly *Pinus radiata*), gorse (*Ulex europaeus*) and hakea (*Hakea salicina* and *H. cericea*) occur in many areas of the Park, these dramatically increase the fire danger and the pines can be invasive. There is increasing pressure on the natural values of the park from concession operators, private land development and for foreshore structures.

Management Recommendations:

Recommendations for the management of the marine section of the national park, based on ecological grounds, are discussed fully in Davidson (1992). In summary they are:

- design a management regime using a variety of legislative mechanisms to protect the existing natural values and encourage the recovery of other marine communities;
- establish marine reserves which incorporate a full range of biological aspects of their coast;
- prohibit the use of bottom towed fishing methods from near-shore areas;
- prohibit marine farms from within the 2.41 kilometre park boundary;
- investigate the water quality and benthic communities in areas of high boat use;
- the spread of pest and weed species be curbed;
- prohibit the use of set nets around the park;
- establishment of coastal structures be minimised;
- restrict activities of private land users within the park's boundaries (eg. planting of exotic weed species, pets).

10. TASMAN BAY ESTUARIES AND COAST

10.1 Summary of Values

10.2 Site Data, Issues and Management Recommendations

Otuwhero, Marahau Estuaries, Sandspits and Tidal Flats
Motueka Delta
Moutere Inlet
Waimea Inlet

10. TASMAN BAY ESTUARIES AND COAST

10.1 SUMMARY AND JUSTIFICATION OF ECOLOGICAL VALUES

The Tasman Bay coastline covers the area between Tinline, near the southern boundary of Abel Tasman National Park, and the Tasman District/Nelson City boundary on the eastern side of Waimea Inlet. This section of coast is approximately 45 km along the seaward edge of the coast, but including the internal coastline of estuaries, islands., the total coastline is ~157 km.

Within this area all four sites (Marahau and Otuwhero, Motueka Delta, Moutere Inlet and Waimea Inlet) are considered to be of national significance. Collectively, they comprise ~71% of this piece of seaward coastline, or ~90% of this total internal and external coastline. The total intertidal area covered by these sites is ~5600 ha. These figures include all of the Waimea Inlet, rather than just the Tasman District Council controlled section. Therefore, the majority of the Tasman Bay coastline is of important ecological value.

Many of the values present in Tasman Bay come from its shallow, sheltered nature, giving rise to large intertidal areas, with a number of large estuaries. This large intertidal area creates habitats suitable for wading birds, and also those which inhabit the estuarine margins. Banded rail (threatened) are birds of the estuaries' margins, and are present in all four sites. Bittern (a freshwater wetland species) have been recorded from Otuwhero, the Kumeras, and Waimea Inlet (Neimans and Pearl Creeks), though there have been no recent sightings. Loss of wetland habitat is responsible for its threatened status. The regionally threatened South Island fernbird is found at Otuwhero. The endangered white heron and threatened Royal spoonbill have small over-wintering populations at Motueka Delta, Moutere Inlet, and Waimea Inlet, with the threatened little egret present at Waimea and occasionally in Moutere Inlet. Both the rare variable oystercatcher and threatened banded dotterel breed on Motueka sandspit. Caspian tern and black-fronted tern are found at the Motueka Delta, both are threatened species. The river dwelling wrybill stops off occasionally during its internal migrations at Motueka Delta and Waimea Inlet.

All four sites are hosts to a number of international migratory waders, especially eastern bar-tailed godwit, with knots and turnstones present in smaller numbers. Largest numbers are present at the Motueka Delta, Waimea Inlet and Moutere Inlet. The largest roost site is at the Motueka sandspit, with all other sites having a number of smaller roost areas.

Both the Motueka and Waimea Rivers, and their associated spring-fed creeks, are important whitebait habitat.

Waimea Inlet contains two endangered plant species, coastal peppercress and grey salt-bush. Both the Motueka Sandspit and Rabbit Island have small populations of pingao, a threatened species (due to habitat loss and competition with marram grass). The Motueka Sandspit and Kumeras Estuary are the focus for a revegetation programme which aims to re-establish natural sand dune and forest on sand communities, both vegetation types which are regionally threatened.

Several areas have regional importance as sources of kaimoana, especially Marahau Beach, Tapu Bay, the Kumeras and Motueka Beach areas. Rabbit Island is recognised as the best New Zealand example of a barrier island.

10.2 SITE DATA, ISSUES AND MANAGEMENT RECOMMENDATIONS

Site Name/s: Otuwhero Inlet, Marahau Estuary, Spits and Tidal Flats	**CRI Site No.** 10-0025	**Code:** 19

Recorders Name: John Preece

Map No: N26 (m)

Grid Reference: 25107 60227

Date: 1 April 1993

Brief Description of Site: **(Tasman Bay)**

This site consists of Otuwhero Estuary, Marahau Estuary and sandspits, and intertidal flats located on the eastern boundary of Abel Tasman National Park. Otuwhero Estuary is relatively large (~100 ha) and has a community sequence including mudflat, saltmarsh, freshwater wetland and forest. Fernbird, banded rail, marsh crake and bittern have been recorded. Much of the adjacent land is covered in pines or shrubland, with two forest remnants. Otuwhero is delineated on the seaward side by a double sandspit (~700 metres long) which are largely covered in exotic weeds. Marahau Estuary (~41 ha) and intertidal flats (~169 ha) consist of sandflats and rushland, with a beach along most of the landward margins. Surrounding land use includes National Park, horticultural, residential, and a shop at the National Park entrance. Historically the adjacent area was an important Maori site with a series of defended pa, pits and areas of made soil.

