

COASTAL RESOURCE INVENTORY

FIRST ORDER SURVEY

BAY OF PLENTY CONSERVANCY

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NATIONAL OVERVIEW

INTRODUCTION

The Coastal Resource Inventory (CRI) programme was initiated in 1987 as the Department of Conservation's principal tool for breaking the cycle of reactive management that has characterised coastal management in New Zealand in the past. CRI provides important information on the physical, biological, recreational, cultural, historic, archaeological, human modification, uses, protection and threats to the coast.

The First Order Survey consists of thirteen volumes, one from each coastal conservancy (Northland, Auckland, Waikato, Bay of Plenty, East Coast, Hawke's Bay, Wanganui, Wellington, Nelson/Marlborough, Canterbury, West Coast, Otago, Southland). Each volume includes a brief description of the conservancies' coastal zone, a summary of the conservation values, a list of issues of concern and recommendations for further work. The information is described on site sheets and plotted on maps at a scale of 1:250 000 to give a broad, overall impression of the coastal conservation values within each conservancy.

In addition to its primary use for coastal management, First Order CRI information will help identify areas suitable for marine reserves and aid in the advocacy role of the Department at both the national and conservancy level.

Mission Statement:

The primary mission of the First Order Survey was:

"To provide information for the maintenance, enhancement and restoration of natural character and qualities of coasts and their sensitive use."

The following specific tasks were developed to achieve the mission:

1. *"To identify coasts with important natural, scientific, historic, cultural and spiritual values;*
2. *to identify coasts currently protected and warranting protection;*
3. *to identify coastal conservation values susceptible to existing and potential threats;*
4. *to identify human modification and uses of coasts"*.

MAP INDEX - BAY OF PLENTY

Site No.	Map Grp.
0001	5.2 and 5.1
0002	5.2 and 5.1
0003	5.2
0004	5.1
0005	5.1
0006	5.1
0007	5.1
0008	5.1
0009	5.1
0010	5.1
0011	5.1
0012	5.1
0013	5.1
0014	5.1
0015	5.1
0016	5.1
0017	4.2
0018	4.2
0019	4.2 and 3.7
0020	4.2 and 3.7
0021	3.7
0022	3.8 and 3.7
0023	3.7
0024	3.7

INSTRUCTIONS FOR USE OF THE COASTAL RESOURCE INVENTORY

This folder consists of an introduction, summary, site record forms, and maps. The site record form gives written information on each site and is to be used with corresponding maps for that site.

Read the site record form with its corresponding maps by following these steps:

SITE RECORD FORMS

1. Turn to the site record forms.
2. Find the site number in the top right-hand corner of the page e.g. CRI 01 0001. The number 01 represents a conservancy coastline. Refer to map of New Zealand below e.g. 01= Northland Conservancy. The number 0001 refers to a particular site e.g. Firth of Thames.
3. Each site record form gives written information on the following:

natural values cultural values historic values	}	site of conservation value
--	---	-------------------------------

existing threats
 human use and modification
 existing protection

4. Letter codes (a,b,c,d,e,f,g) give detail for each part of the information on the site record form. A key is provided on the maps and the codes are listed in the "Methods" section.

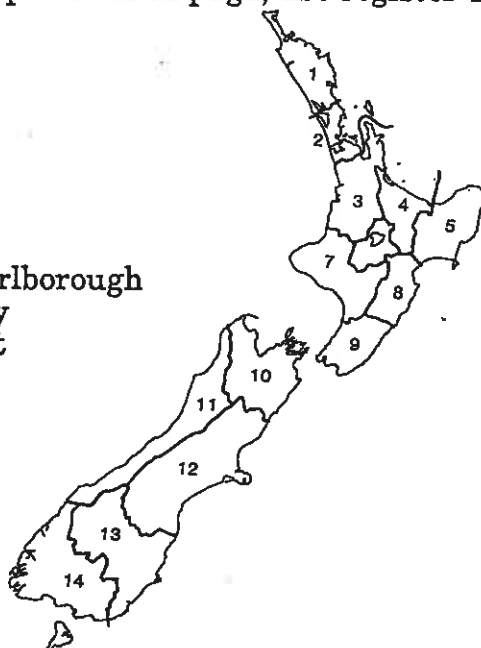
MAPS

5. Turn to the map index overleaf. The index gives the site number and its corresponding maps.
6. Find the corresponding maps in the second part of the folder.
7. Accompanying the maps are two transparent map overlays:
 - i) CONSERVATION VALUES overlay
 - ii) BASE MAP overlay
8. The BASE MAP and CONSERVATION VALUES overlays are designed to lift out and overlay onto each of the previous pages (i.e. natural, cultural, historic, human modification and use, existing threats, existing protection etc.)
9. To accurately overlay the base map with each page, use register marks which are found on each map.

i.e.  overlays on 

DEPARTMENT OF CONSERVATION COASTAL CONSERVANCIES

- | | |
|------------------|------------------------|
| 1. Northland | 8. Wellington |
| 2. Auckland | 9. Nelson/ Marlborough |
| 3. Waikato | 10. Canterbury |
| 4. Bay of Plenty | 11. West Coast |
| 5. East Coast | 12. Otago |
| 6. Hawkes Bay | 13. Southland |
| 7. Wanganui | |



METHODS

The information for the First Order Survey has been collated and mapped in six major categories: natural, historic, cultural, existing threats, human modification and use, and existing protection.

1. Natural Values:

Information on known areas of physical, biological and ecological value in the coastal zone under the following headings:

- a - High degree of naturalness
- b - Rare/unique species, communities or habitats
- c - Important breeding/feeding/roosting/haulout/nursery areas
- d - Fragile/environmentally sensitive areas
- e - Unique or unusual landforms
- f - Representativeness
- g - Known scientific value
- h - National or international importance
- i - Other

2. Cultural Values:

Areas of important Maori and non-Maori cultural values in the coastal zone under the following headings:

- a - Traditional values
- b - Aesthetic value
- c - Landscape (seascape) value
- d - Spiritual value
- e - Educational value
- f - Other

3. Historic Values:

Areas of important historic and archaeological value in the coastal zone under the following headings:

- a - Known historic value
- b - Archaeological value - Maori origin
- c - Archaeological value - Non-Maori origin
- d - Shipwrecks and wreck sites
- e - Known national or international significance
- f - Other

Explanatory Notes

(i) The decision to include the attributes "high degree of naturalness", "representativeness", aesthetic value", "land/seascape value" and "spiritual" value was based on the experience of the data recorder.

The Natural, Cultural and Historic categories of information were combined to form the Conservation Value overlay map, where all features of natural, historic or cultural value were overlaid then amalgamated to form sites of conservation value (Conservation Sites). For each of these sites a brief description was provided on the Site Record Form. The Site Record Form contains details of the conservation values mapped and includes the following three other categories (4-6) that impact on these values:

4. Existing Threats:

Threats may be natural or human induced activities that are or have a history of damage or destruction of the coastal resources. Information on the following was collated and mapped:

- a - Erosion, flooding, landslip
- b - Siltation
- c - Noxious and invasive exotic plants
- d - Noxious or farmed animals
- e - Water pollution
- f - Mining
- g - Shore stabilisation works
- h - Aquaculture
- i - Fishing techniques
- j - Spoil and refuse dumping
- k - Recreation
- l - Coastal subdivision
- i - Other

Explanatory Notes

(ii) The inclusion of "recreation", "mining", "aquaculture" and "fishing techniques" in the "Existing Threats" category was only used where these activities threatened conservation values. It is acknowledged that there are many places where these activities do not pose a threat.

5. Human Modification and Use:

Information on the following was collated and mapped:

- a - Land development
- b - Reclamations and causeways
- c - Commercial port areas
- d - Small boat harbours and moorings
- e - Outfalls, major pipelines and cables
- f - Artificial cuts
- g - Beach replenishment
- h - Shoreland-based recreation
- i - Water-based recreation
- j - Traditional Maori use
- k - Other

6. Existing Protection:

Areas of varying protection status in the coastal zone were mapped, including:

- a - National protected areas
- b - Regional protected areas
- c - Local protected areas
- d - Protective zonings
- e - Marine parks
- f - Private protected areas
- g - Voluntary protection of areas
- h - Rahui
- i - Other

Evaluating Site Importance

Evaluation of site importance was largely species based using the following criteria: The criteria for fauna (Bell, 1986) and flora (Given et al, 1987 and Wilson and Given 1989) are based on the IUCN Red Data list.

1. If a species of plant or animal is listed as endangered and it is an endemic species, then the place(s) where this plant or animal still remain are of INTERNATIONAL importance.
2. If a species of plant is vulnerable or rare, then the site where it naturally occurs is of NATIONAL importance. Similarly if a species of animal is classified as threatened or rare then the site is of NATIONAL importance.
3. For a species of animal that is classified as threatened regionally only, the site has regional importance.
4. Where sufficient information allowed the Ramsar convention was used to determine site importance in Wellington, East Coast and Bay of Plenty. The Ramsar convention states; *"a site is of international importance if 1% of the total*

population of a species or subspecies is found there or if the area supports 1% of breeding pairs".

5. Other information on site importance from the historic or cultural categories which is documented in the literature was also used.
6. The highest level of importance for any category located within a site is given to the whole site.

Explanatory Notes

(iii) The site importance is not a ranking system for the sites. It merely indicates whether there is a feature present at the site which is of known importance. The Conservation Sites identified in the First Order Survey vary considerably in size and importance.

(iv) Wildlife which have an established international conservation status in New Zealand include the terrestrial mammals, birds, reptiles and amphibians and terrestrial arthropods and molluscs. There is no established status list for fish, marine invertebrates and marine mammals. This means that the assessment of comparative site importance in this survey has an unavoidable bias towards the importance of terrestrial wildlife.

(v) Archaeological site information was presented here without comment on its comparative importance. This was necessary because:

(a) authority to assess archaeological site importance under the Historic Places Act 1980 rests with the New Zealand Historic Places Trust, for the purpose of regulating site damage.

(b) No methodology is recognised for assessing comparative importance in a similar manner applied to the other resources described here.

GLOSSARY

archaeological site	Any place in New Zealand associated with human activity which occurred more than 100 years before that time.
historic place	A place which is associated with the past. This includes archaeological sites, traditional sites, buildings, natural objects and historic areas.
holostratotype	A geological term describing the type section that has become the time definition for a New Zealand stage.
tombolo	A bar connecting an island with the mainland or with another island.
type locality	The place where a geological formation is named, and is typically displayed.
ventifact	Rock cut by wind-blown sand.

BIOLOGICAL TERMS:

endangered	Species in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included are those whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are considered to be in immediate danger of extinction.
threatened/ vulnerable	Species believed to likely to move into the endangered category in the near future if the causal factors continue operating.
regionally threatened	Where species are considered to be threatened regionally.
rare	Species with small world populations that are not at present endangered or vulnerable, but are at risk. These are usually localised within restricted geographic areas or habitats or are thinly scattered over a more extensive range.
indeterminate	This category is used for plants thought to be extinct, endangered, vulnerable or rare, but for which there is insufficient information to allow allocation to a category.

In New Zealand a category additional to those used by IUCN (International Union for the Conservation of Nature and Natural Resources) has been found useful:

local	This category includes plants not under threat but potentially threatened, and hence deserving some level of monitoring and possibly protection. Included are regional endemics, plants of potentially vulnerable habitats, and species occurring as frequent but small populations.
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endemic	A species which is confined to New Zealand and is not found elsewhere.
endemic subspecies	A subspecies or geographic race which is confined to New Zealand.
introduced	A species which has been transported to New Zealand, and helped establish by humans.

MAORI**ENGLISH**

hāngi	earth oven
hapū	section of large tribe, clan, subtribe
iwi	nation, people; tribe that traces its history back to a common ancestor
kai moana	food from the sea
kāinga	dwelling place, village
kaitiaki	guardian, keeper
Kaumātua	adult, old man or woman
kōhatu/ toka	stone, rock
mātaitai	food resources from the sea
mahinga mātaitai	the areas from which these resources are gathered
mahinga kai	sites for harvesting kai moana according to tribal customary values
mana	authority, control; influence, prestige, power; psychic force
mana whenua	customary authority exercised by a tribe in an identified area
marae	enclosed space in front of a meeting house, courtyard
mauri	life principle which is latent in all things
midden	Māori shell deposits
moana	sea
Moriori	tangata whenua of Rēkohu (Chatham Islands)
pā	fortified place
rāhui	control/ restriction (e.g. fishing control)
rūnanga	assembly/ council
taiāpure	area of coastal water set aside under the Maori Fisheries Act 1989 as a local fishery because of its special significance to an iwi or hapū, either as a source of food or for spiritual or cultural reasons
Tangaroa	god of the sea
Tangata whenua	indigenous people
tapu	sacred, forbidden (tapu consists of different levels of prohibitions)
tauranga waka	original canoe landing site
tupuna/ tipuna	ancestor/ grandparent
urupā	burial place
wāhi tapu	sacred site
waka	canoe; supra-tribal grouping
whānau	family

BAY OF PLENTY CONSERVANCY
COASTAL RESOURCES INVENTORY
STAGE ONE

SUMMARY CHAPTER

1.0 INTRODUCTION.

This first stage of the Coastal Resources Inventory (CRI) focuses on general conservation values and is designed to act as a framework or series of 'sign posts' to more detailed information available on other databases, to gaps in our information reservoir and a base on which to build later stages of the CRI.

First Order CRI information includes a brief description of the coastal zone, a summary of conservation values (natural, cultural and historic), with existing threats, human use and modification and existing protection. This information is summarised on Site Record Forms and mapped on overlays at a scale of 1:250,000.

1.1 Mission Statement.

The primary mission, developed by the CRI Task Force (Department of Conservation, Head Office) is; "to provide information for the maintenance, enhancement and restoration of the natural character and qualities of coasts and their sensitive use."

The four specific tasks developed to achieve this mission are to :

1. identify coasts with important natural, scientific, historic, cultural and spiritual values
2. identify coasts currently protected and warranting protection
3. identify coastal conservation values susceptible to existing and potential threats
4. identify human modification and use of coasts.

1.2 Methods.

Initial site recording for this Conservancy was conducted in a systematic manner. Each Ecological District within the Conservancy was divided into subunits based on geomorphological boundaries. The site recording forms for these subunits then formed the basis for selecting sites of conservation value, (see Overlay Seven).

Conservancy Field Staff initially compiled the site record forms for each of these sub-units and then information gaps were supplied by Conservancy specialists. These specialist advisors were also asked to identify significant values within their own fields of research.

Conservancy databases were an important resource for accessing updated information sources. Databases included; 'Sites of Special Wildlife Interest' (SSWI), 'Historic Places Trust' (HPT), 'Protected Natural Areas' (PNA) survey reports, 'Wetlands of Ecological and Representative Importance' (WERI) and the Bay of Plenty Conservancy Coastal Bibliography.

Databases and Specialists used were:

CATEGORY	DATABASE	SPECIALISTS
Flora	PNA, SSWI, WERI	W. Shaw (DoC) K. Owen (DoC) C. Richmond (DoC) S. Beadel (Wildlands Consultants)
Fauna	SSWI	C. Richmond (DoC) K. Owen (DoC)
Cultural	HPT	S. Smale (DoC) C. Richmond (DoC)
Historic	HPT, PNA	DoC Central Office
Landscape		S. Smale (DoC)
Recreation		C. Richmond (DoC) C. Jenkins (DoC)

2.0 JUSTIFICATION FOR SITES OF CONSERVATION VALUE (Overlay Seven).

This summary of the first stage of the Coastal Resources Inventory outlines information collected and compiled for the Bay of Plenty Conservancy coastline. Much of the data has been updated since 1987. Information has been collected for the Coastal Resources Inventory project since late 1987, Marine Protected Areas Surveys, Marine Reserve Proposals, Estuarine Management Strategies and the Update of SSWI information.

All the information listed and discussed in the Site Record Forms is based on existing conditions. No data has been documented on potential threats, uses or proposed protection of areas. At all levels the information presented is backed up by scientific data.

Within the Bay of Plenty Conservancy few Protected Natural Area Surveys have been conducted. However the entire area has been surveyed (and updated in 1989) by the Sites of Special Wildlife Interest (SSWI) program. Approximately 90 % of the Conservancy coastline has been covered in the Historic Places Trust archaeological surveys, although not necessarily using systematic techniques. The majority of this information now needs updating. Details of these surveys were not made available through the Central Office database for CRI use.

Almost the entire coastline has been covered by field checks and is fairly regularly updated by Field Centre Staff during the course of their every day work.