Conservation Values: **Natural:** Otuwhero has one of the few complete estuarine related vegetation sequences in Tasman Bay, from eelgrass (*Zostera novazelandica*) beds and sandflats to saltmarsh, shrubland, coastal forest and finally, freshwater wetland. Both Otuwhero and Marahau have extensive areas of rushland. A freshwater wetland which forms the catchment of the eastern arm of Otuwhero is the largest coastal freshwater wetland in Tasman Bay (Walker, 1987). 'Threatened species' (banded rail *Rallus philippensis assimilis*, fernbird *Bowdleria punctata punctata*, marsh crake *Porzana pusilla affinis*, bittern *Botaurus stellaris poiciloptilus*) are present (Walker, 1987). Banded rail are found along the eastern arm of Otuwhero Inlet, and alongside the causeway at Marahau. Fernbird are found throughout the upper reaches of Otuwhero Inlet. Marsh crake occur adjacent to the Marahau causeway and wheelchair walk. Bittern were last recorded from the uppermost reaches of Otuwhero.

The area is characterised by a very large intertidal areas which are feeding areas for six species of waders. The freshwater areas represent spawning habitat for whitebait *Galaxias maculatus* and spawning has been observed in the lower reaches of the Otuwhero River (M. Wells, pers. comm.). The regionally rare *Mimulus repens* has been recorded from Marahau Estuary (Davidson, 1992) and is also present at Otuwhero (J. Preece, pers. obs).

Cultural: During the 1930's, a flash flood eroded the Marahau Stream and many skeletons and artifacts were revealed. Maori elders removed the bones to other urupa and lifted tapu on the sites (J. Mitchell, pers. comm.). The area is contiguous with the Abel Tasman National Park and his similar landscape/ seascape values. An outdoor education centre is located at Marahau.

Historic: Archaeological records show eight sites along the Marahau beach frontage, with a further 14 sites between Tinline and Toka Ngawa Point (New Zealand Historic Places Trust). Made soils and a large number of storage pits suggest kumara growing. Tinline, Te Makawawa and Otuwhero were all defended pa sites (Challis, 1978). Most artifacts are from the classic period (Challis, 1978). A large battle resulting in many deaths was fought at Marahau and the area is considered to have high spiritual and cultural values (J. Mitchell, pers. comm.). Large shellfish beds (primarily cockles, *Austrovenus stutchburyi*, are present and this is reflected by dense midden deposits (Challis, 1978).

Site Importance: National

Of national significance for the presence of the threatened (Bell, 1986) banded rail and Australasian bittern, and the regionally threatened South Island fernbird (Walker, 1987). According to Elliot (pers. comm.), this area represents the highest density of these birds in the Nelson/Marlborough region.

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S 2.2 The upper reaches of Otuwhero Inlet, including some tidal areas, are allocated to DOC.

Otuwhero Scenic Reserve adjoins DOC allocated land.

The land west of Marahau River and north of the causeway is also DOC allocated.

Abel Tasman National Park adjoins to the west.

S 2.3(b) Whitebait have been observed spawning in the Otuwhero River (M. Wells, pers. comm.).

S 2.4(b) Habitat for the threatened banded rail and Australasian bittern, and the regionally threatened South Island fernbird (Walker, 1987).

S 2.4(c) Important feeding area for South Island pied oystercatcher (Walker, 1987) and other waders (Davidson et al., 1990).

S 2.5 As for 2.4(b), also the regionally rare *Mimulus repens* is present (Davidson, 1992).

S 2.6 Marahau is adjacent to, and forms part of, the land and seascape of Abel Tasman National Park, highly regarded for these values.

Human Modification and Human Use:

Land development for farming, roading, recreation and residential development have modified the Marahau beach front and the edges of the Otuwhero Estuary. Residential development and roading on the eastern side of the Otuwhero Inlet have caused major visual modification. Marahau is one of the entrances to Abel Tasman National Park, with associated track, car park, picnic area, accommodation, information kiosk and food outlet. Approximately 100,000 people visit the park each year (B. Clough, pers. comm.). A causeway was built to facilitate foot access across the estuary. Kayak hire businesses work from Marahau beach. On the inside of the Otuwhero sandspit a jetty and moorings cater for residents boats, with a launching ramp on the beach front. The main beach is popular for swimming and is an important shellfish gathering area.

Existing Protection:

The Otuwhero Scenic Reserve (~5 ha) adjacent to the estuary is a small tongue of beech forest on a narrow ridge, the upper end of which has a series of pits. Much of the area around the mouth of the Otuwhero River has been allocated to Department of Conservation. The land on the western edge of this site is within Abel Tasman National Park and the land west of the Marahau River and north of the causeway is also allocated to DOC. A rahui prohibiting commercial shellfishing has been identified for Marahau.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, Waimea County, 1985.

Some of these sources are fairly brief and not always accurate. WERI records Marahau Inlet, Otuwhero and the eastern arm wetland. SSWI includes both Marahau and Otuwhero Estuaries as having moderate to high value.

Issues:

The granite substrate is highly erodible and land disturbance often results in increased sediment deposition downstream. Roading (for forestry, farming and subdivision), forestry operations (eg. harvesting), and natural flooding can all mobilise sediments which can fill stream beds with sediment and destroy habitat for insects and fish (eg. Otuwhero Stream), as well as raising estuary levels, thereby smothering animal and plant life and allowing weed invasion (eg. head of Otuwhero Inlet).

Grazing around the head of Otuwhero Inlet and Marahau Estuary has damaged vegetation and modified wildlife habitat.

Subdivision has the potential to considerably impact on the landscape character of the eastern side of Otuwhero Inlet. Any land disturbance has a major visual result because of the very light colour of the granite substrate.

Weeds, particularly gorse, ice plant and lupin have invaded the spits which prevents their use by birds as a roosting area.

Commercial development the rapid pace of commercial development at Marahau may impinge on the natural character of the coastal strip.

Drainage works for agricultural development have reduced the amount of freshwater wetland, particularly the low lying areas of Marahau. Excavation of farm drains regularly results in spoil being dumped in Otuwhero Inlet, at times smothering saltmarsh.

Road works in the surrounding areas regularly result in large quantities of spoil being dumped. At times this has been at the expense of wetland (eg. Otuwhero). Realignment of the road around the edge of Otuwhero Inlet has resulted in loss of saltmarsh, and small slips sometimes are pushed into the estuary.

Coastal processes have caused some erosion at Marahau Beach, with the heavy rock protection works being out of character with the natural environment.

Increased use of the Marahau boat launching ramp has caused damage to cockle and eelgrass beds, with vehicles travelling over a larger area.

Management Recommendations:

All activities which could result in larger than natural volumes of sediment entering waterways need controls. This includes drain clearing operations. Requirement that sediment excavated from drains should not be placed in waterways or estuaries would be appropriate. Special emphasis needs to be placed on riparian strip management as a means of intercepting sediment. Of particular importance is quantitative monitoring of the effects of land disturbance.

A code of practice (and education in conservation values) to apply to all contractors (or local authorities) carrying out roadworks in and around waterways and estuaries would help avoid some of the unnecessary damage which has taken place in the past.

Grazing within saltmarsh should be prevented by fencing adjacent to estuaries, particularly in the upper Otuwhero Inlet.

Ensure that land disturbance is minimised and vegetation retained to avoid visual scars on the landscape.

Site Name/s: Motueka Delta	**CRI Site No.** 10-0027	**Code:** 20

Recorders Name: John Preece

Map No: N26 (m)

Grid Reference: 25128 60123

Date: 1 April 1993

Brief Description of Site:

(Tasman Bay)

This site includes estuaries and tidal flats between Anawera Point (Tapu Bay) and the Motueka Wharf (~12.5 km length). It receives freshwater from the Motueka and Riwaka Rivers (average flows 58 cumecs and 3.9 cumecs respectively) (NRWB). Sediment from these rivers, especially the Motueka, forms a large delta (~790 ha) of shallow gradient intertidal area consisting of pebbles, cobbles, mudflats, but mostly sandflats. These extensive intertidal areas are rich in shellfish (mostly cockles *Austrovenus stutchburyi*) and are major feeding grounds for wading birds (Walker, 1987). Substantial areas of saltmarsh occur around the river and creek mouths. The shrub and forest components of the vegetation sequence have disappeared with land developed almost to the shoreline for horticulture, agriculture, and housing. The Kumeras Estuary (~75 ha) and Motueka beachfront (~220 ha) also have large intertidal areas. The Motueka Sandspit provides shelter for the Motueka beachfront.

Conservation Values:

Natural: The Motueka delta area is most notable for its large intertidal area (~1,085 ha) which provides important feeding areas for a variety of bird species, especially waders (Walker. 1987). All the intertidal areas are utilised with birds also using the Moutere Inlet. Banded rail (*Bowdleria punctata punctata*) are present at the mouth of the Motueka River (Elliot, 1989). There are several high tide roost sites. The Motueka Sandspit is the largest in Tasman Bay with over 10,000 birds being present in late summer (J. Preece, pers. obs.). It is also the longest spit in Tasman Bay (~3.3 km) and is a very dynamic landform, subject to periodic movement (Kirk, 1990). A small population (large by Nelsons standards) of pingao (*Desmoschoenus spiralis*) is present at the sandspit.

The Motueka River mouth has a large area of rushland and it is also thought to be important whitebait spawning habitat (J. Preece, pers. obs.).

The sandspit is a breeding area for white-fronted tern (*Sterna striata*), banded dotterel (*Charadrius bicinctus bicinctus*), variable oystercatchers (*Haematopus unicolor*) and gulls. The area is an over-wintering site for Royal spoonbill (*Platalea leucorodia regia* and white heron (*Egretta alba modesta*) (Walker, 1987). Wrybill (*Anarhyncus frontalis*) occasionally are seen on their internal migrations (A. Crossland, pers. comm.).

Cultural: The area is important as a former major population centre and is an important archaeological, cultural, spiritual and educational resource. There are important shellfish gathering areas. Pingao is still present on the Motueka sandspit, not in sufficient quantity to harvest, but in the long-term revegetation may again facilitate its use as a cultural resource. There are numerous Maori Reserve Lands along this coastline - a reflection of the population density at the time of European colonisation. Reserves were demanded as a condition of sale (Mitchell & Mitchell, 1990).

Historic: The Riwaka area was the major centre with its concentration of resources from the sea, intertidal zone, swamps, rivers and lowland and hill forests, and was occupied during both archaic and classic periods. It is likely that Riwaka was the most important living area, with Motueka being visited frequently or perhaps seasonally occupied. This is reflected in the wide range and high numbers of sites at Riwaka, with the Motueka area being notable for large areas of made soils. Settlements were found at Pah Point, Goodalls Island, Outer Island and the Riwaka wharf (Challis, 1987). During the 1840's, much of the population moved towards Motueka. The port of Motueka operated between 1857 and 1916 at what is now known as the old wharf, adjacent to which lies the wreck of the 'Janie Seddon'.

Site Importance:

National

Of national significance for the numbers of pied oystercatchers (*Haematopus ostralegus finschi*) and eastern bar-tailed godwits (*Limosa lapponica baueri*) which visit Motueka sandspit, of national importance for turnstones (*Arenaria interpres interpres*) and Royal spoonbill (A. Crossland, pers. comm.).

White heron are endangered, while Royal spoonbill, banded rail, banded dotterel, black-fronted tern (*Sterna albostriata*), caspian tern (*Hydroprogne caspia*), and wrybill (*Anarhynchus frontalis*) are all threatened species (Bell, 1986) and found at this site (J. Preece, pers. obs.).