For natural resources, effects of human use, threats and protected areas the percentage of available data is high and regularly updated. Archaeological finds are being made frequently but this data is not readily available in all cases from the correct authorities. A Conservancy archaeologist has only recently been appointed to the Bay of Plenty Conservancy. There are large gaps in the documentation of cultural and spiritual values. For instance the islands of Karewa, Schooner, Whakaari and along Matakana beach have no documented cultural resources though they may be high. The subunits where no cultural information was available totalled approximately 10 % of the coastline. Whilst this is not a comparatively large part of the Conservancy to remain undocumented the detail and level of documentation to scientific defensibility is not as high as for other values. These gaps in information pinpoint areas for directions in the second order survey (see section 4.0). Large gaps also exist for the marine areas.

3.0 SUMMARY OF THE CONSERVATION VALUES OF THE COASTLINE.

3.1 General Description of the Area.

The Bay of Plenty Conservancy coastline extends from the north-west end of Waihi beach to the eastern end of Ohiwa Harbour (129 km of coast). Of this area 124 km is sandy and 5 km is rocky. The entire coastline is covered by our Sites of Conservation Value (ie Overlay 7).

The coastal environment of the Bay of Plenty Conservancy consists of open, low-lying plains, sand dunes, swamplands and estuaries, offshore islands and rocky shores. Much of the wetland areas, (e.g., 98 % in the Rangitaiki area), have been greatly modified by horticultural and agricultural development or residential use. Within the Conservancy are long stretches of white sand beaches; at Matakana Island, Papamoa, Pukehina, Kohiawa, Awaateatua and Ohope. Major coastal rivers are Wairoa, Kaituna, Tarawera, Rangitaiki, Whakatane and Waimana. These flow into the estuaries of Tauranga, Maketu, Little Waihi, Matata Lagoon, Whakatane and Ohiwa harbours. Within the region are nine offshore island groups, (approx. 60 km of coastal perimeter); all of which are included in the Sites of Conservation Value.

In the Bay of Plenty the high biomass producing ecosystems of estuaries and coastal wetlands are under the greatest pressure of development and intensified land use. Estuaries are the most threatened habitat type in this area.

The coastal zone is enlarged by enclosed coastal waters of the harbours and estuaries; the most prominent being Tauranga and Ohiwa.

The enclosed coastal perimeter of this Conservancy is larger than the open coastline, including the offshore islands. This is one reason harbours, estuaries and wetlands feature so strongly in the directions for Second Order CRI survey. Harbour and estuarine zones total 262.42 km², with approximately 350 km of coastal perimeter. With Tauranga being 218 km² (250.5 perimeter), Ohiwa 28 km² (59 km perimeter), Maketu 3.9 km² (8.8 km perimeter), Little Waihi 2.4 km² (9.5 km perimeter) and others combined 5.5 km² (25.5 km perimeter).

Historically the region has a long history of human settlement. Maori occupation probably began around 1125 A.D. and in the early 1800's European settlement greatly increased the extent and degree of habitat modification. This is particularly evident in the changes to rivers made in the early 1900's. The Kaituna, Tarawera and Rangitaiki Rivers were straightened, stopbanked and given new outlets to coasts as the draining of plains for farming developed.

The coastal environment is still subject to human exploitation. Nearly half the population of the Bay of Plenty live in the coastal zone. This puts pressure on the coast from urban and industrial development, reclamations, storm water discharge and recreational activities. Marginal wetlands (262 km²) are now only a small fraction (2%) of their former extent because of flood control, reclamations and urban development. The sensitive coastal zone is vulnerable to flooding and sand dune blowouts because of human interference in this naturally dynamic environment.

Wildlife is consequently severely affected by loss of habitat, the introduction of predators, as well as human uses. On the offshore islands in this Conservancy 60% of the total area remains unmodified and predators have been eradicated (with 8% of the rest now protected against further degradation) ensuring habitats are being maintained for preserving important coastal species whose mainland habitat is severely threatened. Along the coastal zone esplanade reserves provide for access but do not specifically protect ecological values.

The endangered and threatened species in the Bay of Plenty are concentrated in estuarine zones where the greatest diversity of bird species is found. Estuaries in this region are also vital as fish spawning areas and nursery habitats.

3.2 Specific Outlines of Outstanding Values along the Bay of Plenty Coastline.

Of the twenty four sites of conservation value thirteen are sites of high to outstanding SSWI ranking, (91% of the total area of sites). Nine of these are already protected by total or partial status as wildlife refuges. This high concentration of outstanding natural values means that these thirteen sites are nationally, or internationally important.

Habitats for bird breeding and roosting areas are generally provided by protective wetland vegetation. Though along the sandy foredunes at Otamarakau (Site 04/0010) and Matakana Beach (Site 04/0020) are nesting habitats for NZ dotterel; the highest concentrations of the national breeding population. Endangered and threatened bird species found in the wetlands and on offshore islands include; grey faced petrel (*Pterodroma macroptera*), dotterels (*Charadrius* spp.), oystercatcher (*Haematopus unicolor*), caspian tern (*Hydroprogne caspia*), rail (*Rallus philippensis*), crake (*Porzana tabuensis*), NZ fernbird (*Bowdleria punctata*), reef heron (*Egretta sacra*), white heron (*Egretta alba*), brown teal (*Anas aucklandia*) and the Australasian bittern (*Botaurus stellaris*). Many of these areas also provide feeding habitats for international migrant waders, including eastern bartail godwit (*Limosa lapodica*), sandpiper (*Tringa hypoleucos*), red necked stint (*Calidris ruficollis*), golden plover (*Pluvialis fulva*)

The estuarine zones in this Conservancy, which make up a significant proportion of the total length of the Bay of Plenty coast, provide highly productive habitats for fish spawning and nursery areas. Fish species which require wetland habitats in their early lifecycle include; mullet, flounder, kahawai and whitebait (*Galaxias* spp.) Shellfish species such as mussel, pipi and cockle are important not only as food sources for fish such as snapper but as culturally traditional resources for local hapu.

Many of the offshore islands provide special feeding habitats for pelagic fish and nursery areas for other species. The deep, clear water with its unusual reef and rock formations of islands such as Tuhua (site 04/0022) and Whakaari (site 04/0003) is vital for boosting national fish stocks and for regional recreational users. At Tuhua are many examples of unusual marine flora and fauna such as the Spanish lobster population and areas of black coral.

All these sites have examples of rare and nationally threatened plants. On Karewa island (site 04/0021) is the rare plant *Pisonia bruneriana* and in the Matakana wetlands (site 04/0023) are two rare fern species. Pingao (a threatened native sand binder) is found all along the Bay of Plenty sand-dunes and at Matakana Beach (site 04/0020) there is a rare combination of pingao and native *spinifex*. The Ohiwa harbour (site 04/0001) is nationally important for being the southern most extremity of mangroves.

Nationally threatened and endangered animals found on the offshore islands make them areas of outstanding value. On the Rurima Islands (site 04/0008) and Karewa Island (site 04/0021) are large populations of the nationally threatened tuatara. On Motiti Island (site 04/0016) is the threatened *D'uvaucel's* gecko.

Many of these selected sites are not only known for their natural values but are also renowned for their varied and unusual land and seascapes and associated aesthetic values. Matata lagoon (site 04/0009) is an area recognised by botanists as a unique example of a brackish lagoon with a wide range of vegetation. The Ohiwa wetlands (site 04/0001) too have a wide vegetative range; some areas without drainage making them special for being wetlands with little or no interference. Whakaari Island (site 04/0003) is noted for its unusual landforms and geological features. Many of the offshore islands mentioned are features of Bay of Plenty touristic ventures, such as game fishing, camping and diving tours.

Many of the twenty four sites noted are also salient for having a high degree of naturalness. Ohiwa Beach, Ohope sandspit (site 04/0002) and the Matata lagoon (site 04/0009) are often visited by national and international tourists simply for their scenic value.

These same areas though are also monitored for scientific purposes. Otamarakau Beach (site 04/0010) is studied for its erosion and accretion trends. Ohiwa, Ohope (site 04/0002) and Maketu (site 04/0013) are regularly monitored by Central Government and University agencies to record erosion trends and effects of sand spit blowouts on sedimentation and shore erosion. These areas are also now monitored for the possible effects of sea level rise. Maketu estuary is also the subject of a study on saltmarsh restoration. Motiti (site 04/0016) and Whakaari (site 04/0003) islands are both closely monitored for their geological and seismological values.

Settlement in the Bay of Plenty region has always been high. Maori cultural and historical resources in this Conservancy are comparatively high on a national scale. The Bay of Plenty coastline provided a rich resource in terms of food availability and secondary resources such as the obsidian found at Tuhua (site 04/0022). Cultural resources though have not though been documented to the same level as other values. It is vital that the comparative lack of cultural information does not lessen its importance within this area. European settlement has also been intensive and the coastal region is still the most densely settled in the Conservancy. Intensive settlement and easy access to recreational amenities has resulted in a high degree of domestic tourism in this area and subsequent stress on some of the significant resources of the coast.

3.3 List of Sites According to Their Order of Importance.

Sites of significant conservation value have been ranked on the site record forms on a scale ranging from; international, national, regional, and local to unknown importance. They are listed here in that order.

3.3.1 Sites of International Importance

Two sites are considered to be of International importance, both are islands. Their area totals 8.3% of the total sites.

0003 Whakaari and the Volkner Rocks. Ranks as an 'A' in the Geopreservation inventory. The area is also important for its geological features and unusual landforms. (Geopreservation Inventory, Richmond, pers. comm.)

0007 Motuhora (Whale Island). The island is significant for its threatened bird species and unique volcanic landforms. Its subtidal geothermic features attract international interest. (Bell, 1986, Wright and Beaver, 1984, Richmond, pers. comm.)

3.3.2 Sites of National Importance

Fourteen sites are considered to have national importance. Their areas total 67 % of the open coastal perimeter and 90 % of the enclosed coastal perimeter and 60.3 % of the total sites.

0001 Ohiwa Harbour. The site of the southern most naturally occurring mangroves as well as ranking as an outstanding SSWI site for migrant waders (Rasch, 1989). The area is rich in Maori and historic values and Pataua Island is a scientific reserve. (Daniels, 1984).

0002 Ohope Spit - Ohiwa Spit. Port Ohope is a Wildlife Refuge (a breeding and roosting site for international and national birds) (Rasch, 1989). Vegetation types in the area, such as the pohutukawa lined cliffs and pingao along the beach, also make the site nationally important. (Owen and Shaw pers. comm.). Scientific investigation into sea level rise and spit erosion trends is also important.

0009 Matata Lagoon. The lagoon is significant for its bird populations, including endangered and threatened species (Bell, 1986; Rasch, 1989).

0010 Matata beach - Otamarakau beach. The beach front is important for its breeding population of NZ dotterel, banded dotterel and variable oystercatcher. (Bell, 1986; Rasch, 1989)

0011 Pukehina beach - Rogers beach. The beach front in this site is important as a relatively unmodified area with high aesthetic values. The beach also has breeding populations of NZ dotterel and variable oystercatcher. (Rasch, 1989)

0012 Newdick's beach - Little Waihi estuary. The estuary is significant for its variety of freshwater wetlands and saltmarsh and also for the bird habitats they support, (Rasch, 1989; Beadel, 1989). The area is also notable for its pipi and mussel beds, (Richmond, pers. comm.)

0013 **Maketu estuary, Te Tumu estuary and Okurei Point.** Both estuaries are important for their range of threatened and endangered bird life and also for remnant freshwater wetlands which have high botanical conservation values for birds and plants (including rare ferns), (Richmond and Forbes, 1990, Rasch, 1989, Beadel, 1989). As the traditional landing place of the Arawa canoe the area has rich cultural and spiritual associations.

0014 **Motunau (Plate Island).** The island is important as a predator free wildlife sanctuary, which includes a habitat for tuatara, native lizards and threatened birds. (Rasch, 1989).

0017 **Mt. Maunganui, Mt. Maunganui beach - Te Tumu beach.** The Mt. Maunganui area is a focal recreation point in the Bay of Plenty and is highly regarded for its scenic value. Along the beach front the occurrence of pingao and coastal pohutukawa forest make the site important, (Owen, Shaw pers. comm.)

0019 **Tauranga Harbour.** This large harbour and wetland zone is important for its wide range of uses. It is an important commercial port, has a high level of recreational use and ranks as an outstanding SSWI for its habitat range and threatened bird populations (Rasch, 1989).

0020 **Matakana Island.** This stretch of beach is important as a threatened species habitat and for extensive areas of pingao on the foredunes, (Rasch, 1989), (Beadel, 1989), (Owen pers. obs.).

0021 **Karewa Island.** The island is important as a predator free wildlife sanctuary and tuatara habitat. The area is also noted for its uncommon seabirds and the rare plant *Pisonia brunoniana*. (Rasch, 1989; Beadel, 1989; Cree, in prep., Given, 1990).

0022 **Tuhua (Mayor Island).** This large island is noted for its threatened wildlife and fauna, unique landforms and geology, tourism and recreation potential and a nationally rare vegetation association with its pohutukawa forests, (Shaw, 1988; Smale, 1989). The island is also significant for its unusual marine habitats and warm ocean currents, (Jones and Garrick, 1990).

0023 **Northern Matakana Wetlands.** The wetlands are important for their nationally threatened bird species and rare fern species, (Rasch, 1989; Beadel, 1989).

3.3.3 Sites of Regional Importance.

Six sites are considered to be regionally important. This is 22.9 % of the total sites and includes 35 % of the open coastal perimeter and 5.5 % of the enclosed coastal perimeter.

0005 **Whakatane estuary.** The estuary is notable for its threatened birds (Rasch, 1989) and waahi tapu sites (Whakatane Marina Environmental Impact Assessment Report, 1988).

0006 **Tarawera River estuary, Rangitaiki River estuary and Piripai beach.** This area is primarily noted for the Thornton Wildlife Management Reserve and NZ dotterel numbers along the beach fronts (Richmond, pers. comm.; Rasch, 1989). Other important features are its kanuka forest (Shaw, pers. comm.) and the Rangitaiki beach formations.

0008 **Rurima Islands.** This island group is important for its threatened tuatara and vegetation species, (Shaw, 1988; Bell, 1986).

0016 **Motiti Island.** This area is notable for the regionally threatened Duvaucels gecko, (Bell, 1986)

0018 **Motuotau (Rabbit Island).** This small island is regionally important as a Bay of Plenty recreation resource and also for its scenic reserve status.

0024 **Waihi beach - Bowentown Heads.** The beach area has nationally rare vegetation associations with its pohutukawa forest (Shaw pers. comm.) and is also important for the unique geological features at Bowentown.

3.3.4 Sites of Local Importance

Two small sites are considered to be of local importance and therefore comprise 8.3 % of the total sites, and only 1.8 % of the total coastal perimeter.

0004 **Kohi Point.** The rocky point has important local landscape values (Rasch, 1989) and is culturally important for its historic Maori settlement and waahi tapu.

0015 **Motuhaku (Schooner Rocks).** The rocks are important as a seabird roost (Owen, pers. comm.) and for their potential as a marine reserve.

4.0 **SPECIFIC COASTAL POLICY ISSUES RELATING TO THE BAY OF PLENTY COAST**

The main issues of concern to the Department of Conservation in the Bay of Plenty Coast include:

- modification to harbours and estuaries
- modification to natural dune systems
- resource depletion around offshore islands

4.1 Modification to Harbours and Estuaries

The harbours and estuaries in the Western Bay of Plenty are all shallow. They have large expanses of intertidal mudflats and extensive areas of saltmarsh and wetlands around their margins. Their natural values are particularly high being both biologically very productive as well as providing a refuge for many species of rare and endangered birds and fish.

The main harbours and estuaries are subject to increasing modification of their margins from land development. Already, significant areas of wetlands and saltmarsh have been reclaimed for pastoral farming. Other areas have been impacted by residential and horticultural development. The value of these wetlands for wildlife purposes is considerable, particularly for breeding purposes for a wide range of rare and endangered bird species.

The wetlands and saltmarsh also provide an important buffer between the intertidal habitats of the harbour and adjacent land use by trapping sediments and improving the water quality of land runoff.

If the value of the remaining saltmarsh and wetlands are to be retained for wildlife purposes and as a buffer from adjacent land use, better provision for their protection will be needed to minimise the impact from unnecessary developments.

Water quality in the harbours and estuaries has deteriorated. Stronger controls on land use practices and discharges will be needed if the present standards are to be retained or improved.

4.2 Modification to Natural Dune Systems

Residential development has occurred along a significant portion of the Western Bay of Plenty coastline. In many areas these have been built too close to the sea and are likely to suffer from flooding and undermining during periods of significant erosion.

The area of dunes that have not yet been developed provide an important refuge for wildlife. There may, however, be pressure in the future to develop these areas for residential sub-division. While some of these areas are protected by reserve designation, the remaining areas should have sufficient areas set aside to provide an adequate buffer to avoid any risk from flooding or erosion.

4.3 Resource Depletion around Offshore Islands and Reefs

The offshore islands and reefs all have significant conservation value. The main threats are from the introduction of predators and overfishing. Establishment of adequate protection mechanisms, such as marine reserves will resolve some of the problem of overfishing. Fisheries management, however, is a Ministry of Agriculture and Fisheries responsibility. There is little opportunity to resolve resource depletion problems through coastal policy.

5.0 DIRECTIONS FOR SECOND ORDER SURVEY

There are significant gaps in the type, range and quality of information. The main gaps are:

1. inadequate detailed information on the quality and values of estuarine margins and habitats in the main harbours and estuaries;
2. inadequate general and detailed information on marine natural values including threats to habitats and fish species from overfishing; and
3. inadequate general and detailed information on cultural and historic values for most of the Bay of Plenty, where these are expected to be high.

Because the main pressure for development is focused around the harbours and estuaries in the Bay of Plenty and these areas are known to have significant conservation value, it is proposed that the second stage of CRI will focus on these areas.

The conservancy is keen to complete a field survey of estuarine margins of the Tauranga Harbour, Little Waihi Estuary and Ohiwa Harbour to identify, describe and evaluate important wetlands, wildlife habitats, modifications and threats. Compilation of data and analysis of the value and vulnerability of intertidal estuarine environments in these areas will also be carried out. Obtaining this detailed information on conservation values in these areas will allow the Department to negotiate adequate provision for their conservation management in the future management of these areas.

6.0 ARCHAEOLOGICAL SUMMARY

Appendix 1 is a general summary of archaeological sites in the Bay of Plenty Conservancy as supplied by the Central Office of the Department of Conservation. At the time of publishing this first order inventory more detailed information was not made available.

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7.2 Persons Cited in the Text

- C. Richmond** **Manager, Protection Division, Bay of Plenty Conservancy, Department of Conservation.**
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Sites of Conservation Value

BAY OF PLENTY CONSERVANCY
COASTAL RESOURCES INVENTORY
STAGE ONE.

0001	Ohiwa Harbour (national)
0002	Ohope Spit - Ohiwa spit (national)
0003	Whakaari - Volkner Rocks (international)
0004	Kohi Point (local)
0005	Whakatane estuary (regional)
0006	Tarawera river estuary - Rangitaiki river estuary - Piripai beach (regional)
0007	Motuhora (international)
0008	Rurima islands (regional)
0009	Matata lagoon (national)
0010	Matata beach - Otamarakau beach (national)
0011	Pukehina beach - Rogers beach (national)
0012	Newdick's beach - Little Waihi estuary (national)
0013	Maketu estuary, Te Tumu estuary, Okurei point (national)
0014	Motunau (national)
0015	Motuhaku (local)
0016	Motiti (regional)
0017	Mt. Maunganui, Mt. Maunganui beach - Te Tumu beach (national)
0018	Motuotau (regional)
0019	Tauranga harbour (national)
0020	Matakana Island (national)
0021	Karewa (national)
0022	Tuhua (national)
0023	Northern Matakana wetlands (national)
0024	Waihi beach - Bowentown heads (regional)

Site Record Forms

Site Name/s: Ohiwa Harbour	Site No: CRI 04/0001
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: W15	Grid Ref: E: 50720 N: 40470 Date: 07/ 08/90

Brief Description of Site: The harbour is 28 km² (59 km coastal perimeter). It is shallow and contains intertidal seagrass (*Zostera* spp.) beds, saltmarshes, mangroves (*Avicennia marina*) and mudflats, protected by a fragile sand spit. Within the inner harbour are six small groups of islands considered to be remnant headlands (ca. 4600 BC) (Daniels, 1984). The immediate harbour margins are largely protected by a 20 metre esplanade reserve status though historically the margins are altered by stopbanks and drainage ditches, (L. Daniels, 1984). Extensive *Zostera* beds are throughout the estuary but around Motuotu Island, Pataua Island and Kutere Inlet are extensive mangrove communities. The latter area is significant for being the southern national extremity for this species (Crisp et al, 1990). These areas provide an important habitat for birds and juvenile fish. The southern extremity (Kutarere Inlet) is largely modified by development as is the western sector with roading, causeways and pastoral development. On Uretara Island there is regenerating coastal forest.

Conservation Values: Natural: a,b,c,d,f,g,h Cultural: a,b,c,d,e Historic: a,b

Comment: NATURAL: The intertidal wetlands of the Wainui stream catchment are unmodified and have a high degree of naturalness (Smale pers. comm.). Pataua Island is also in this category for having no drainage of its wetlands and is nationally important for its wide range of vegetation, from intertidal to coastal forest. The island is designated a scientific reserve. The harbour is classed as an outstanding Site of Special Wildlife Interest (SSWI) (Rasch, 1989) because of its importance for breeding nationally threatened NZ dotterel (*Charadrius obscurus*) and banded dotterel (*C. bicinctus*), nationally rare variable oystercatcher (*Haematopus unicolor*), and the presence of nationally threatened caspian tern (*Hydroprogne caspia*) and banded rail (*Rallus philippensis*), regionally threatened North Island fernbird (*Bowdleria punctata*) (Bell, 1986) and a range of international and national migrant waders. The southern spit on Ohakana Island is important as a secondary high tide roost for many of these birds (Owen pers. comm.). In the Ohope area near Ohakana Is. the pohutukawa (*Metrosideros excelsa*) are representative of coastal vegetation in the region and are considered to be of regional importance (Shaw pers. comm.). The rushes *Juncus* & *Leptocarpus* and kanuka (*Kunzea ericoides*) /rewarewa (*Knightia excelsa*) communities in the Nukuhou estuary and on Uretara Island are considered to be representative within this region. The southern sector of the harbour is also recognised as being nationally important for the southern most naturally occurring mangrove community at Kutarere Inlet (Crisp et al, 1990)

CULTURAL: Traditional Maori use of the Ohiwa region mainly involves food gathering such as the collection of cockles (*Chione stutchburvi*), pipi (*Paphies australis*), mussel (*Atrina zelandica*), mullet (*Aldrichetta forsteri*), eel (*Anguilla* spp.), and whitebait (*Galaxias* spp.). In addition to this Motuotu Island is a traditional place for the preparation of hui food and is a tapu area. The harbour is culturally very rich with high aesthetic values of land and seascapes (Smale pers. comm.). In particular Ohiwa north and Ohope spit are areas especially valued by visitors. The Island of Hokiangia is a Maori-owned sector and is presently an Outdoor Education Centre for Whakatohea youth (Ngati awa tribal area). The island also has great spiritual significance for being the place where Te Kooti was killed. Pataua Island was a battle site and canoe landing area and Ohakana Island was a battle site between Ngatiawa and Whakatohea.

HISTORIC: Archaeologically the Ohiwa area is rich in history. Many recorded pa, urupa, middens and cultivation sites have been recorded. Four pa exist in the Wainui Inlet, two on Motuotu Island, one on Hokiangia Island one pa in the Kutarere Inlet two pa on Uretara Island, three pa on Nukuhou Island, which used to be developed for agriculture but has since reverted back to wetland, and four pa, numerous pits and terraces on Ohakana Island (Historic Places Trust Opotiki County Inventory 1983). There is an historic wharf site in Kutarere Inlet and in the deep entrance channel to Ohiwa spit is the site of an old hotel which used to be on the spit prior to severe natural cyclical erosion (Richmond pers. comm.).

Site Importance: International National Regional Local Unknown

Comment: The harbour is important for having the southern most naturally occurring mangroves in NZ and for an outstanding SSWI habitat for migrant waders (Rasch, 1989). Ohiwa is notable too for its rich Maori history and cultural values (Daniels, 1984). Pataua Island is significant for its wide range of coastal vegetation, for which it is designated a scientific reserve.

Existing Threats: a,b,c,d,g,i,j,k,l

Type & Comment: Some erosion occurs on Ohakana Island. Flooding poses a threat to development in the Munro subdivision. Siltation occurs in Kutarere inlet, in the oxidation pond inlet. *Spartina* spp. has invaded the Kutarere inlet competing with native rushes (*Juncus* spp. and *Leptocarpus* spp.) and pampas (*Cortaderia selloana*) is well established on the Ohiwa and Ohope spits. Cattle graze the native saltmarsh and mangroves in all southern inlets and all the estuarine islands have rats. Set netting and scallop dredging in the harbour entrance are said by locals to rapidly deplete local fish populations. The Opotiki District Council use harbour margins for dumping of spoil causing infilling of the estuarine zone. recreational use of the area has caused severe localised damage to the spits and to the margins of mudflats (Paine, pers. comm). Coastal subdivision on Ohope Spit has resulted in loss of saltmarsh and modification of marginal vegetation, as is also the case for Kutarere and Tern Island (Richmond, pers. comm.).

Human Modification and Human Use: a,b,c,d,e,h,i,j

Land development in the northern harbour centres around agriculture and horticulture with some forestry in the Wainui School Inlet area. The Ohope and Ohiwa areas have high levels of residential development, including a golf course on Ohope beach. Minor reclamations have been carried out in the Wainui School Inlet area, Kutarere Inlet, Tern Island and Ohakana Island (Owen pers. comm.). In the latter area the reclamations were for oxidation ponds and storm water outfalls. In all these areas stopbanking, causeways and roading have also been constructed. In the Port Ohope area there is a commercial wharf, with boat ramps and moorings scattered throughout the harbour. Shorebased recreation is intensive and covers a wide range of active and passive activities including, camping, picnicing, land sailing, horse riding, bird watching, fishing and beach racing and shooting (Owen pers. comm.). Water based recreation is also intensive and includes swimming, shellfish gathering, water skiing, jet skiing, diving, fishing, and wind surfing. Traditional Maori use of the area includes fishing for eel (*Anguilla* spp.) and whitebait (*Galaxias* spp.), gathering shellfish and flounder (*Rhombosolea* spp.) netting (Richmond pers. comm.).

Existing Protection: a,c,d,f

Type & Comment: Within the Opotiki District Council scheme several areas in the harbour have been zoned Rural D which contains provision for wetland protection. These are; Tern Island (also a wildlife reserve), Pataua Island (also a scientific reserve) and Paparoa Pa (also protected by HPT designation). Tauwhare Pa is designated a scenic reserve and Motuotu Island is a nature reserve. Several areas are zoned for wetland protection in the Opotiki District Scheme. These include Waitane Embayment (the Whitiwhiti Point area being under Q.E.II covenant), Uretara Island, Motuare Point and Kuatere Inlet. The saltmarsh area in the Nukuhou estuary is Crown Stewardship land and Hokianga Island is reserved under S.439 of the Maori Affairs Act as a Maori Reserve.

Availability of Information:

Natural 1 2 3
Cultural 1 2 3
Historic 1 2 3
Threats 1 2 3
Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: At the time of printing the first stage of the CRI no further details on historic values were made available from the NZHPT. For further information contact DoC Central Office.

Sources of Information:

Natural 1 2 3 4 5 6 7
Cultural 1 2 3 4 5 6 7
Historic 1 2 3 4 5 6 7
Threats 1 2 3 4 5 6 7
Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis.
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

References:

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Contacts:

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S.Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.
W. Shaw: Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.
D.Paine: Conservation Officer, Whakatane Field Centre, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI. Site no. 229 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory: Opotiki County March 1983
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Ohope Beach - Ohiwa Spit	Site No: CRI 04/0002
Recorders Name: Susan Forbes	Conservancy: Bay of Plenty
Map No: W15	Grid Ref: E: 50745 N: 40485
	Date: 1/ 08/90

Brief Description of Site: Ohope Beach is an exposed sandy beach stretching 9 km from West End Ohope to Port Ohope spit. The beach is heavily modified with the adjacent land along its entire length under residential subdivision. The two spits, Port Ohope and Ohiwa, have been formed either side of the entrance to Ohiwa Harbour. Port Ohope Spit (3km long) extends westward from Ohiwa Harbour entrance. The eastern section of the spit has a recreation reserve status within which are established the Englands Motorcamp and Ohope Golf Club (under lease from the Department of Conservation). At the eastern end of the sandspit is the Port Ohope Wildlife Refuge; an internationally significant high tide roost for migratory and local wading birds and a breeding site for white-fronted terns (*Sterna striata*), threatened NZ dotterel (*Charadrius obscurus*) and banded dotterel (*C. bicinctus*), rare variable oystercatcher (*Haematopus unicolor*) and gulls (Rasch 1989, Bell 1986). The Ohiwa spit (1.2 km long) is the remains of a once extensive sand spit which was developed as a residential subdivision during the 1970's. Severe erosion washed many houses into the sea, even though a sea wall structure was built as protection. The spit continues to be very mobile (Richmond pers. comm.).

Conservation Values: Natural: a,b,c,d,e,f,g,h Cultural: a,b,c,e. Historic: a,b

Comment: NATURAL: The Ohope Beach area is highly modified by peri-urban development. The dunes on the eastern side of the beach are vulnerable to disturbance and modification by adjacent landowners. The coastal cliff pohutukawa community on Ohope Spit prograding into the hinterland pohutukawa (*Metrosideros excelsa*) predominant forest is representative of this type of coastal vegetation community and the pohutukawa lined cliffs are considered to be nationally important (Shaw, 1988). Port Ohope spit has some unmodified areas and is considered to be highly natural, particularly the relatively unvegetated tip where pingao (*Desmoschoenus spiralis*) (Given et al, 1987) is present (Owen pers. comm.). The area is classed as part of an outstanding Site of Special Wildlife Interest (SSWI) (Rasch, 1989) and includes breeding populations of the threatened birds; NZ dotterel, banded dotterel and caspian tern (*Hydroprogne caspia*) and the rare variable oystercatcher. The spit is also the main high tide roost for a large number of migrant waders. These are monitored regularly by the Ornithological Society. Whilst it is the best example of a barrier spit in the region, the tip is vulnerable to erosion. The DSIR and Universities monitor erosion cycles as well as dune swale and blowout systems which are unusual landforms.

Ohiwa spit, except for the tip, is extensively modified by urban development and has also been subject to severe erosion. Remnants of failed erosion protection works remain on the spit. The spit contains a pair of breeding NZ dotterel and several pingao plants (Owen pers. obs.). It is a secondary roost for migrant and local wading birds using Ohiwa Harbour. The spit maybe considered representative of a 'roaming' spit. These erosion trends have been the subject of much scientific investigation by Universities and DSIR (Richmond, pers. comm.).

CULTURAL: Ohope beach marks a boundary (currently under dispute) between the two tribes Ngatiawa and Whakatuia. Maori values attached to the two spits are unknown to the Department of Conservation but both areas are highly valued for landscape and aesthetic values (Smale pers. comm.). Both areas are also studied by scientific organisations for erosion trends and also by local school groups.

HISTORIC: Ohope beach has numerous recorded middens, pa and urupa sites according to the New Zealand Historic Places Trust (1983) (NZHPT). Port Ohope spit is important as an historic ferry terminal for the main route between Ohiwa Harbour and Opotiki. Middens have also been recorded here. Historic values at Ohiwa spit are presently unknown to the Department. The deep entrance channel covers the site of the original hotel which used to be on the spit prior to dramatic erosion. No sites are documented on the 1983 Opotiki NZHPT Inventory on the spits.

Site Importance:	International	<u>National</u>	Regional	Local	Unknown
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Comment: The area is nationally significant for the Port Ohope Wildlife Refuge which provides a breeding and roosting site for international, national and local migrant waders, including rare species (Rasch, 1989). National values include the pohutukawa lined cliffs, spit erosion trends, unusual landforms and occurrence of pingao (Owen pers. comm.) Locally the area is particularly notable for its aesthetic values (Smale pers. comm.).