S 2.2 Motueka Sandspit and Raumauku Reserve are Scenic Reserves.

Parts of the Kumeras are public land which may have some form of protected status in the long-term.

This area contains important shellfish gathering areas at Tapu Bay, the Kumeras, and Motueka Beach, all of which have been identified as rahui areas.

S 2.3(b) The Motueka Rivermouth is thought to be an important spawning ground for whitebait (J. Preece, pers. obs.).

S 2.3(d) The Delta is a stopover for some species of internal migrants (eg. wrybill), over-wintering site for Royal spoonbills and white herons, and an over-summering site for international migrants (Davidson et al., 1990).

S 2.4 (b) Habitat for a range of 'at risk' species including banded rail, banded dotterel, variable oystercatcher, Royal spoonbill, white heron and black-fronted tern (Davidson et al., 1990).

S 2.4 (c) Motueka sandspit is the largest roost site in Tasman Bay. The delta has very large intertidal areas which are important feeding areas for a range of waders (Davidson et al., 1990).

S 2.5 As for 2.4, the Delta contains a range of 'at risk' species.

The threatened pingao is present on the sandspit.

Human Modification and Human Use:

Much of the shore below high water is relatively unmodified, but no areas of adjacent forest or shrubland remain. Between Tapu Bay and the Motueka River, horticultural development to the edge is the major modification, for the Kumeras it is grazing and sewage treatment, and nearer Motueka it is a residential development and the port. A wharf and numerous moorings and sheds modify Riwaka. Inappropriate erosion protection (eg. large concrete slabs) are present at the Riwaka wharf and Motueka beach front. The whole area west of the Motueka River has been extensively drained and reclaimed, and the mouth of the Motueka has been shifted west. Very nearly all of the small creeks have been culverted and floodgated, preventing tidal inundation and freshwater fish migration. A sewage pipeline between Kaiteriteri and the treatment ponds is buried beneath the sandflats in front of the Riwaka River mouth. The Motueka River is the most important whitebait fishery in Tasman Bay. The sandspit is a popular place

for swimming, dog exercise, walking and fishing, and also birdwatching. Some duck shooting occurs at the Motueka rivermouth.

The shoreline near Motueka is popular for swimming, walking and picnics and also has a campground. Several traditional shellfish gathering sites are present. A small fishing port is present at Motueka, with associated pleasure boat jetties and moorings.

Existing Protection:

Rahui areas advocating against commercial fishing are found at Tapu Bay, the Kumeras Estuary, and the Motueka Beach. Small areas of recreation reserve front the shore near Motueka. The Motueka rivermouth and the Kumeras are largely public land for which reserve status is proposed. The Motueka sandspit and Raumanuka Reserve are both Scenic Reserves.

Recorded on Existing Databases:

CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, Waimea County, 1985

Other Considerations:

Waitangi Tribunal claims are being prepared to formalise traditional harvesting rights and rahui over several stretches of coastline adjacent to Occupation Reserves (Mitchell, pers. comm.).

Issues:

The west bank tributaries of the Motueka River flow through highly erodible granite substrate. Land disturbance often results in increased sedimentation downstream. Roading (for forestry, farming and residential development), forestry operations and natural flooding can all mobilise sediments, filling stream beds and destroying habitat for insects and fish (eg. Brooklyn Stream), as well as raising estuary levels, thereby smothering animal and plant life (eg. Motueka River mouth).

Residential development has taken place close to the margins of the estuary at Riwaka Wharf and the Motueka foreshore, with attendant problems of rubbish dumping and erosion protection. Attempts at erosion protection in these areas are out of character with the natural environment.

Uncontrolled and unauthorised boat moorings facilities are present at Riwaka wharf, again out of character with the natural environment. Various options have been proposed to improve boat access to Port Motueka. Structural proposals may have effects on the ecology of the Motueka sandspit (eg. wildlife disturbance, alternations to sediment transport patterns).

Trail bikes and dogs are causing disturbance to wildlife at the sandspit and Motueka Beach.

Aircraft, (both fixed wing and helicopters) are causing disturbance to both wildlife and recreational users of the Kumeras and Motueka Sandspit.

Grazing in the Kumeras is causing damage to saltmarsh and sand dune vegetation.

Gravel extraction from the mouth of the Motueka River may threaten supply of sediment to the littoral drift process.

Stopgates limiting passage of native fish are present at a number of sites including the Waiatua Stream, Little Sydney Streams, spring-fed creeks at the mouth of the Motueka and tributaries of the Kumeras Estuary.

Management Recommendations

Activities resulting in larger than natural volumes of sediment need controls. The existing consents procedure needs to be expanded to include quantitative monitoring of the effects of land disturbance. Special emphasis be placed on riparian management as a means of intercepting sediment.

Future residential developments to be set back from coastal margins a distance sufficient to account for the need for erosion protection works, and not inhibit public access.

Existing erosion protection works at the Riwaka wharf and Motueka beach require removal and replacement with more sympathetic, authorised solutions.

The unauthorised developments at Riwaka wharf improved to an acceptable standard (including visual aspects) and licensed or removed.

Solutions to the boat access problem at Port Motueka must recognise the high conservation values of the Motueka sandspit and surrounding areas. On ecological grounds, the best solution has the least environmental impact.

Aircraft noise is incompatible with the very high wildlife values, and recreational users and residents. An alternative low-flying area and helicopter training area should be investigated.

Further work on the impact of gravel extraction from the lower Motueka River is required to assess its role in coastal processes; more investigations are required into all the processes which operate within the system between the Motueka River and Waimea Inlet.

Most of the Kumeras Estuary deserves protective status.

The Kumaras area is regarded as very sensitive and all proposed development should be preceded by consultation with Te Awhina Marae.