Existing Threats: a,c,d,e,f,g,i,j,k,l.
Type & Comment: Ohope beach is prone to cyclical erosion. Dune vegetation has intrusive weed species such as pampas (*Cortaderia* spp). Localised dumping of domestic and garden refuse occurs on the dunes. Offshore waters are subject to localised pollution from the sewage outfall and plastic garbage on the beach is prevalent. Off-road vehicles are damaging the beach and access areas. A subdivision at the western end of the beach has resulted in the loss of the 'Crown chain'. There have been reports from locals of over-fishing in the area but little information is available on this. The two spits are also prone to severe erosion. At Ohiwa this has resulted in the loss of a number of residential houses. Pampas grass invasion is extensive as is the intrusion of cats and rabbits. At Port Ohope spit off-road vehicle use disturbs wildlife habitats. Cyclical overharvesting of mussel beds is also said to be occurring (Richmond pers. comm.). At Ohiwa spit shore stabilization works have not been successful and their remains scar natural scenic values (Richmond pers. comm.). Some minor unauthorized sand winning occurs on the spit (Owen pers. comm.).

Human Modification and Human Use: a,e,h,i,j

Extensive residential development occurs behind the Ohope Beach Camping Grounds and local parks are subsidiary uses. A major sewage outfall is offshore as well as several small stormwater outfalls. Recreation on the open beach is extensive and includes swimming, surfing, walking, picnicing, land yachting, horse riding, beach racing, windsurfing shellfish gathering and fishing. Most of Port Ohope spit has been redeveloped as a golf course. Car parking and picnic sites are also common. The area also contains a large public boat ramp. Recreation within the harbour includes fishing, swimming, diving, skiing, shellfish harvesting, bird watching, diving, jet skiing and windsurfing. Residential development on Ohiwa spit is extensive. Recreational pursuits are the same as for Ohope spit and traditional Maori use for all areas involves shellfish harvesting (Ngati awa and Whakatapu tribes).

Existing Protection: a,c

Type & Comment: Ohope Beach and Ohiwa Spit both have esplanade and recreation reserve status. In view of the high natural values attached to the area and the high degree of modification and threats this protection is clearly inadequate. Port Ohope Spit is a recreation reserve with a Wildlife Refuge established on its tip.

Availability of Information:

Natural 1 2 3
Cultural 1 2 3
Historic 1 2 3
Threats 1 2 3
Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: More thorough research is needed on the effects of the threats listed here and also on the cultural values of the area.

Sources of Information:

Natural 1 2 3 4 5 6 7
Cultural 1 2 3 4 5 6 7
Historic 1 2 3 4 5 6 7
Threats 1 2 3 4 5 6 7
Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:**Contacts:**

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C.Richmond; Protection Division Manager, Bay of Plenty Conservancy, DoC.
W.Shaw; Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.
S.Smale; Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.

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Recorded on Existing Databases:

1. WERI
2. SSWI Included as part of Ohiwa Harbour Site no. 229 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory Opotiki County March 1983
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Whakaari (White Island) & Volkner Rocks Site No: CRI 04/0003

Recorders Name: Susan Forbes

Conservancy: Bay of Plenty

Map No: W13, W14

Grid Ref: E: 72800 N: 94005 Date: 07/ 08/90

Brief Description of Site: Whakaari is an active volcano (approximately 375 ha.) lying 50km from the Whakatane Heads at the end of a zone of volcanic activity which extends for 150 km NE from Mt. Ruapehu in the central North Island. The Volkner Rocks 5 km to the north west are remnants of an older volcanic cone at Whakaari, witness to its former larger size. These rocks are Crown land designated military reserve for airforce target practice. The rocks are a collection of small stacks with sparse vegetation (Shaw pers. comm.) Whakaari has had a history of habitation, industry and eruptions and now supports an area of coastal forest vegetation, Three gannet colonies and some tourism based on volcanism, fishing and diving (Richmond pers. comm.). The waters around the island are rich and relatively undisturbed. The island has steep, harbourless shores, and clear warm water supporting flora and fauna similar to the Poor Knights Islands (Richmond pers. comm.).

Conservation Values:

Natural: a,b,c,d,e,f,g,h Cultural: a,b,c,d,e

Historic: a

Comment: NATURAL: The Volkner Rocks are modified only by airforce activity and there is a low level of exploitation of marine life. The rare endemic coastal herb Lepidium oleraceum has been found on the rocks (Beadel, 1988) and is listed as vulnerable (Given et al, 1987). The rocks are one of three breeding areas recorded in New Zealand for grey ternlet (Procelsterna cerulea albivitta) (Kinsky, 1980). In November there is usually a high density of packhorse crayfish (Jasus verreauxi) around the rocks (Richmond pers. comm.).

Whakaari is a highly natural volcanic island. It has a low plant species diversity (8 spp.) and is classified as moderate to high Site of Special Wildlife Interest (SSWI) (Rasch, 1989). The island contains a large Australasian Gannet (Sula bassana serrata) population and is used by breeding grey-faced petrel (Pterodroma macroptera gouldi) and northern blue penguin (Eudyptula minor iredalei). The species and communities on the island are vulnerable to volcanic activity. The island is an unusual landform and has a ranking of A in the geopreservation inventory. The island has been the focus of scientific study by the Offshore Islands Research Group (Wright and Beaver, 1986). The island also marks the eastern limit of the East Auckland current and has an unusual reef and boulder system between 10 to 25 metres below sea level with a high density of featherstars in the spaces between the boulders (Walls, pers. comm.)

CULTURAL: Whakaari has high traditional values for fishing and bird (gannet and petrel) harvesting. A strong Maori tradition relating to the origin of Whakaari also exists. No further details concerning cultural or historic values were available at the time of printing. The aesthetic, landscape and seascape values of the island are also rated highly (Smale pers. comm.). Educational and scientific research is a prominent aspect of the island. Much of this concentrates on the geological and seismological features.

HISTORIC: The trader Phillip Tapsell acquired the island in 1868 and it changed hands regularly with small scale sulphur extraction until 1911. An old sulphur mining site and factory are on the island, associated with these is an old wharf (Parham, 1973).

Site Importance: International National Regional Local Unknown

Comment: The island is regarded as having international significance for its geological features and unusual landforms (Wright and Beaver, 1986) Wildlife values here are of national significance (Owen pers. comm. and K. Walls pers. comm.). The island also ranks as 'A' in the Geopreservation Inventory.

Existing Threats: i,j,m

Type & Comment: Around the Volkner rocks some threat exists to marine life from spear and line fishing. Recent DoC surveys have shown an apparent decline in the reef fish populations (Richmond pers. comm.) Continuing use of the area for airforce bombing targets poses a debatable threat. Use of non-selective fishing methods around the island are resulting in the over-exploitation of fish stocks. The renowned large schools of big kingfish and hump headed trevally are now reported as significantly depleted. An increasing litter problem is resulting from plastic pollution. The natural threat of volcanic activity is always posed for the islands flora and fauna.

Human Modification and Human Use: h,i,j,k

Whakaari island is no longer modified by habitation. Limited walking and fossicking are the main types of shore based recreation derived from helicopter based tourism but scientific visitations to the island are also common. Fishing, SCUBA and sailing are common water based activities (Owen pers. comm.). Traditional Maori use included bird harvesting and fishing. At the Volkner Rocks SCUBA diving and fishing are common (Owen pers. comm.). The Volkner Rocks area though is mostly used by the airforce for bombing practice and the seabed is littered with unexploded shells and fragments of others (Richmond pers. comm.).

Existing Protection: f

Type & Comment: Whakaari is a private Scenic Reserve owned by the Buttler family. There is no formal protection for the Volkner Rocks, but the existing of the bombing zone tends to reduce some boating and fishing impacts.

Availability of Information:

Natural 1 2 3
Cultural 1 2 3
Historic 1 2 3
Threats 1 2 3
Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: The island has extremely important geological features and is therefore the subject of detailed scientific studies. Maori settlement or use of the island has received little description but the history after 1868 is well described by Parham, W.T. 1973.

Sources of Information:

Natural 1 2 3 4 5 6 7
Cultural 1 2 3 4 5 6 7
Historic 1 2 3 4 5 6 7
Threats 1 2 3 4 5 6 7
Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis.
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:**Contacts:**

K. Owen; Senior Conservation Officer, Bay of Plenty Conservancy, Department of Conservation (DoC)
C. Richmond; Protection Division Manager, Bay of Plenty Conservancy, DoC.
W. Shaw; Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.
K. Walls; Conservation Manager, Central Office, DoC.

References:

Given, D.R. et al (1987) Threatened and Local Plants of New Zealand: A Revised Checklist, Botany Division Report, DSIR, ChCh, 17pp.
Rasch, G. 1989 Wildlife and Wildlife Habitat in the Bay of Plenty Region. Regional Report series 11, DoC.
Wright, A.E. and Beever, R.E. (1986) eds. The Offshore Islands of Northern New Zealand. Department of Lands and Survey, Wellington.
Parham, W.T. (1973) Island Volcano, Collins 211pp.
Beadel, S. (1988) A Register of Threatened and Local Plant Taxa in the Eastern Region. Department of Conservation - Their Distribution and Status, Department of Conservation, Rotorua Technical Report Series No.6.
Kinsky (1980), ???

Recorded on Existing Databases:

1. WERI
2. SSWI site no. 251 (Rasch, 1989)
3. PNA
4. Geopreservation; 'A' ranking in the inventory.
5. HPT County inventory
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Kohi Point - Otarawairere	Site No: CRI 04/0004
Recorders Name: Susan Forbes	Conservancy: Bay of Plenty
Map No: W15	Grid Ref: E: 50635 N: 40540
	Date: 30/07 /90

Brief Description of Site: This point between sites 04/0002 and 04/0005 is the only rocky headland between Little Waihi estuary and Opape. The area extends over 750 m. The high escarpment is well vegetated in coastal pohutukawa (*Metrosideros excelsa*) -broadleaved forest remnant and fern land (Rasch, 1989). The land principally comprises the Kohi Point Scenic Reserve (2.8 ha.).

Conservation Values: Natural: a,c,f Cultural: a,d,e Historic: b

Comment: NATURAL: Kohi Point has a high degree of naturalness. No rare species exist here but three species of shag use the pohutukawa (*Metrosideros excelsa*) trees for nesting. The intertidal reef and coastal cliff system is the only type of this landform in the central Bay of Plenty and forms part of a protected continuum from the reserve land behind. Kohi Point Scenic Reserve is a Site of Special Wildlife Interest (SSWI) of potential value to wildlife (Rasch, 1989). The area has representative value because of this variety of landform types and its good regeneration (Rasch, 1989).

CULTURAL: To the Maori people this area is significant because Kapaturangi is the site to which kumara (*Ipomoea batatas*) was brought to New Zealand from Hawaii. The area has strong spiritual values because early habitation by the Mataatua tribe was intense (Jenkins pers. comm.). Many schools use the area for studies.

HISTORIC: There are 15 sites in the area including a number of pa, the most famous being Kapaturangi. (Information was gleaned from basic Historic Places Trust (HPT) maps showing areas surveyed.) At the time of printing the CRI no further information was available on dates of surveys. The 1983 HPT County Inventory was consulted showing last date of survey to be 1975. This revealed approximately five sites on the coast and many more inland within the scenic reserve.

Site Importance: International National Regional Local Unknown

Comment: The area is culturally important for its intensive early Maori settlement and as an important spiritual site as the landing place kumara and home of the Mataatua hapu. Locally the area is valuable for its landscape values (Smale, pers. comm.) The area could well deserve upgrading in terms of its site importance to a national level as the canoe landing site. However until further research is conducted into cultural and historic values justification of the site as being nationally important is not valid.

Existing Threats: b,c,j

Type & Comment: The reef community is subject to high levels of turbidity and silt from the Whakatane River. The coastal cliffs have some minor pine (*Pinus radiata*) and pampas (*Cortaderia* spp.) intrusion. An inadequately serviced garbage collection area has resulted in a significant litter problem on the beach.

Human Modification and Human Use: d,h,i,j

A small storm mooring exists in this area for boats unable to cross the Whakatane River mouth bar. The area is used extensively by recreational users for walking, running, picnicing, swimming, diving and boating (subject to weather conditions). Traditional Maori use (Mataatua hapu area) involves fishing and shellfish harvesting.

Existing Protection: a

Type & Comment: The point is a scenic reserve (Kohi Point Scenic Reserve) managed by the Department of Conservation and protection appears adequate for the area.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: More cultural information is available here than for surrounding areas but still more research is needed.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:
Contacts:

S. Smale, Conservancy Landscape Architect, Bay of Plenty Conservancy, Department of Conservation.
 C.Jenkins, Use and Advocacy Manager, Bay of Plenty Conservancy, DoC.

References: Rasch, G. (1989) Wildlife and Wildlife Habitats in the Bay of Plenty Region, Report Series 11, ISSN: 0113-3799, Department of Conservation.

Recorded on Existing Databases:

1. WERI
2. SSWI; Kohi Point Scenic Reserve Site no. 209 (potential wildlife value, Rasch, 1989).
3. PNA
4. Geopreservation
5. HPT County Inventory; HPT: The County Inventory shows 15 sites in the entire scenic reserve including several pa. The area was last surveyed in 1975 according to the 1984 edition of the Inventory. (Opotiki County)
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Whakatane Estuary	Site No: CRI 04/0005
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: W15	Grid Ref: E: 50615 N: 40540 Date: 06/ 08/90

Brief Description of Site: This extremely modified estuary has been reduced in size by large areas of reclamations upon which most of the commercial centre of Whakatane now stands (Whakatane District Council, 1988). The estuary is now about 1.5 km². The upper reaches have flood control stopbanking and the original wetlands are now mostly gone. The area is continually under pressure of development with marina proposals and river mouth developments intended to improve bar conditions for larger vessels. The adjacent Piripai sandspit, the northern boundary of the estuary, has recently been allocated to the Department of Conservation.

Conservation Values:	Natural: b,c,d	Cultural: a,b,c,d,e	Historic: a,b,c,d
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Comment: NATURAL: The Whakatane estuary is highly modified (Owen pers. comm.). A third of its original area has been reclaimed for urban development. Stopbanking of its margins and grazing of its wetlands has also occurred. The wildlife Site of Special Wildlife Value (SSWI) ranking is moderate (Rasch, 1989). A number of bird species are found including threatened banded dotterel (*Charadrius bicinctus*), variable oystercatcher (*Haematopus unicolor*) and reef heron (*Egretta sacra*) which use the estuary for feeding (Rasch, 1989 and Bell, 1986). The estuary is particularly vulnerable to sedimentation because of the effects of stopbanking and subsequent decrease in native vegetation (Owen pers. comm.).

CULTURAL: The rocks near the harbour entrance are said to be the landing point of the Mataatua canoe so hold high spiritual values. No further information could be traced at the time of printing to confirm this. The estuary is traditionally used for whitebaiting (Owen pers. comm.). Local schools make use of the estuarine environment for teaching purposes. The area is also important for its landscape values (Smale pers. comm.).

HISTORIC: Whakatane estuary is a well established historic harbour. There is an historic shipwreck (the "Welcome") buried in sand at the harbour entrance. Numerous pa sites are located around the estuary margin (Historic Places Trust Whakatane County Inventory April 1983) and there is a culturally important paru (black mud) site in the estuary (Ministry of Works and Development, 1988).

Site Importance:	International	National	<u>Regional</u>	Local	Unknown
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Comment: Though highly modified the estuary is regionally important for its wildlife habitats and the birds they support (Rasch 1989), as well as being important culturally for its waahi tapu sites (MWD, 1988).

Existing Threats: a,b,c,d,e,g,j,m

Type & Comment: The estuary is particularly prone to flooding and is heavily stopbanked to protect adjacent residential and commercial development. Between floods the harbour entrance is prone to silting, causing a navigation hazard (Owen pers. comm.). Pampas (*Cortaderia* spp.) is a problem on the islands in the estuary while cattle grazing of margins are damaging whitebait spawning areas (Owen pers. comm.). A large population of rats exists in the estuary and threaten wildlife values as well as increase the potential for re-infestation of offshore islands (Owen pers. comm.). A significant wood fibre discharge periodically occurs from the Elders NZ Forests Products board mill (Richmond pers. comm.). Stopbanking has reduced the tidal prism of the estuary (Richmond pers. comm.). Wood wastes have been previously dumped into the wetlands adjoining the estuary (Richmond pers. comm.). A proposed marina and further port development are likely to increase existing pressure on the remaining natural values (MWD, 1988).

Human Modification and Human Use: a,b,c,d,e,h,i,j

Residential and commercial development are the predominant uses on the south bank of the estuary. Pastoral and recreational use is predominant on the north bank. A third of the estuary has been reclaimed for commercial uses and parking. The estuary is a secondary port and has a large number of boat moorings. It receives storm water from Whakatane's industrial sector at a large outfall and has a major sewage pipeline running under the bed (Owen pers. comm.). The area has intensive recreation use including fishing, snorkeling, surfing, walking, sailing and boating. Traditional usage involves shellfish gathering and dyeing of flax by the Ngati awa tribe.