Site Name/s: Moutere Inlet	**CRI Site No.** 10-0028	**Code:** 21

Recorders Name: John Preece

Map No: N27 (m)

Grid Reference: 25125 60055

Date: 1 April 1993

Brief Description of Site:

(Tasman Bay)

Moutere Inlet (~750 ha) has an internal coastline of 24 km, and includes Jacketts Island and the inside of Kina Peninsula. The estuary drains almost completely at low tide. The surrounding area consists of Moutere Gravels, giving rise to distinctive rolling, low hills, with apple orchards on the lower slopes and forestry and gorse on the upper slopes. In the north, the estuary adjoins the alluvial plains of Motueka with residential and industrial development centred on the port. Roading has considerably reduced the vegetation on the margins of the inlet, with few areas of shrubland and no forest remaining. Substantial areas of mudflat and saltmarsh are present. Jacketts Island and Kina Peninsula were major areas of Maori occupation.

Conservation Values:

Natural: The estuary has large intertidal areas with substantial rushland in all embayments. Several small sandbanks and islands are present, the highest has a complete vegetation sequence through to the shrub stage. Beds of eelgrass (*Zostera novazelandica*) are present, along with large areas of the seaweeds *Ulva* sp., *Gracilaria* sp. and *Enteromorpha* sp. A small population of estuary tussock (*Stipa stipoides*) is present, the westernmost outlier of the main Waimea Inlet population. Tiny remnants of beech forest are found on Kina Peninsula. The Inlet is an important feeding ground for waders (Walker, 1987) with small roost sites on several sandbanks, though spring tides force the birds onto Motueka Sandspit. White heron (*Egretta alba modesta*) are frequent visitors, as are Royal spoonbills (*Platalea leucorodia regiro*). Banded rail (*Rallus philippensis assimilis*) are present at the head of the Inlet (Elliot, 1990), while the elusive marsh crake (*Porzana pusilla affinis*) have been observed (J. Preece, pers. obs.) in the freshwater embayment pond. Large and dense beds of cockles (*Austrovenus stutchburyi*) are present (J. Preece, pers. obs.).

Cultural: The area is important as a densely occupied area and for shellfishing. The Moutere pa sites were the scenes of bitter struggle between Ngati Apa defenders and invading Ngati Toa, Ngati Tama, Ngati Rarua, Te Atiawa and Ngati Koata. Pakipaki and Te Kotuku were among the defeated chiefs, and Te Puoho, Te Manutoheroa, Reretawhangawhanga and others among the conquerors (J. Mitchell, pers. comm.).

Historic: There is a concentration of archaeological sites on the inside of Kina Peninsula and Jacketts Island, with few sites on the opposite side of the inlet. This probably reflects the swampy nature of the Lower Moutere area in pre-European times. Deep channels provided good access for canoes, both inside and outside the inlet, and fish and shellfish resources were plentiful. Both archaic and classic occupation is indicated by the artifacts, which include evidence of fishing, shellfishing, bird hunting, cooking and stone-working. Defended pa sites are found further along the coast towards Kina (Challis, 1978).

Site Importance:

National

Of national importance for the presence of white heron (endangered), Royal spoonbills and banded rail (both threatened) (Bell, 1986).

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2.3 Identified as an estuary of national significance (Davidson et al., 1990).

2.4(b) Habitat of the endangered white heron and threatened Royal spoonbill and banded rail.

2.4(c) Important feeding grounds for a range of wading species (Davidson et al., 1990).

2.5 As for 2.4(b), contains at 'risk species'.

Human Modification and Human Use:

The coastal highway skirts the edge of the Inlet over most of its length (on the inland side). This has effectively replaced the shrub zone and a series of causeways has restricted water circulation (Kirk, 1990). Port Motueka is situated at the northern outlets of the Inlet. A major fish processing plant and a small-scale marina are also located here. Several small embayments have been reclaimed, together with some larger areas at the mouth of the Moutere River. Kina Peninsula is a popular recreation area for swimming, picnicking, water skiing. Fishing pressure both in and outside the estuary has depleted both the numbers and variety of fish present (local opinion).

One large embayment has been converted to an irrigation pond. Most embayments suffer from orchard pruning and other rubbish being dumped on them. The entrance to Port Motueka is scheduled for future dredging.

Existing Protection: None.

Recorded on Existing Databases: CRI, 1990.
WERI, 1988.
SSWI, 1987.
HPT County Inventories, Waimea County, 1985.

Issues:

A major development which caused modification within Moutere Inlet has been the realignment of the coastal highway through the southern edge of the estuary. This has caused modification through reclamation, altered tidal circulation, and has also isolated a number of small embayments. Small-scale reclamation in these areas, coupled with rubbish dumping (eg. prunings), has contributed to an estimated total loss in productivity over the last 50 years of approximately 25%. The banded rail population appears to be threatened because of this degradation (Elliot, 1990). Reclamation continues with destruction of saltmarsh for the purposes of shell dumping, currently taking place (April 1993) near the mouth of the Moutere River.

Cockle harvesting has been proposed for parts of the estuary, and other forms of aquaculture have been discussed.

Port developments include boat berths and fish processing plant, while proposed developments include marinas and a slipway. Moffat (1989) found deceased faunal diversity consistent with moderate nutrient enrichment.

Many of the freshwater tributaries of the Moutere Inlet are heavily abstracted for irrigation. As a result many streams dry up over summer and autumn, preventing access by native fish for spawning.

Management Recommendations:

Any further roading developments need to avoid impact on the estuary if at all possible, or at least to be adequately culverted to allow tidal circulation.

A survey to establish public land within the Inlet needs to be undertaken, with active restoration taking place as mitigation for some of the previous modification and protection for the banded rail.

Prohibit conversion of tidal embayments into freshwater storage reservoirs.

A monitoring programme to document the effects of port developments is necessary to reveal the effects of increased nutrient status, fuel, oil, or chemical pollution.

Site Name/s: Waimea Inlet	**CRI Site No.** 10-0031	**Code:** 22

Recorders Name: Rob Davidson

Map No: N27 (m)

Grid Reference: 25220 59914

Date: 1 April 1993

Brief Description of Site: **(Tasman Bay)**

Waimea Inlet is a shallow bar-built estuary. The Inlet is the largest enclosed estuary in the South Island (~3,455 ha), with an internal coastline of approximately 65 km. There are 10 islands within the inlet and 42,000 people living within 8 km of the Inlet. The Inlet is enclosed by Rabbit Island which limits tidal flow from the estuary to Tasman Bay via the Mapua (western) and Tahunanui (eastern) entrances. A combination of large tidal volume (up to 62 million cumecs of water) and the shallow nature of the inlet result in a relatively quick flushing action. Fresh water input into the inlet is from 22 small streams and the Waimea River. Normal flows from the Waimea River are approximately 19 cumecs, but floods of 2,000 cumecs have been recorded. The Inlet and surrounding land have been occupied by Maori since the 1300's and Europeans since the 1840's. The estuary margins and adjacent land have been considerably modified over this period by industrial, urban and rural development.

Conservation Values: **Natural:** Although the margins of the Inlet have been significantly modified, areas within the Inlet retain high biological importance (Davidson & Moffat, 1990). Areas of biological interest include: the whole western inlet; No-mans Island, O'Connor Creek; Pearl Creek; Higgs Reserve and Stringer Creek; Saxton Island and intertidal flats; MDF plant to Waimea River (Neiman Creek); Bells Island flats; Tahunanui embayment; Saxton Creek saltmarsh; and Aerodrome Peninsula flats. The Inlet is utilized by 112 invertebrate species, 41 fish species (marine and freshwater) and 50 species of waterbird. These numbers are relatively high compared with other New Zealand estuaries (Davidson & Moffat, 1990). Of particular significance are visits by ~3,000 eastern bar-tailed godwit (*Limosa lapponica baueri*) and ~3,100 South Island pied oystercatcher (*Haematopus ostralegus*). Fourteen species of wader utilize the Inlet. The marginal areas that remain are important to the threatened (Bell, 1986) banded rail (*Rallus philippensis assimilis*) and Australasian bittern (*Botaurus stellaris poiciloptilus*; also marsh crake (*Porzana pusilla affinis*). The Inlet is important for juvenile flatfish and snapper. Large numbers of juvenile snapper (*Chrysophrys pagrus*) have been recorded congregating outside the Inlet (MAF Fisheries). The Waimea

Rivermouth and associated areas are thought to be important for whitebait spawning, which has been observed at Neiman Creek (Mace Ward, pers. comm.). Densities of invertebrates reach numbers as high as 76,000 per m^2. This represents a huge food source to the estuarine food chain (Davidson & Moffat, 1990). The endangered (Wilson & Given, 1989) coastal peppercress *Lepidium banksii* is present, as is the endangered grey salt bush *Atriplex cinerea* (only remaining New Zealand population).

Rabbit Island represents a vital landform for the continued survival of Waimea Inlet. Rabbit Island was once a system of dunes and wetlands, the island now has few natural values. Isolated pingao (*Desmoschoenus spiralis*) plants are located on Rabbit Island. Pingao is a nationally threatened species and other than a few plants on Motueka Spit and at the Whangamoa River mouth, these are the only populations known in Tasman Bay (Courtney, pers. comm.). A small area of flax (*Phormium tenax*) exists near the eastern end of Rabbit Island. On the adjacent Rough Island, the only South Island record of the sedge *Baumea articulata* is known (Davidson & Moffat, 1990). A small wetland at the western end of the Traverse is the only Nelson location of *Isolepis prolifer*. As a landform, Rabbit Island is the best New Zealand example of a barrier island (Priestley et al., 1989). Many people use the area because of its quiet nature and pleasant seascapes.

Cultural: The intertidal flats at Aerodrome Peninsula are used by students from Nelson and Stoke (Norriss & Davidson, 1989). The inlet is an important part of the Nelson landscape, especially as viewed from the adjacent hillsides at Nelson and in the Mapua area. Oral traditions record pre-'fleet' peoples on the Waimea, and the first named occupiers, as Pohea's people who were believed to have come there in about 1,450 AD.

Historic: Approximately 33 known archaeological sites are recorded from the inlet and islands within the estuary. The majority of these sites are midden, however, a number of findspots are also recorded. Urupa are also located within the boundaries of the inlet. The inlet was an important area to the Maori, especially for food and materials. The Grossis Point/Mapua area is of particular archaeological importance. The inlet also has a rich European history which has resulted in extensive modification of the natural values of Waimea Inlet.

Site Importance:

Waimea Inlet: National
No-Mans Island: International

One of two sites in New Zealand where the endangered (Wilson & Given, 1989) endemic coastal peppercress *Lepidium banksii* grows naturally, the endangered grey salt bush *Atriplex cinerea* is also present (Davidson & Moffat, 1990). Ranked as an area of outstanding value to wildlife (Walker, 1987). The size and variety of habitats found in the estuary makes Waimea Inlet a nationally significant estuary. Nationally important to the endangered (Bell, 1986) white heron (*Egretta alba modesta*), the threatened Royal

spoonbill (*Platalea leucorodia regia*), little egret (*Egretta garzetta*), Australasian bittern and banded rail (Davidson & Moffat, 1990).

Archaeological sites are abundant, with the Grossis Point area being especially important (Challis, 1978).

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S 2.2 No-mans Island is Nature Reserve.