Existing Protection: c,d

Type & Comment: A range of local purpose reserves (7 types) exist for the land adjacent to the estuary. The area is proposed to be zoned for Coastal Protection in the District Scheme Review.

Availability of Information:

Natural	1 2 3
Cultural	1 2 3
Historic	1 2 3
Threats	1 2 3
Human Mod. & Use	1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: At the time of printing the CRI first stage no more detailed historical information was available from the NZHPT.

Sources of Information:

Natural	1 2 3 4 5 6 7
Cultural	1 2 3 4 5 6 7
Historic	1 2 3 4 5 6 7
Threats	1 2 3 4 5 6 7
Human Mod. & Use	1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

Contacts:

K.Owen; Senior Conservation Officer, Bay of Plenty Conservancy, Department of Conservation (DoC)
C.Richmond; Protection Division Manager, Bay of Plenty Conservancy, DoC.
S.Smale; Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.

References:

Rasch, G. 1989 Wildlife and Wildlife Habitat in the Bay of Plenty Region. Regional Report Series 11, DoC.
Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. NZ Wildlife Service Occasional publication no.12
Whakatane District Council (1988) Whakatane Harbour Management Development Plan.
Ministry of Works and Development (1988) Whakatane Marina Environmental Impact Assessment. Whakatane District Council.

Recorded on Existing Databases:

1. WERI
2. SSWI Site no 208 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory Whakatane County April 1983
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Tarawera River Estuary – Rangitaiki Beach, Rangitaiki River Estuary, Piripai Beach.

Site No: CRI 04/0006

Recorders Name: Susan Forbes

Conservancy: Bay of Plenty

Map No: V15 W15

Grid Ref: E: 10400 N: 40590

Date: 31/ 07/90

Brief Description of Site: This unit is a long, exposed sandy beach (14 km long) stretching from the Tarawera estuary in a south easterly direction through to the Rangitaiki estuary and the Piripai sandspit, which protects the Whakatane estuary (04/0005), at the eastern end. The Tarawera estuary (0.6km²) is a heavily modified cut into the Tarawera River mouth into which 3 large drainage canals discharge. The Tarawera River carries discharge from the Tasman Mill at Kawerau often producing discoloration up to several km offshore (Owen pers. comm.). Indigenous fish populations in the river are now much reduced, due to discharges, conversion of wetlands to pasture and the lack of fish pass facilities upstream (Owen pers. comm.). The 8km stretch of beach between the Tarawera and Rangitaiki estuaries is an open sandy beach largely unmodified though grazing of the foredunes occurs in the south. The Rangitaiki estuary and the Thornton Wildlife Management Reserve is another heavily modified rivermouth cut to 'improve drainage' of the Rangitaiki plains. The southern end of the estuary is heavily stopbanked and leased to adjoining dairy farms for grazing. The Thornton lagoon is managed for wetland values and waterfowl hunting. Piripai beach extends east from here a further 8km. Some 3km of this is Maori land which has riparian rights but is fenced to protect the foredunes. The sandspit protecting the Whakatane estuary extends a further 2km from Piripai beach. The spit is typically mobile and contributes sand to the Whakatane River entrance (Owen pers. comm.). Tenure is Maori land (urupa) and Crown land and is heavily modified by grazing and invasive plants (Owen pers. comm.).

Conservation Values: Natural: b,c,d,e,f,g Cultural: a,b,c, Historic: b

Comment: NATURAL: The Tarawera estuary is a highly modified site but does contain 16 NZ dotterel (1% of the threatened national population) (Owen pers. comm.) and is an important whitebait breeding area; though this is effected by Tasman Mill discharges (Richmond pers. comm.). The beach system south-east of the estuary contains large areas of highly natural beach and dune systems, though small areas are grazed. The threatened plant; pingao (*Desmoschoenus spiralis*) (Given et al, 1987) and coastal dune kanuka (*Kunzea ericoides*) forest occurs along the Wahieroa dunes (Rasch, 1989) (unique in this area and therefore regionally important (Shaw pers. comm.) They are currently the subject of kanuka forest dynamics study, (Shaw pers. comm.). The Rangitaiki estuary is highly modified, including a river cut, training wall and grazing of its margins. Some threatened species occur including Australasian bittern (*Botaurus stellarus*) and dab-chick (*Podiceps rufopectus*) in the wetlands and black fronted terns. Whitebait (*Galaxias* spp.) occur in the upper estuary. The Rangitaiki beach ridges and river barrier have been identified by a Geological Survey to be nationally important features (Richmond pers. comm.). These are currently threatened by farming and urban expansion. Piripai beach is highly modified with grazing on the secondary dunes. A few small areas of natural and representative vegetation exist but most is infested with noxious weeds (Shaw pers. comm.). The area north of the Whakatane airport is regionally important for its 'Rangitaiki Cuspate Foreland Landform' (Richmond pers. comm.).

CULTURAL: Landscape and seascape values along the beaches are considered to be high (Smale pers. comm.). The Rangitaiki estuary is used for obtaining traditional seafood (Owen pers. comm.). Whitebait is found in the Tarawera and Rangitaiki estuaries.

HISTORIC: There are two pa in the Tarawera Estuary area (one named Maruopotiki) (Owen pers. comm.). Along the adjacent beach are middens and an urupa at the western end. Within the Rangitaiki estuary and along Piripai beach are further middens. Piripai sandspit is also an important urupa.

Site Importance: International National Regional Local Unknown

Comment: The area is regionally important for its NZ dotterel (*Charadrius obscurus*) (nationally threatened) population (Rasch, 1989) and significant for its kanuka forest and the Rangitaiki beach formations (Shaw pers. comm.).

Existing Threats: a,c,d,e,g,i,j,k

Type & Comment: The Tarawera and Rangitaiki estuaries are prone to periodic flooding. In the upper Tarawera estuary the riparian vegetation community has been replaced by river sweetgrass (*Glyceria maxima*) (Owen pers. comm.). Discharges from Tasman Pulp and Paper Mill, Caxton Paper Mill and the Kawerau Borough Sewage result in a constant breach of water classification standards and breaches caused by the Rangitaiki Dairy factory are common in the Rangitaiki estuary (Richmond, pers. comm.). Localised erosion occurs at the mouth during storm events. A variety of noxious plants occur, particularly in the wetlands (Owen pers. comm.). Noxious animals threaten wildlife values and stock grazing damages whitebait habitats. A training wall on the eastern side of the river mouth denies fish access to the eastern wetland (Owen pers. comm.). Along the beaches cattle grazing occurs but this is being reduced by progressive withdrawal of licences (Owen pers. comm.). Pulp fibre and industrial debris is common on the western beaches (Richmond pers. comm.). Offshore purse seining is believed to be depleting fish stocks, according to locals. At Piripai beach and sandspit pampas (*Cortaderia* spp.), boxthorn (*Lycium ferocissimum*) and other weeds are common (Owen pers. comm.). There is a sewage outfall servicing Whakatane 600m offshore. Rabbits are common on the spit. The dune systems here are subject to erosion and disturbance by grazing stock and off-road vehicle use (Owen pers. comm.).

Human Modification and Human Use: a,b,e,h,i,j

At the Tarawera estuary pastoral and agricultural use is dominant. The Matata Wildlife Management Reserve adjoins the estuary. The estuary is modified by an artificial cut (in 1924) and a major causeway. A sewage outfall is located 600m offshore. A small launching ramp is the only boating facility in the estuary. The estuary is used for fishing and swimming and traditionally for whitebaiting and eeling (Owen pers. comm.). The Rangitaiki estuary and Thornton lagoon are predominantly characterized by grazing and wildlife management reserves. Small camping grounds exist and also a single launching ramp. The estuary is subject to intensive recreational use including surfcasting, whitebaiting, set-netting, picnics, swimming, duck shooting and boating (Owen pers. comm.). Traditional use includes shell-fishing, eeling and pingao harvesting (Owen pers. comm.). Along the Rangitaiki beach is a recreation reserve, though stock grazing occurs. Recreational activities here are fishing, walking, swimming, sailing and boating. Pingao is also harvested here. Piripai beach has minor residential development. Agriculture is a major use of the coastal zone and encroaches on the dunes. Recreational pursuits and traditional use are the same as for Rangitaiki beach. The sandspit is partly used for agriculture whilst the remainder is recreation reserve. Recreational pursuits are the same as for Piripai beach but include surfing.

Existing Protection: a,c,d

Type & Comment: Tarawera Estuary falls under a draft 'Tarawera River Management Plan' prepared by the Bay of Plenty Regional Council. At the Rangitaiki estuary a Wildlife Management Reserve has been gazetted to protect the Thornton lagoon wetland (Richmond pers. comm.). Other areas have local purpose recreation reserve status. Along Rangitaiki beach a recreation reserve exists for the entire beach between the two estuaries. Half of Piripai beach is protected by a local recreation reserve status whilst the remainder is unprotected. Piripai spit has 2 types of protective status; Stewardship land under the Conservation Act and a Maori reserve (urupa) under S.439 of the Maori Affairs Act.

Availability of Information:

Natural 1 2 3
Cultural 1 2 3
Historic 1 2 3
Threats 1 2 3
Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: As for much of the Bay of Plenty coastline very little is documented on the cultural and historic resources especially when compared with natural resources. This needs attention.

Sources of Information:

Natural 1 2 3 4 5 6 7
Cultural 1 2 3 4 5 6 7
Historic 1 2 3 4 5 6 7
Threats 1 2 3 4 5 6 7
Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:**References:**

Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region. Regional Report Series 11, Department of Conservation.
Given, D.R. et al (1987) Threatened and Local Plants of New Zealand: A Revised Checklist, Botany Division Report, DSIR, ChCh, pp17.

Contacts:

K.Owen: Senior Conservation Officer, Bay of Plenty Conservancy, Department of Conservation (DoC).
S.Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.
W.Shaw: Conservancy Advisory Scientist, Bay of Plenty Region, DoC.
C.Richmond: Protection Division Manager, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI: No survey information exists for this area except for a section in site no. 198; Waheroa Dunes. (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory; Whakatane County Inventory April 1983
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Motuhora (Whale Island)	Site No: CRI 04/0007
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: W15	Grid Ref: E: 50600 N: 40640 Date: 06/ 08/90

Brief Description of Site: Motuhora lies 7 km offshore and 9 km from the Whakatane Heads. The 143 ha, volcanic island has been significantly modified and its original vegetation had largely been removed by goats, rabbits and rats, which are now all eradicated (Rasch, 1989). The island is Crown owned and managed by the Department of Conservation. The island is a geologically young andesite volcanic and parts of the island are still active (Sulphur Bay) (Rasch, 1989). Revegetation has been instigated with a theme of restoration of habitat for locally endangered flora and fauna (Smale and Owen, 1989). More recently the management objective has changed to emphasize natural ecosystem recovery processes. The intertidal and subtidal zones around the island have recently been surveyed for a marine reserve investigation (Paine and Garrick, in prep.). The flora, fauna, sediments and geochemistry of zones surrounding submarine geothermal vents have recently been investigated by Soviet scientists and bathymetric charts have been prepared by a second Soviet Research vessel in 1989 (Richmond pers. comm.).

The name of the island should possibly be Motutuhora, meaning Whale Island. It is possible that Motuhora is a corrupted name.

Conservation Values: Natural: a,b,c,d,e,f,g,h Cultural: a,b,c Historic: a,b

Comment:

NATURAL: The island is highly modified by past farming, burning and feral stock grazing. It is currently being restored and there is good natural regeneration. The intertidal area has a high degree of naturalness (Smale pers. comm.). The island is an important breeding ground for the grey faced petrel (*Pterodroma macroptera gouldi*) an endemic subspecies and sooty shearwater (*Puffinus griseus*), and is ranked as a Site of Special Wildlife Interest (SSWI) of high value (Rasch, 1989). It is vulnerable to the introduction of nuisance animal and plant species and fire. The island has unusual volcanic landforms and the geothermal valley could be considered a unique feature (Smale pers. comm.). The island has been subject to considerable scientific study, especially by the Offshore Island Research Group (Wright and Beever, 1986). Threatened wildlife species breed on the island, including NZ Dotterel (*Charadrius obscurus*) and Caspian Tern (*Hydroprogne caspia*) (Bell, 1986). The scientific values of the subtidal are related to both the features associated with submarine geothermal vents and to the opportunities to monitor ecosystem recovery following establishment of marine reserve status. Representative vegetation occurs in the coastal pohutukawa (*Metrosideros excelsa*) and mahoe (*Melicytus ramiflorus*) forest and manuka (*Leptospermum scoparium*) shrubland (Rasch, 1989).

CULTURAL: Mutton birding was voluntarily stopped in 1958 by the Ngatiawa and Tuhoe. The island is considered to be aesthetically outstanding with a distinctive landscape (Smale, pers. comm.).

HISTORIC: Sulphur mining was attempted unsuccessfully but rounded rock was quarried off the various boulder banks for construction of rock walls in nearby Whakatane harbour. The first European contact recorded was Gilbert Mair in 1838 who established an unsuccessful whaling station (Richmond, pers. comm.). Maori occupation ended before the 19th century. Fifteen prehistoric sites have been recorded, including pa, middens, terraces, stone walls and cultivation areas, although the New Zealand Historic Places Trust Whakatane Inventory shows only one (Smale pers. comm.).

Site Importance: International National Regional Local Unknown

Comment: The island is significant for its threatened bird species (Bell, 1986) and unique volcanic landforms (Smale, pers. comm.). The subtidal geothermal features are developing international significance with two recent visits by research vessels from the Soviet Academy of Sciences. Comparative studies of submarine thermophilic microbial flora are being undertaken on Pacific Rim sites, including Whale Island and the Soviet Shantar Archipelago (Richmond pers. comm.).

Existing Threats: c,f,i,j,k

Type & Comment: The island is threatened from invasion of wattle (*Acacia* spp.) and Pampas (*Cortaderia* spp.) (Shaw pers. comm.). Gill netting, pava and cray fishing is causing local depletion of stocks, according to local users. Plastic pollution on the foreshore is apparent (Richmond pers. obs.). Some threat exists from fire and possible rodent re-infestation from unauthorised boat users. Mining on the island is no longer an existing threat.

Human Modification and Human Use: h,i

The island is used extensively for nature and scientific study, conservation education, swimming, diving and fishing (Richmond pers. comm.). Offshore use includes SCUBA diving, sailing, fishing and cruising (Owen pers. comm.).

Existing Protection: a

Type & Comment: The island is proclaimed a Wildlife Refuge, pursuant to the Wildlife Act 1953 (NZ Gazette, 9 September 1965, No.50, page 1494), and was acquired for a Wildlife Refuge pursuant to section 20 of the Public Works Act 1981 (NZ Gazette, 10 May 1984, No. 75, page 1534).

Availability of Information:

Natural	1 2 3	1. Well documented
Cultural	1 2 3	2. Limited information (general)
Historic	1 2 3	3. Little information (if any)
Threats	1 2 3	
Human Mod. & Use	1 2 3	

Comment: Historic and natural resources are well documented. Cultural resources need further survey work.

Sources of Information:

Natural	1 2 3 4 5 6 7	1. Derived info. from existing literature & databases
Cultural	1 2 3 4 5 6 7	2. Derived info as above & field check
Historic	1 2 3 4 5 6 7	3. Derived from existing maps & aerial photographs
Threats	1 2 3 4 5 6 7	4. Recent DOC survey including sampling & analysis
Human Mod. & Use	1 2 3 4 5 6 7	5. Recent DOC survey excluding sampling & analysis
		6. Experience
		7. Expert opinion

Comment:

References:

Bell, B.D. (1986) Conservation Status of New Zealand Wildlife. NZ Wildlife Service Occasional publication no.12.
 Wright, A.E. and Beever, R.E. (1986) (eds) The Offshore Islands of New Zealand. Department of Lands and Survey.
 Smale, S. and Owen, K. (1989) 'Motuhora; A Whale of an Island'. Ecological Restoration of New Zealand Islands Conference Proceedings. (in press).
 Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region. Regional Report Series 11, DoC.
 Paine and Garrick, (in prep) Marine Survey of Whale Island. Bay of Plenty Conservancy, Department of Conservation.

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 C.Richmond: Protection Division Manager, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 245 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventories: Whakatane County Inventory 1983. Further survey work has been conducted but was not made available by the NZHPT. Contact Central Office Conservancy archaeologists, DoC for more information.
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Rurima Islands	Site No: CRI 04/0008
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: W15	Grid Ref: E: 50510 N: 40672 Date: 06/ 08/90

Brief Description of Site: The Rurima Islands are a Maori owned group of small islands, rocks and reefs (12.5 ha. approx.) 8km offshore and 17km from the Whakatane Heads. These islands are largely unmodified and support a healthy tuatara (*Sphenodon punctatus*) (regionally threatened) population on Moutoki Island (Dougharty, 1989). The group includes the islands; Rurima, Moutoki and Tokata.