Davidson and Moffat (1990) proposes protective status for a number of areas within Waimea Inlet, some of which are being implemented (eg. esplanade reserves and covenant on Pearl Creek).

S 2.3 Considered to be of national significance by Davidson (1990) and of outstanding significance to wildlife by Walker (1987).

S 2.3(b) It is important for juvenile snapper and flatfish (Davidson and Moffat, 1990).

Whitebait spawning has been observed in Neimans Creek and the whole Waimea Rivermouth is likely to be good spawning habitat (J. Preece, pers. obs.).

S 2.4(b) The at risk species present include banded rail, Australasian bittern and marsh crake, white heron, Royal spoonbill and little egret.

S 2.4(c) The large intertidal area provides important feeding grounds for waders (Davidson and Moffat, 1990).

S 2.5 As for 2.4, several 'at risk' birds are present.

Pingao (threatened) is present on Rabbit Island and the endangered coastal peppercress and grey saltbush are present within the inlet.

S 2.8 Rabbit Island is considered to be the best New Zealand example of a barrier island (Priestly et al., 1989).

Human Modification and Human Use:

Modification of the estuary and surrounding land has been greatest in the eastern or Nelson side of the Inlet. Here the urban centres of Stoke and Richmond lie adjacent to the Inlet. Numerous industrial developments lie along the eastern margins, while farms and forestry surround the remaining estuary. Approximately 200 ha of estuary has been lost to reclamation and industrial development. Between 8,000-10,000 m^3 of treated effluent is discharged into the eastern inlet per day. Three ski lanes exist,

two in the eastern inlet and one adjacent to Mapua. The Inlet is recreationally important to joggers, dog exercisers, duck hunters, fishers, whitebaiters and birdwatchers.

Existing Protection: Some recreational reserves (around Rabbit Island) and occasional esplanade reserve around parts of the Inlet. Oyster Island is Recreation Reserve (~5 ha). Most of Rabbit Island is Plantation Reserve. No-mans Island is Nature Reserve.

Recorded on Existing Databases:
CRI, 1990.
WERI, 1988.
SSWI (Outstanding), 1987.
HPT County Inventories - Waimea County, 1985.

Stringer Creek wetland on WERI
Trafalgar Road wetland on WERI

Issues:

Erosion is taking place on the estuary side of Rabbit Island, in estuarine parts of the river channel (eg. along the dog exercise area), and in some grazed areas on the eastern side. Where erosion protection works have been constructed, these are out of character with the natural environment.

Spartina anglica has been present in large areas, with resultant trapping of silt, building up of estuary levels and displacement of natural communities. Control operations have reduced the area, but may also constitute a threat through potential physical and chemical damage to the environment.

Grazing is taking place at Pearl Creek, around the Richmond tip, and several locations on the eastern side. This results in destruction of saltmarsh communities, modification of wildlife habitats, and causes erosion which in turn releases fine sediment into the estuary.

Whitebaiting can cause localised damage to vegetation and streambanks through trampling, eg. Pearl Creek, Neimans Creek.

The popularity of recreational shooting sometimes results in the death of non-acclimatised species.

Residential developments and subdivisions have reduced natural coastal values, eg. Bests Island, Deadmans Island, Neimans Creek.

Industrial development has been allowed to take piace directly adjacent to and in the estuary with consequent destruction of estuaries and buffer zone values. Public access is also inhibited by these developments.

Sewage disposal results in large amounts of nutrients being discharged into the estuary daily, with occasional further problems arising from maintenance, construction, or accidental disruption.

Rubbish dumping along some of the western embayments has occurred, with tip sites (now closed) at Richmond and Appleby. A refuse transfer station now operates at the Richmond site.

Forestry operations at Rabbit and Rough Island have damaged saltmarsh vegetation in the past and may be contributing towards erosion on the northern side.

Gravel extraction operations have also caused damage to saltmarsh vegetation in the past.

Aquaculture trials in the Traverse area have also damaged saltmarsh areas.

Transmission lines have had an adverse visual impact within the Inlet.

Inadequate culverts in the causeways between Rough Island and Rabbit Island has disrupted tidal flow and caused modification in the Traverse.

Management Recommendations:

An ecological report on Waimea Inlet (Davidson & Moffat, 1990) includes a chapter of management recommendations, of which this is a summary.

Protective status is proposed for a number of areas in recognition of the area's outstanding ecological values. The western part of the Inlet between Mapua and the Waimea River is recommended for protective status, as well as a number of other areas proposed for more specific protection (eg. wildlife reserve). These include O'Connor Creek, Pearl Creek, Saxton Island Flats, Chip Mill to Waimea River, Higgs Reserve and Stringer Creek Flat, and the Bells Island Flats (details contained in report). Additionally, protection is proposed for areas important as whitebait habitat (and other native fish) including parts of Pearl Creek, Neimans Creek and O'Connor Creek.

Management recommendations for the western inlet include:

- prohibit marine farming, commercial fishing, gill and drag netting, infilling, stopbanking, roading, port development and rubbish dumping;

- prohibit powerboating, motorbikes and cars on the estuary and shooting;

- set out in a management plan, areas where passive recreation (eg. sailing and boating, walking, dog exercise, bird watching) can be undertaken without problems of conflicting use;

- construction of adequate fencing around sensitive areas;

- provide protection to land adjacent to biologically important areas listed in Chapter 10 (Davidson and Moffat, 1990) through management agreements or land purchase;

- replant vegetation both intertidally and immediately above the high tide zone, thereby creating a buffer strip around the whole western inlet.

Specific measures for the management of whitebait habitat include:

- recognition of spawning sites;

- establishment of plants suitable for spawning;

- discourage drainage of wetlands;

- minimizing of stopbanking, especially around the saltwater wedge;

- removal and discouragement of the use of culverts or other structures which interfere with migration pathways;

- fencing of spawning areas to prevent grazing of habitat;

- education of local body organisations.