Conservation Values: Natural: a,b,c,d,f,g,h. Cultural: a Historic: d

Comment: NATURAL: The islands are little modified by human influence. Moutoki Island contains a healthy population of Tuatara and is an important breeding habitat. The islands are highly sensitive to human disturbance and vulnerable to the introduction of nuisance exotic species and fire. The islands are ranked as an outstanding Site of Special Wildlife Interest (SSWI) (Rasch, 1989). The Islands also have a healthy petrel population. Grey-faced (*Pterodroma macroptera gouldi*) and diving petrel (*Pelecanoides urinatrix*) breed on the island, as well as the threatened NZ dotterel (*Charadrius obscurus*), Rasch, 1989. The Tuatara and some flora have known scientific value and have been studied by the Auckland Museum, Victoria University of Wellington (Dougherty, 1989) and the Department of Conservation (Owen pers. comm.).

CULTURAL: Traditional belief is that the rocks parted to allow the Mataatua canoe through on its path to Whakatane. The area is also a traditional fishing ground for the Ngatiawa.

HISTORIC: On the Tasman reef is the wreck of the 'Tasman'. No other data on historic resources was made available at the time of printing.

Site Importance:	International	National	<u>Regional</u>	Local	Unknown
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Comment: The Islands are significant for their population of the regionally threatened tuatara (Bell, 1986) and their *Coprosma* spp. and pohutukawa (*Metrosideros excelsa*) vegetation (Shaw pers. comm.).

Existing Threats: c,i,j,k

Type & Comment: Some threat exists from invasion of boxthorn (*Lycium ferocissimum*) (Owen pers. comm.). Gill netting, long lining and paua poaching is causing depletion of local fish stocks, according to local users. There is an increasing problem from plastic accumulation on the beaches. Although public access is prohibited, there is a threat of fire from unauthorised recreational users (Owen pers. comm.).

Human Modification and Human Use: h,i,

Some shorebased picnicing, diving and fishing occurs although access is prohibited (Owen pers. comm.). Water based recreation includes fishing, diving and snorkelling.

Existing Protection: a

Type & Comment: The Islands are Gazetted as a Wildlife Refuge (NZ Gazette, 27 February 1969, Vol 1, page 359). Policing of access is difficult and some unauthorized use occurs.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
 2. Limited information (general)
 3. Little information (if any)

Comment: Cultural and historic values have minor amounts of documentation. Much more research is needed in these areas.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
 2. Derived info as above & field check
 3. Derived from existing maps & aerial photographs
 4. Recent DOC survey including sampling & analysis
 5. Recent DOC survey excluding sampling & analysis
 6. Experience
 7. Expert opinion

Comment:

References:

Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. NZ Wildlife Service Occasional publication no. 12
 Dougherty, C.H. (1989) Geographic Variation and Conservation of Tuatara. Unpublished report to the Department of Conservation from the School of Biological Sciences, Victoria University of Wellington.
 Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region, Regional Report Series 11, DoC.

Contacts:

K.Owen: Senior Conservation Officer, Bay of Plenty Conservancy, DoC.
 W Shaw: Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
 2. SSWI: Site no. 246, (Rasch, 1989)
 3. PNA
 4. Geopreservation
 5. HPT County Inventories: No record in the 1983 Whakatane Inventory.
 6. Other
 7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Matata Lagoon	Site No: CRI 04/0009
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: V15	Grid Ref: 402617 - 431610 Date: 06/ 08/90

Brief Description of Site: Matata lagoon was formed in 1924 when the Tarawera River flood control scheme diverted the river and formed the present river mouth. This historical event converted the estuary of the old Tarawera river mouth to a unique brackish water lagoon (Richmond pers. comm.). The lagoon has an area of approximately 140 ha and has relatively natural and unmodified progressions of estuarine rush to fresh water raupo flax wetlands (Rasch, 1989). The area is noted for large numbers of waders and waterfowl, but also the threatened species; Australasian bittern (*Botaurus stellaris*), spotless crane (*Porzana tabuensis*), New Zealand dabchick (*Podiceps rufopectus*) and New Zealand fernbird (*Boudleria punctata vealeae*) are present. The lagoon is rapidly infilling with sediment transported by two local streams (Owen pers. comm.). Increasing raupo colonisation of the shallow water communities is occurring. This is likely to be a result of increased nutrient enrichment and possibly leachate from septic tank outfalls within Matata village and the Matata Domain camping area (Department of Conservation, in prep.)

Conservation Values: Natural: b,c,d,f,g,h Cultural: a,b,c,d,e Historic: a,b

Comment: NATURAL: The Matata lagoon has a moderate degree of naturalness. It is classified as a Site of Special Wildlife Interest (SSWI) of high value (Rasch, 1989) containing five nationally threatened and nationally endangered bird species which inhabit the lagoon, including banded rail (*Rallus philippensis*), NZ dabchick, Australasian bittern, white heron (endangered) (*Ardea alba*) and the reef heron (*Egretta sacra*). The lagoon is extremely vulnerable to disturbances from human modification and sedimentation. It is the best example of a brackish water lagoon in the Bay of Plenty (Rasch, 1989). Within the lagoon is the representative vegetation sequence from estuarine rush (*Leptocarpus* spp.) to freshwater raupo (*Typha occidentalis*) and flax (*Phormium tenax*) wetlands.

CULTURAL: The trees in Pohutukawa Square have great traditional value as a place for the laying out of dead bodies. Spiritual values associated with this site are high and relate to the Kaharoa Battle (Owen pers. comm.). Aesthetic and landscape values of this site are high and local schools use the area for their studies (Smale, pers. comm.).

HISTORIC: The lagoon is the site of the old Tarawera river bed. There are several recorded archaeological sites in the area including hill top pa, urupa and midden. The original Te Paepae-o-Rarotonga canoe of Ngati Tuwharetoa is said to be buried in the swamp (Bay of Plenty Catchment Commission, 1985)

Site Importance: International National Regional Local Unknown

Comment: The lagoon is important for a number of bird species that are either endangered, or nationally threatened or regionally threatened (Bell, 1986) and (Rasch, 1989).

Existing Threats: a,b,c,d,e.

Type & Comment: Flooding of the lagoon occurs regularly and endangers the adjoining recreation reserve (Owen pers. comm.). Siltation of the lagoon from the surrounding catchment is also a serious threat (Owen pers. comm.). The intrusion of gorse and willow are a moderate problem and feral cats are posing a threat to wildlife (Owen pers. comm.). The occasional inflow of the Tarawera River during flood periods, to the lower lagoon often results in water pollution and aggravates an earlier 1956-1973 build up of sludge in the lagoon (Tarawera River Management Plan Vol.2. section 1.11, and Richmond 1986, Matata Lagoon Investigation Report).

 Human Modification and Human Use: a,b,h,i,j

Some minor camping around the lagoon perimeter does occur, resulting in some minor refuse dumping (Owen pers. comm.). Two causeways have been built between the lagoons. Land based recreation includes bird watching, walking and camping. Some canoeing on the lagoon also occurs. Traditional Maori use includes eeling and flax harvesting (Unidentified hapu Ngati Awa tribal area) (Smale pers. comm.).

 Existing Protection: a

Type & Comment: Matata lagoon is gazetted as a Wildlife Refuge Reserve (NZ Gazette, 1980, page 2195).

 Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: Cultural and historic resources need further surveys and more regular updating.

 Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis.
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

References:

Department of Conservation Matata Wildlife Refuge Draft Management Plan, Technical Report No. 10, Bay of Plenty Conservancy, Rotorua.
 Bay of Plenty Catchment Commission, (1985) Tarawera River Management Plan.
 Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region. Regional Report series 11, DoC.
 Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. New Zealand Wildlife Service Occasional Publication no. 12
 Richmond 1986, Matata Lagoon Investigation Report, NZ Wildlife Service.

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 Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 203 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory: Whakatane County Inventory April 1983
6. Other
7. None

 Other Considerations:

 Accompanying Maps and Photographs:

Site Name/s: Matata beach to Otamarakau beach Site No: CRI 04/0010
 Recorders Name: Susan Forbes Conservancy: Bay of Plenty
 Map No: V15 Grid Ref: E: 10250 N: 40250 Date: 06/ 08/90

Brief Description of Site: The beach frontage in this site is 18km long stretching from the western boundary of the Tarawera River mouth, past the Matata Lagoon to the Waitahunui stream in the West. The beach has a NNE aspect and the beach composition is fine to coarse sand and shell, probably overlying pea gravel. In the south the dune system is largely intact where local development is minimal. Adjacent to Matata lagoon moderate modification has occurred. The area provides a point of access to the beach and dunes which facilitates increasing dune degradation. Further north the White Sands motor camp is established on the recreation reserve and also provides access to the sea. The remainder of this area around the motor camp is established in *Eucalyptus* spp. which has completely altered the natural values of the area (Shaw pers. comm.). Closer to Otamarakau the dune system is well vegetated and generally in a healthy condition with some degradation at local access points (Owen pers. comm.). Beach access is largely restricted by the railway line, whilst stream mouths allow recreational access. At Otamarakau is a general accretion trend, although some serious erosion occurred in 1989 (Owen pers. comm.). The beach has now almost recovered from the erosion (Smith, 1990). This part of the beach is very popular as a recreation area but also has a sand mining operation along a two kilometre stretch.

Conservation Values: Natural: a,b,c,d,e,g Cultural: a,b,c,d,e Historic: b

Comment:

NATURAL: The beach area varies from moderate modification to highly natural areas. There are Domain and camping areas in the south where dune vegetation is affected all along the beach. Pingao (*Desmochoenus spiralis*) a nationally threatened plant (Given et al, 1987), is present at intervals along the beach. The White Sands area is highly modified by motor camp and exotic plantation on the dunes. The Matata rubbish dump adjoins a five hectare raupo (*Typha occidentalis*) /sedge (*Juncus* spp.) wetland behind the dunes. The wetland is ranked of high value as a Site of Specific Wildlife Interest (SSWI) (Rasch, 1989). Further north actively eroding cliff faces approximately 200 metres inland have unusual wind sculptures possibly unique to the region (Richmond, pers. comm.). This northern sector is less modified than the southern areas. The whole beach is important for two nationally threatened wading birds, the NZ dotterel (*Charadrius obscurus*) and banded dotterel (*C. bicinctus*) (Bell, 1986) (at least four breeding pairs (K. Owen, pers. comm.)). Their nesting sites are highly sensitive to disturbance. The area is subject to investigation by the DSIR for baseline monitoring of coastal erosion/accretion trends (Richmond pers. comm.). Otamarakau is modified by the sand mining operation but will be the subject of a restoration project in 1991 (Owen pers. comm.). In addition to the dotterel breeding area, the threatened variable oystercatcher (*Haematopus unicolor*) (Bell 1986) is present.

CULTURAL: The beach site is part of the highly significant Kaharoa Battle scene which stretches from Tarawera to Otamarakau (Smale pers. comm.). In the Kohiawa beach area aesthetic and landscape values are highly significant (Smale pers. comm.). School study groups use the beach for local pollution monitoring. Traditional use involves native plant harvesting.

HISTORIC: No systematic surveys have been carried out in this area but 51 sites are recorded. More sites are to be expected on the inland terraces. Of the sites most are pa and midden with terraces, pits and urupa (Whakatane County Inventory 1983 New Zealand Historic Places Trust). No more recent information was made available to the Conservancy office at the time of printing. For further details contact DoC Central office archaeologists. In early 1990 remains of three human burials were discovered in the frontal dune systems. Ngati Whakahemo and Ngati Makino kaumatua were investigating (Richmond pers. comm.).

Site Importance: International National Regional Local Unknown

Comment:

This long stretch of beach is significant for both the nationally threatened NZ dotterel, banded dotterel (Bell, 1986) and the threatened variable oystercatcher as a breeding area (Rasch, 1989 and Owen pers. comm.).

Existing Threats: a,c,d,e,f,i,j,k,l

Type & Comment: Parts of the beach are subject to cyclical erosion which is regularly monitored (Richmond pers. comm.). A Eucalypt plantation runs for half the length of White Sands and various noxious plants occur (Owen pers. comm.). Rats and stock pose a threat to dune vegetation and bird nesting areas. Leachate from the Matata rubbish dump, though recently closed, is entering the fresh water lagoon but the current degree of contamination is not known (Richmond pers. comm.). At the western end a two kilometre stretch is subject to sand mining within the intertidal zone. This is to be relocated within the next 2 years. Some minor rubble dumping occurs by the Awaateatua domain. Purse seining is said by local fishermen to be depleting stocks as has intensive surf casting activity. Off road vehicle use is severely effecting dune vegetation and nesting species (Owen pers. comm.)

Human Modification and Human Use: a,g,h,i,j
 Modification in the area varies from wildlife reserve, to camping grounds and mining areas. The main types of recreation in this area include camping, walking, fishing, picnicing and sailing. Traditional use of the area includes fishing and flax and pingao harvesting, by unidentified hapu (Te Arawa tribal area).

Existing Protection: a,c
 Type & Comment: Part of Awaateatua beach abutting Matata Lagoon is a wildlife Refuge whilst the rest of the beach is a recreation reserve.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
 2. Limited information (general)
 3. Little information (if any)

Comment: Threats to this vulnerable area are regularly monitored however more control may need to be enforced over recreational use of the area.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
 2. Derived info as above & field check
 3. Derived from existing maps & aerial photographs
 4. Recent DOC survey including sampling & analysis.
 5. Recent DOC survey excluding sampling & analysis
 6. Experience
 7. Expert opinion

Comment: The area is part of a DSIR accretion and erosion monitoring scheme.

References:

Bell, B.D. 1986 The Conservation Status of New Zealand Wildlife. New Zealand Wildlife Service Occasional publication No. 12
 Given, D.R. et al (1987) Threatened and Local Plants of New Zealand: A Revised Checklist, Botany Division Report, DSIR, ChCh, pp17.
 Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region, Regional Report Series 11, DoC.
 Smith, R.K. (1990) Report on Beach Changes at the Otamarakau to Hauone Mining Strip, June 1989 to June 1990, Water Quality Centre, DSIR, Hamilton.

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 C. Richmond: Protection Division Manager, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
 2. SSWI: Matata Lagoon (04/0009) Site no. 203, (Rasch 1989)
 3. PNA
 4. Geopreservation
 5. HPT County Inventory: Whakatane County Inventory April 1983
 6. Other
 7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Pukehina Beach - Rogers Beach	Site No: CRI 04/0011
Recorders Name: Susan Forbes	Conservancy: Bay of Plenty
Map No: V14	Grid Ref: E: 10211 N: 70730 Date: 30/ 07/90

Brief Description of Site: Pukehina and Rogers beaches are open, ocean sandy beaches (13 km long) south-east of Okurei Point. Rogers beach begins at the Pukehina Beach Road and continues south-east to the Waiohānui river mouth at Ōtamārakau. At its north-west end Pukehina beach encloses Little Waihi Estuary (04/0012). The beach is backed by residential development behind the foredune. Rogers beach is backed by a narrow dune system. Adjacent land use is mainly pastoral farming but there is residential development at Rogers Road.

Conservation Values:	Natural: a,b,c,	Cultural: b	Historic: a,b
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Comment: NATURAL: These beach systems are largely unmodified though residential development occurs behind the dunes. The threatened plant, pingao (*Desmoschoenus spiralis*) (Given et al, 1987) occurs in low numbers (K.Owen pers. comm.) as do variable oystercatcher (*Haematopus unicolor*); a nationally threatened species (Bell, 1986). Several pairs of New Zealand dotterel (*Charadrius obscurus*) (also threatened) use the north-west end of Pukehina beach for breeding (Owen pers. comm.).

CULTURAL: Both beaches are locally valued for their exposed seascape value (Smale pers. comm.).

HISTORIC: Close to Pukehina Beach Rd is the Pukehina Redoubt and there are three recorded pa sites along Rogers beach as well as associated middens (New Zealand Historic Places Trust (NZHPT) County Inventory, March 1986). At printing no further details were made available by the NZHPT. For further information contact DoC Central Office archaeologists.

Site Importance:	International	<u>National</u>	Regional	Local	Unknown
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Comment: The site is important for the NZ dotterel (nationally threatened) and to a lesser extent the variable oystercatcher (Owen pers. comm.). Locally the area is valuable as an exposed, relatively unmodified space (Smale pers. comm.)

Existing Threats: a,c,d,k,l

Type & Comment: Pukehina Beach and the sandspit are susceptible to erosion. The dunes here and at Rogers beach have a number of noxious weed species and are also subject to damage from stock trampling and off-road vehicle use (Owen pers. comm.). Rabbits are also invading the dunes at Rogers beach (Owen pers. comm.). Residential development is beginning to encroach along the foredunes, especially along Pukehina Beach (Smale pers. comm.).

Human Modification and Human Use: a,b,h,j

The main land use at Pukehina is residential, which includes some reclamations, whilst at Rogers beach it is pastoral farming (Owen pers. comm.). Pukehina beach is popular locally for recreational use, mainly fishing (snapper and kontiki), tuatua (*Paphies subtriangulata*) and scallop gathering, walking, horse riding and swimming. Traditional Maori use of the area is for tuatua gathering (Smale pers. comm.).

Existing Protection: c,i

Type & Comment: At Pukehina beach is a marginal strip vested in the Department of Conservation and at Rogers beach is an unformed public road along the beach which offers some protection from urban development.

Availability of Information:

Natural 1 2 3
Cultural 1 2 3
Historic 1 2 3
Threats 1 2 3
Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: All along this area information for cultural and historic resources is extremely limited and needs to be addressed.

Sources of Information:

Natural 1 2 3 4 5 6 7
Cultural 1 2 3 4 5 6 7
Historic 1 2 3 4 5 6 7
Threats 1 2 3 4 5 6 7
Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis.
6. Experience
7. Expert opinion

Comment:**References:**

Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. New Zealand Wildlife Service Occasional Publication, no.12.
Given, D.R. et al (1987) Threatened and Local Plants of New Zealand: A Revised Checklist, Botany Division Report, DSIR, ChCh, pp17.

Contacts:

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S.Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI:
3. PNA
4. Geopreservation
5. HPT County Inventory; Tauranga County Inventory March 1986.
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Newdick's Beach & Little Waihi Estuary Site No: CRI 04/0012

Recorders Name: Grant Bridgwater

Conservancy: Bay of Plenty

Map No: V14

Grid Ref: E: 10170 N: 70755 Date: 06/ 08/90

Brief Description of Site: The Little Waihi Estuary (2.4 km² and 9.5 km of coastal perimeter) is separated from Maketu Estuary by the Okurei (Town Point) and Newdick's Beach. Okurei is a predominantly rocky shore with a boulder strewn beach along the eastern side. Little Waihi is a large, shallow, bar bound estuary with fresh water inflow via a number of channelised streams. The estuary contains a number of low-lying islands which are scrub covered. Much of the estuarine margins have been stopbanked and converted into pasture. Important saltwater and freshwater wetlands are found along the margins of the estuary where conversion to farmland has not occurred. The wetlands are important because they are an excellent example of transitional vegetation ranging from estuarine rushes to freshwater sedge and flax.

Conservation Values: Natural: a,b,c, Cultural: a,c Historic: a,b
 Comment: NATURAL: The cliffs and beach at Newdick's are largely unmodified and are a favoured habitat for 20-40 Variable oystercatcher (*Haematopus unicolor*); a nationally rare species (Bell, 1986). Along Newdick's beach are also some pingao (*Desmoschoenus spiralis*) plants (also a rare species (Given et al (1987)). The rocky shore and large rounded boulders are an uncommon landform in the Conservancy, with only 5% of the conservancy coast being rocky. Little Waihi is accorded a high Sites of Special Wildlife Interest (SSWI) ranking (Rasch, 1989). Nationally threatened or rare bird species include; Caspian tern (*Hydroprogne caspia*), Australasian bittern (*Botaurus stellaris*), North Island fernbird (*Bowdleria punctata vealeae*), Banded Rail (*Rallus philippensis*), NZ dotterel (*Charadrius obscurus*) and Variable oystercatcher (*Haematopus unicolor*). The upper estuary has an excellent transitional wetland sequence of estuarine rushes (*Leptocarpus* spp. and *Juncus* spp.) and freshwater raupo (*Typha occidentalis*)/sedge (*Scirpus* spp.) and flax (*Phormium tenax*).

CULTURAL: The estuary is an important traditional food gathering source for shellfish and fish for all local residents and occasional visitors from the central Bay of Plenty area, (Te Arawa tribe). The reefs offshore from Newdick's Beach are very important sources of mussels (*Perna canaliculus*), also gathered by locals (Richmond, pers. obs.).

HISTORIC: A large number of Maori settlement sites are recorded in this area and the area is also notable for early European settlement contiguous with Maketu Estuary (TapSELL, 1977). (These sites are recorded on the Historic Places Trust Inventory 1986). Fifteen sites have been recorded in this area.

Site Importance: International National Regional Local Unknown
 Comment: The presence of the nationally rare species variable oystercatcher and pingao means the site is of national importance. The estuary and beach are important for their value as important bird habitat (Rasch, 1989). The upper estuary contains saltmarsh and contiguous freshwater wetlands (Beadel, 1989) and this is of some significance. The pipi beds in the lower estuary and the mussel beds off Newdick's beach are of regional importance (C.Richmond pers. comm.)

Existing Threats: a,b,e,g,i,l

Type & Comment: The coastal headland cliffs are prone to erosion although this is not a serious threat to conservation values. The offshore reefs are prone to overfishing by locals. The estuary is vulnerable to siltation and water pollution from farm drainage channels and also from septic tank leachate (Richmond pers. comm.) Stopbanking around the upper margins of the estuary has significantly reduced the tidal prism. A number of retaining walls around Bledisloe Park and the residential area on the spit are damaging the natural shoreline. Subdivision on the coastal spit has resulted in damage to the coastal dunes.

 Human Modification and Human Use: a,b,e,h,i,j,k

A private road on the headland gives access to Newdick's beach. The predominant land use around the estuary is pastoral with residential development on the sandspit. A minor reclamation behind a retaining wall exists at Bledisloe Park. Stopbanking and drainage of the wetlands have occurred in the upper reaches and there are two main outfalls from these drains. The estuary is important for traditional food gathering including the harvesting of paua (*Haliotis iris*), kina (*Evichinus chloroticus*), and mussels. The area is used extensively for waterfowl hunting, fishing, swimming, sailing, walking, diving and wind surfing.

 Existing Protection: a,c

Type & Comment: Just over 17 hectares of the upper reaches of the estuary are within the Little Waihi Estuary Wildlife Management Reserve whilst the North East and south margins of the estuary have either esplanade or section 58 strip (Land Act 1948) protection.

 Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: Cultural resources for this area are not documented in detail and need to be recorded to the same extent as the same values for nearby Maketu (Site 8).

 Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

References:

Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region, Regional report series 11, DoC.
 Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. New Zealand Wildlife Service Occasional Publication, No. 12
 Beadel, S.M. (1989) 'Notes on the Vegetation and Flora of Tauranga Harbour and Little Waihi Estuary Bay of Plenty', Wildlands Consultants Ltd.
 Tapsett, E. (1977) Historic Maketu (First Published in the "Rotorua Morning Post", 1940).
 Given, D.R. et al (1987) Threatened and Local Plants of New Zealand: A Revised Checklist, Botany Division Report, DSIR. 17pp.

Contacts:

S. Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, Department of Conservation (DoCo).
 C. Richmond: Protection Division Manager, Bay of Plenty Conservancy, DoC.

 Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 46, (Rasch,1989)
3. PNA
4. Geopreservation
5. HPT County Inventories; Tauranga County Inventory March 1986.
6. Other
7. None

 Other Considerations:

 Accompanying Maps and Photographs:

Site Name/s: Maketu & Te Tumu estuaries & Okurei Pt. Site No: CRI 04/0013

Recorders Name: Chris Richmond & Susan Forbes Conservancy: Bay of Plenty

Map No: V 14 Grid Ref: E: 10130 N: 70770 Date: 06/ 08/90

Brief Description of Site: Maketu is a bar built estuary lying just west of Okurei (Town Point). It contains approximately 230 hectares of tidal flats, channels, saltmarsh and contiguous freshwater wetlands (8.8 km coastal perimeter). Adjacent to the western side of the estuary is the present mouth of the Kaituna River at Te Tumu, which was diverted from the estuary in 1958. There has been substantial infilling with sand causing mortality of saltmarshes and a decline of pipi beds. There has also been stopbanking/perimeter drainage of the estuarine margins since that time (Richmond & Forbes, 1990). Local and regional concern about the degradation of the estuary started to increase in the mid 1970's and peaked in the late 1980's with the Department of Conservation being assigned the task of preparing a comprehensive restoration strategy for approval by Cabinet. The Te Tumu wetlands to the west are an artificially constrained outlet of the Kaituna River, which has been straightened and protected as part of the Kaituna Catchment flood protection works. The wetlands provide an important habitat for a number of nationally threatened birds (Rasch, 1989). Okurei Point to the East is the headland separating Maketu from Little Waihi estuary. It is a predominantly rocky shore backed by coastal cliffs. Along the western (Maketu) side residential development has occurred. Offshore reefs are popular fishing and SCUBA diving areas for locals.

Conservation Values: Natural: b,c,d,g,h Cultural: a,b,c,d,e Historic: a,b,c,d
Comment: NATURAL: The interference with the natural regime of the estuary and reduction in the tidal prism caused by diversion of the Kaituna River, stopbanking, sandspit erosion, subsequent wave overtopping of the sandspit and eutrophication within the estuary has resulted in adverse effects on intertidal flora and fauna (Richmond and Forbes, 1990). Recent escalations in the populations of sea lettuce (*Ulva lactuca*) and sea hare (*Aplysia nigra*) have had detrimental effects on marine fauna (particularly shellfish) and the appearance of the estuary (Richmond pers. comm.). Native saltmarshes have been intruded on by the introduced cordgrass *Spartina alterniflora*. Maketu Estuary and the upper section of 'Ford's Road Lagoon' are both ranked as Site of Special Wildlife Interest (SSWI) of Moderate-High wildlife value (Rasch, 1989). The Kaituna River wetland is ranked as an SSWI of high wildlife value (Rasch, 1989). Endangered bird life found at the estuary and in the Kaituna wetlands includes 48 species of waders, wetland and shore birds as well as migrant visitors (Rasch, 1989). Eight of these are nationally threatened or endangered species; NZ dotterel (*Charadrius obscurus*), caspian tern (*Hydroprogne caspia*), banded rail (*Rallus philippensis*), wrybill (*Anarchynchus frontalis*), Australasian bittern (*Botaurus stellaris*), banded dotterel (*Charadrius bicinctus*), reef heron (*Egretta sacra*) and white heron (*E. alba modesta*). At the Kaituna rivermouth are 20-40 nesting pied shag (*Phalacrocorax varius varius*); which is one of the few known mainland colonies in the Bay of Plenty. There used to be high concentrations of pipi (*Paphies australis*), flounder (*Rhombosolea* spp.), mullet (*Aldrichetta forsteri*), snapper (*Chrysophrys auratus*), kahawai (*Arripus trutta*) and whitebait (*Galaxias* spp.) which locals say are now severely depleted. There is also a decline in water quality as a result of septic tank seepage to the estuary (BOPRC, undated) and inflows of the Kaituna River water containing effluent from the Auckland Farmers Freezing works Cooperative (AFFCO), Te Puke Borough sewage, and others (DSIR, 1989). Pipi beds are now confined to mid and low tidal channels and are characterized by instability, small size and periodic mortality. There is now high cockle (*Chione stutchburyi*) density due to the increased salinity (Richmond pers. comm.). The Maketu sandspit is in a state of dynamic equilibrium but large wave overtopping could result in severe infilling of the estuary (Richmond & Forbes, 1990)

CULTURAL: The estuary, as the traditional landing place of the Arawa canoe has high spiritual values. The recent pollution caused by discharges of effluent into the Kaituna has had a resulting reduction of the mauri values and loss of mana for the Arawa (Richmond & Forbes, 1990). The waters were thought to be the "food bowl of the Bay" with traditional shellfish gathering and fishing for eel (*Anguilla* spp.), flounder, kahawai, and whitebait being practiced. The area surrounding the estuary is still used for the harvesting and washing of flax (*Phormium tenax*) and kiekie (*Freycinetis bauerana* ssp *banksii*). The estuary is also important for local school classes.

HISTORIC: The area is one of the first regions in NZ to have been settled by the Maori and has had a long history of settlement since. The area was the scene of many battles between Arawa and Ngaiterangi. In 1829 came the first European influence with the trader Tapsell (Tapsell, 1977). Flax milling and trading developed here and Te Tumu was established as a port for goods bound for Te Puke. Numerous pa and 67 midden sites, concentrated in the Okurei area, have been recorded (New Zealand Historic Places Trust Inventory, 1986). Numerous shipwrecks have been reported testifying to the hazardous nature of the bar even before river diversion.

Site Importance: International National Regional Local Unknown
Comment: The Maketu Estuary is significant for its range of nationally threatened or endangered birdlife (Rasch, 1989) and as a fish nursery area (Richmond, Forbes 1990). Although the region is highly modified it has outstanding value for its historical and spiritual associations as the landing place of the Arawa canoe (Richmond, Forbes 1990) as well as being valuable for scientific research, e.g. experimental restoration of salt marsh. The remnant freshwater wetlands adjoining the estuary have very high botanical conservation values for rare ferns (Beadel, 1989) and for wildlife values (bittern, rail etc).

Existing Threats: a,b,c,d,e,j,k

Type & Comment: The estuary and wetlands have suffered severe effects from the diversion of the Kaituna River resulting in a perturbation of their natural equilibrium (Richmond pers. comm.). Erosion has occurred in the estuary of an area once reclaimed. Siltation is a major threat from wave overtopping and spit breaching (Richmond and Forbes, 1990). The invasion of noxious plants (*Spartina alterniflora* and *Ulva lactuca*) and animals has had degrading effects on the native flora and fauna as well as appearance and aesthetic values (Richmond & Forbes 1990). Recent pollution measurements have shown that concentrations of coliform bacteria at Te Tumu average 4000 total and 2000 faecal per 100ml (DSIR, 1989). The degree of health risk to estuary users will be assessed and addressed as part of the Maketu Estuary Restoration Strategy. The use of vehicles and motor bikes on the spit is a hazard to regenerating coastal vegetation and spit protection (Richmond pers. comm.). The ongoing drainage of remnant freshwater wetlands on the estuary margins threatens both intrinsic values and the adjoining saltmarsh. Spoil dumping by locals as a reclamation measure and by the Tauranga County Council contributes to the dangerous infilling of the estuarine wetlands (Richmond & Forbes, 1990)

Human Modification and Human Use: a,b,d,f,h,i,j

The estuary and its environs are highly modified by the extensive development of agriculture and horticulture in the catchment. Residential settlement at Maketu may contribute septic tank leachate into the estuary (Richmond and Forbes, 1990). Illegal reclamations in the town area have since been eroded. Causeways link Papahikawai Island to the spit giving stock access to the sand spit and wetlands (Richmond pers. comm.). Stopbanking prevents fresh ground water flows into saltmarshes. Outfalls from farms and a pumping station contribute seriously to organic pollution (Richmond and Forbes, 1990). At Te Tumu a wharf has been built for the fishing boats and stock barges which cross to Motiti Island. Many forms of passive recreation occur including; bird watching, walking, picnicing and whitebaiting (Forbes pers. comm.). Fishing, netting and surf casting are popular as well as shellfish gathering, surfing, swimming, boating, duck shooting and wind surfing. Traditional use by the Te Arawa people involves native plant harvesting and shell fish gathering, although these activities have declined with the health of the estuary (Richmond & Forbes, 1990).

Existing Protection: b,c (a and d are in preparation).

Type & Comment: In the estuary a stopbank exists around one small tidal arm of the estuary which is proposed for reservation as a wildlife management reserve. Maketu Estuary has no formal protection but is covered by the Harbour zone in the proposed review of the Western Bay of Plenty District Scheme. Preparation is being made, as part of the Restoration Strategy, for an estuarine protection zone over most of the estuary and a Wildlife Reserve in the Te Tumu wetlands.

Availability of Information:

Natural	1 2 3
Cultural	1 2 3
Historic	1 2 3
Threats	1 2 3
Human Mod. & Use	1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: The Maketu estuary has been well documented in the last 20 years by different agencies attempting to research its restoration.