Section 3 provides recommendations for the protection of estuarine plant communities. Given the highly modified nature of the estuarine margins, and their ecological importance, it is also recommended that enhancement of these margins take place through an active revegetation programme.

It is recommended that production of educational material and use of the estuary by school groups be encouraged. Education is an important part of estuarine management.

Currently access around the edge of Waimea Inlet is difficult; establishment of a walkway system around the entire margin of the inlet would improve this situation:

- encourage replacement of causeway at each end of The Traverse (Rabbit Island) with a bridge at the eastern end and complete removal of the causeway at the western end.

Establishment of strips to buffer both land and sea from the effects of sea level rise is proposed through an active programme of land retirement around the edge of the estuary. Restrictions on the type and form of development around Waimea Inlet should be formulated. The following guidelines are suggested:

- infilling (reclamation) of intertidal areas, particularly marginal vegetation, should only be approved in exceptional circumstances;

- no refuse tips or rubbish disposal management schemes should be established in or adjacent to the estuary;

- roadways should be discouraged in or adjacent to the Inlet;

- coastal subdivision should be discouraged from areas adjacent to the Inlet;

- housing and industry should be gradually relocated away from the edges of the Inlet;

- the 20 metre reserve formed if subdivision occurs should be retained as a reserve, not as a road substitute;

- structures which destroy marginal vegetation or disrupt the natural flow of water or sediments should be discouraged;

- control of erosion using buffer strips and planting of marginal vegetation should be encouraged, wherever possible erosion should be left to take its natural course. Grazing of saltmarsh vegetation with subsequent erosion should also be prevented;

- present discharge levels of treated sewage into the Inlet should not be significantly increased without an investigation into the probable impacts on the Inlet (Section 7.1);

- faecal coliform bacterial, viral levels and nutrients should be monitored;

- industry, regional government and local farmers and residents should be encouraged to remove rubbish which has been deposited into the Inlet;

- the environmental implications of aquaculture in Waimea Inlet need to be very thoroughly assessed before being allowed to proceed. Commercial harvesting of cockles should not be allowed;

- any facilities to cater for additional recreational pressure need to be carefully assessed for their necessity, impact on the estuary, and effectiveness;

- powerboating, jetskis and hovercraft be restricted to particular areas in the estuary;

- the use of underground transmission lines be encouraged and the gradual replacement of existing aerial lines be encouraged;

- dis-used lines and poles be removed from the Inlet and estuary margins (eg. Higgs and Stringer embayments);

- efforts be made to reduce sediment load from sources including catchment use, gravel extraction and dredging;

- construction of fences to limit livestock grazing be encouraged;

- the flow of Waimea River, small streams and ground seepage into the estuary not be significantly interrupted or altered;

- *Spartina* spraying in biologically important areas be prioritized;

- further biological surveys be undertaken at regular intervals. Areas of specific interest include: the distribution and changes in abundance of the Pacific oyster; impact of *Spartina*; loss of sediments and habitat classification; spread of vegetation cover over time; and the impact of sea level rises on estuarine boundaries and erosion rates.

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APPENDIX 1

SCHEDULE 2
(From Draft New Zealand Coastal Policy Statement, 1992)

Criteria for Identifying Areas of Significant Conservation Value

The Minister of Conservation may use one or more of the following criteria in assessing whether an area has significant conservation values:

S2.1 Maori Cultural Values

Areas of local, regional, or national significance identified by the tangata whenua in accordance with tikanga Maori, including wahi tapu, urupa, tauranga waka and mahinga maataitai.

S2.2 Protected Areas

Where there are protected areas below Mean High Water Springs
Any gazetted or notified reserve, marine mammal sanctuary, marine park or other marine protected area, including adequate buffer areas, or any proposal which is under current investigation.

Where there are protected areas above Mean High Water Springs
Where there are protected areas above mean high water springs, consideration may be given to whether the adjoining area below mean high water springs should be identified as an area of significant conservation value.

S2.3 Wetlands, Estuaries and Coastal Lagoons

Any wetland, estuary or coastal lagoon in the coastal marine area which is of national or international importance, including those:

(a) necessary to act as buffer zones;

(b) that are important spawning grounds or nurseries for marine and freshwater species;

(c) where related catchments, marginal land and tidal flats have been minimally modified;

(d) strategically situated to act as stepping stones for migratory species along coastal tracts.

S2.4 Marine Mammals and Birds

Areas including or near any:

(a) marine mammal breeding or haul out site;

(b) habitats of endangered, vulnerable, rare or threatened bird species;

(c) important roost sites, or feeding areas of wading birds.

S2.5 Ecosystems, Flora and Fauna Habitats

Any area that contains regionally, nationally or internationally significant or threatened ecosystem or plant or animal species.

S2.6 Scenic Sites

Any part of the coastal marine area that forms a land or seascape of national or international importance.

S2.7 Historic Places

Historic places of national or outstanding significance (including archaeological sites adjoining mean high water springs), especially places where the values relate to the seabed as well as to the land.

S2.8 Coastal Landforms and Associated Processes

Representative examples of nationally significant or outstanding coastal landforms and their associated sediment transport systems and sources including:

(a) Submerged landforms (eg. fiords, drowned river valleys, banks, reefs, moraines and drowned shorelines).

(b) Erosional landforms including those that have been carved out of the land by the sea (eg. shore platforms and submarine canyons).

(c) Geologically rare or unusual features of very high quality.

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No. 2
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No. 3
Byrom, A. E., Davidson, R. J. 1992: Investigation of behavioral patterns of black swan at Farewell Spit and Whanganui Inlet, North-west Nelson. 20 pp. NZ$10.00.

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