Sources of Information:

Natural	1 2 3 4 5 6 7
Cultural	1 2 3 4 5 6 7
Historic	1 2 3 4 5 6 7
Threats	1 2 3 4 5 6 7
Human Mod. & Use	1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs.
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

References:

Rasch, G. (1989) Wildlife and Wildlife Habitats in the Bay of Plenty Region, Department of Conservation.
 Richmond, C.J. and Forbes, S.P. (1990) Maketu Estuary Restoration Strategy (Department of Conservation).
 DSIR, 1989 Appendix to Richmond and Forbes, 1990.
 Beadel, S.M. (1989) Botanical Values of the Arawa Wetlands, Maketu, Wildlands Consultants Ltd.
 BOPRC, (undated) Septic Tank Project Report, Sec 3.
 Tapsell (1977) Historic Maketu (First Published "Rotorua Morning Post" 1940).

Contacts:

C. Richmond: Protection Division Manager, Bay of Plenty Conservancy, DoC.
 S. Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 45, (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory: Tauranga County March 1986
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Motunau (Plate Island)	Site No: CRI 04/0014
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: V14	Grid Ref: E: 10243 N: 70873 Date: 06/ 08/90

Brief Description of Site: Motunau is a small, rocky island (2.8 hectares) with a summit plateau at 30 m above sea level and surrounded by extensive rocky reefs. It is situated approximately 13km north east of Maketu and is gazetted as a Wildlife Sanctuary. The island is vegetated and has surrounding it extensive rocky reefs and several rock stacks.

Conservation Values:	Natural: a,b,c,d,e	Cultural: a	Historic: b
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Comment: NATURAL: The island is a highly natural area containing coastal treeland communities of taupata (*Coprosma repens*)/ Hymenanchera/ karo (*Pittosporum crassifolium*) and pohutukawa (*Metrosideros excelsa*). The island provides habitats for the regionally threatened tuatara (*Sphenodon punctatus*), native skink and gecko as well as a number of uncommon seabirds, including sooty shearwater (*Puffinus griseus*), fluttering shearwater (*P. gavia*), white-faced storm petrel (*Pelecanoides marina*) and northern diving petrel (*Pelecanoides urinatrix*). The island is important as a grey-faced petrel (*Pterodroma macroptera gouldi*) breeding area and as a roosting site for a range of seabirds (Rasch, 1989). New Zealand fur seals are often present. The island is sensitive to rodent and predator introduction (Owen pers. comm.). The island is surrounded by rocky reefs which have stopped trawlers operating within ten kilometres. It is recognised as an important fish nursery and breeding area where large numbers of small fish are present (Owen pers. comm.). The island's landform is unusual in that it is split into two and has large offshore reefs (Owen pers. comm.).

CULTURAL: The island is used for traditional mutton bird harvesting by the Maori owners on a permit basis issued by the Department of Conservation (Owen pers. comm.).

HISTORIC: Some evidence exists of Maori occupation (Owen pers. comm.) though no detailed surveys have been conducted. Contact DoC Central Office archaeologists for further information.

Site Importance:	International	<u>National</u>	Regional	Local	Unknown
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Comment: The island is nationally important for its status as a predator free wildlife sanctuary and as a habitat for tuatara, native lizards and uncommon seabirds (Rasch, 1989). It is important too as a fish breeding and nursery area (Owen pers. comm.)

Existing Threats: c,d,i

Type & Comment: The island is vulnerable to noxious plant infestation from weed seeds being transported by birds (Owen pers. comm.). Possible introduction of rodents is also a threat from illegal landings on the island. Local overfishing of the reefs is also occurring, according to local fishermen.

Human Modification and Human Use: i,j,k

The area is subject to intensive recreational and commercial fishing (Owen pers. comm.). Scuba diving is also popular. Traditional Maori use includes mutton birding. Commercially the area is used for long line, gill net and cray fishing operations outside a 10km radius (Owen pers. comm.).

Existing Protection: a

Type & Comment: The island is Maori owned but was Gazetted a Wildlife Sanctuary on 30 July 1964 (No.46, page 1205) pursuant to the Wildlife Act 1953.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
 2. Limited information (general)
 3. Little information (if any)

Comment: Natural resources are well documented because of the island's importance as a wildlife sanctuary, but cultural and historic resources have been inadequately researched.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
 2. Derived info as above & field check
 3. Derived from existing maps & aerial photographs
 4. Recent DOC survey including sampling & analysis
 5. Recent DOC survey excluding sampling & analysis
 6. Experience
 7. Expert opinion

Comment: Systematic archaeological surveys are desirable as are regular checks on the results of commercial and recreational fishing in the area.

References:

Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty, Regional Report Series 11, DoC.

Contacts:

K. Owen: Senior Conservation Officer, Bay of Plenty Conservancy, Department of Conservation.

Recorded on Existing Databases:

1. WERI
 2. SSWI: Site no. 247, (Rasch, 1989)
 3. PNA
 4. Geopreservation
 5. HPT County Inventory
 6. Other
 7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Motuhaku - Schooner Rocks	Site No: CRI 04/0015
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: V14	Grid Ref: E: 10215 N: 70932 Date: 06/ 08/90

Brief Description of Site: The two rocks are small 15m high stacks located approximately 16km north of Maketu (04/0013) and 9km east of Motiti Island (04/0016) (3.75 ha.). The rocks are exposed with sparse vegetation and are wave swept in storms. No terrestrial fauna exists but the rocks are used by sea birds for both roosting and nesting (Owen pers. comm.).

Conservation Values:	Natural: a, f	Cultural: Unknown	Historic: Unknown
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Comment: NATURAL: The rocks and the surrounding marine environment are in a completely natural state except for local depletion of fish and crayfish stocks (Owen pers. comm.). The underwater reef systems around the rocks are examples of typical reef systems in this area. It is possible that the area may be important as a fish breeding and nursery ground and crayfish stopping point on their migration route, though detailed scientific surveys have not been conducted.

Cultural and Historic resources have not been documented because of gaps in available information.

Site Importance:	International	National	Regional	<u>Local</u>	Unknown
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Comment: The rocks are locally important in the Bay of Plenty Conservancy as a roost for seabirds (K. Owen, pers comm). The area has potential for a marine protected area (Owen pers. comm.).

Existing Threats: i

Type & Comment: Though difficult to assess it seems likely from local fishermen's comments that the area is under threat from overfishing for bait fish, etc.

Human Modification and Human Use: i,k
 Recreational fishing is confined to trolling, line-fishing, gill netting and spear fishing. Some cray fish potting is carried out in the area (Owen pers. comm.). Minor commercial fishing is carried out around the reefs, mainly long-lining with some gill netting (Owen pers. comm.).

Existing Protection: None existing.

Type & Comment: Protection of the area should be reviewed in the light of comments from local fishermen.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
 2. Limited information (general)
 3. Little information (if any)

Comment: Generally the area is not documented in detail. It is unlikely that there would be evidence for historic resources because of their size and isolation.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
 2. Derived info as above & field check
 3. Derived from existing maps & aerial photographs.
 4. Recent DOC survey including sampling & analysis
 5. Recent DOC survey excluding sampling & analysis
 6. Experience
 7. Expert opinion

Comment: Whilst difficult to assess some monitoring of human use and possible resulting threats would be desirable for the protection of the rocks and their fauna.

Contacts:

K.Owen: Senior Conservation Officer, Bay of Conservancy, Department of Conservancy, Department of Conservation.

Recorded on Existing Databases:

1. WERI
 2. SSWI
 3. PNA
 4. Geopreservation
 5. HPT County Inventory
 6. Other
 7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Motiti Island Group	Site No: CRI 04/0016
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: V14	Grid Ref: E: 10125 N: 70917 Date: 96/ 08/90

Brief Description of Site: Motiti is the largest island in the Bay of Plenty and is low and flat. It is largely developed for farming and horticulture. The island is approximately 750 hectares lying 10km from Papamoa beach. Its highest point is 57m above sea level. The island is surrounded by low coastal cliffs with a fringe of pohutukawa trees. Three sandy bays exist at Wairauaki Bay, Orongatia Bay and Wairere Bay. The island is part Maori owned and part freehold. A number of smaller offshore islands/stacks lie off the main island.

Conservation Values: Natural: a,b,c,e,g Cultural: a,b,c Historic: b

Comment: NATURAL: The coastal cliffs, beaches and offshore islets are largely unmodified, though the central area is farmed. The main island is a Site of Special Wildlife Interest (SSWI) of moderate-high value (Rasch, 1989). The regionally threatened Duvaucel's gecko (Hoplodactylus duvauceli) (Bell, 1986) is found on one of the smaller offshore islands (Motukahakaha). This small islet is designated 'Customary Maori Land' (Owen pers. comm.). The sand spurge (Euphorbia glauca), a vulnerable plant species nationally (Given 1990) is found in reasonable numbers on Taumouhi Island (Owen, pers comm), the largest of the subsidiary islets. These offshore islets are important for sea bird nesting (Rasch, 1989). The coastal cliffs on the main island show an interesting geological sequence of old seabed and beaches (Shaw, pers. comm.). The island group has scientific value for Duvaucel's gecko, yellow pohutukawa (Metrosideros excelsa) trees and geology (Owen pers. comm.).

CULTURAL: Traditional Maori values include battle sites (Owen pers. comm.). Aesthetic and seascape values of the island are high (Smale, pers. comm.).

HISTORIC: Maori archaeological value includes a number of pa and battle sites on the main and Taumaihi Island. The most recent survey (Walton and McFadgen, 1990) has located 22 pa and 8 other sites.

Contact the Department of Conservation, Central Office archaeologists for details of this survey.

Site Importance: International National Regional Local Unknown

Comment: The island is significant for the regionally threatened (Bell, 1986) Duvaucel's gecko population and possibly also for its dense Maori occupation (McFadgen and Walton, 1990).

Existing Threats: a,c,d,i,j,k

Type & Comment: The coastal cliffs are prone to erosion (Owen pers. comm.). The island and its associated offshore rocks stacks and islands are subject to invasion by weed species, including boxthorn (Lycium ferocissimum) (Shaw pers. comm.). Farm animals are preventing pohutukawa regeneration (Shaw pers. comm.). Some local rubbish dumping over the coastal cliffs has also occurred. The surrounding marine environment is subject to intensive SCUBA diving and fishing pressure resulting in depletion of local reef stocks (Owen pers. comm.). There is an increasing residential buildup with no services being provided for rubbish or sewage.

 Human Modification and Human Use: a,d,i,j

Motiti Island is largely developed for farming and horticulture. Some residential development is also occurring (Owen pers. comm.). A large landing facility is at Pattersons Bay. Intensive Scuba diving and fishing, both recreational and commercial, also occur (Owen pers. comm.). The area is extensively used commercially by long liners and gill netters, charter boats for diving and fishing (Owen pers. comm.). 'Island Safaris' have a lodge on the island which is accessed by air and specialise in tours (Richmond pers. comm.). Commercial fishing boats often anchor overnight in Wairere Bay.

 Existing Protection: No existing protection.

Type & Comment:

 Availability of Information:

Natural	1 2 3
Cultural	1 2 3
Historic	1 2 3
Threats	1 2 3
Human Mod. & Use	1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: More survey work is required on the effects of human modification and development on the island.

 Sources of Information:

Natural	1 2 3 4 5 6 7
Cultural	1 2 3 4 5 6 7
Historic	1 2 3 4 5 6 7
Threats	1 2 3 4 5 6 7
Human Mod. & Use	1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

References:

Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region. Regional Report Series 11, Department of Conservation (DoC).
 Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. New Zealand Wildlife Service, Occasional publication no. 12.
 Given, D.R. (1990) Revised Threatened Plants List (Draft) DSIR Land Resources.
 Walton, A. and McFadgen, B. (1990) unpublished report for the Department of Conservation

Contacts:

K.Owen: Senior Conservation Officer, Bay of Plenty Conservancy, DoC.
 C. Richmond: Protection Division Manager, Bay of Plenty Conservancy, DoC.
 S. Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.
 W. Shaw: Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.

 Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 248 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory: 1990 survey conducted but data as yet unavailable to Conservancy.
6. Other
7. None

 Other Considerations:

 Accompanying Maps and Photographs:

Site Name/s: Mt. Maunganui, Mt Maunganui Beach, Papamoa Beach, Te Tumu Beach, Moturiki Is.
Site No:04/0017

Recorders Name: Susan Forbes

Conservancy: Bay of Plenty

Map No: U14 V14

Grid Ref: E: 70010 N: 70840

Date: 31/ 07/90

Brief Description of Site: This area covers a long stretch (26 km) of exposed beach between sites 04/0013 and 04/0020. At the north-western end is Mt. Maunganui; the eastern headland marker to the Tauranga Harbour entrance. This headland is a mainly rocky shore with exposed open coast on the northern face and a sheltered harbour bay on the south. The foredunes behind the open sandy beach south of Mt. Maunganui are backed by a road and have continuous residential development. At the northern end of the beach are the small islands Moturiki and Motuotau (04/0018) as well as a number of reefs. Papamoa beach continues south-east of Mt. Maunganui beach and is also an exposed shore backed by sand-dunes. The dunes are covered in typical coastal vegetation (Shaw pers. comm.) and have newly developed residential properties to their rear. Te Tumu beach marks the south-eastern boundary of this site and is very similar to Papamoa beach. The foredunes though are backed by farmland and the coastal dune system has been grazed. The beach ends in a small pine covered promontory at the present Kaituna River mouth at Te Tumu. Moturiki is a tiny island just to the west of Motuotau (04/0018), nearby are rocky reefs used extensively for fishing and diving.

Conservation Values: Natural: b,c,d,e,h Cultural: a,b,c,d,e Historic: b

Comment: The Mt. Maunganui northern face rocky shore provides habitats for variable oystercatcher (*Haematopus unicolor*), reef heron (*Egretta sacra sacra*) and caspian tern (*Hydroprogone caspia*); all nationally threatened species (Bell, 1986). The immediate shoreline has tall pohutukawa (*Metrosideros excelsa*) coastal forest; a nationally rare vegetation association and one of the best regional examples of harbour forest (Shaw, 1988). The area supports breeding little blue penguin (*Eudyptula minor*) and grey-faced petrel (*Pterodroma macroptera gouldi*) in low numbers (Owen pers. comm.). Mt. Maunganui is a salient scenic and touristic location in the Bay of Plenty (Owen pers. comm.). Mt. Maunganui beach is fairly modified but the nationally rare pingao (*Desmoschoenus spiralis*) (Given et al, 1987) is found along the beach; more commonly at the south-eastern end (Omanu) (Owen pers. comm.). The original tombo to Mt. Maunganui is now reinforced with rock. The beach and foredunes of Papamoa beach are largely unmodified but the rear dune and hinterland are highly modified by residential development. Pingao is established in localised areas along the whole beach front (Owen pers. comm.). Sand daphne (*Pimelia arenaria*), listed as indeterminate nationally in terms of rarity (Given et al, 1987) is found on the beach (one of only 2 known sites in the Bay of Plenty). The dunes here are fragile and sensitive to disturbance. Grazing of the dune vegetation down to mean high water mark has altered the dunes at Te Tumu beach. This vegetation is now a mixed association of sand coprosma (*Coprosma acerosa*), spinifex (*Spinifex sericeus*), lupin (*Lupinus arboreus*) and pingao (Shaw pers. comm.). Pingao occurs in clumps approximately every 50-100m along the dunes (Owen pers. comm.) The beach and dunes here are vulnerable to periodic natural erosion with numerous blowouts present (Owen pers. comm.).

CULTURAL: Mt. Maunganui is a focal recreation and scenic point in the Bay of Plenty with high aesthetic and landscape values (Smale pers. comm.). The open beaches too have high scenic value. In addition to the pa and urupa sites near Mt. Maunganui are the spiritually important Te Kua rocks, located on the western face of Mt. Maunganui (Owen pers. comm.). Some traditional shellfish gathering also occurs along these beaches (Ngai te Rangī area). The island and associated reefs are used extensively by schools and underwater clubs for educational purposes.

HISTORIC: Two pa sites exist on Mt. Maunganui and one on Moturiki Island. There is an urupa south of Otira on Papamoa beach (Tauranga County Inventory, March 1986).

Site Importance: International National Regional Local Unknown

Comment: The area is nationally significant for its pingao distribution (Owen pers. comm.), its coastal pohutukawa forest (Shaw pers. comm.) for its scenic value and as a focal recreational area for the Bay of Plenty (Smale pers. comm.).

Existing Threats: a,c,d,i,k,l

Type & Comment: Considerable pressure appears to be placed on reef fish stocks around Mt. Maunganui, Moturiki Island, nearby reefs and Motuotau (04/0018) (Jones pers. comm.) by recreational fishing. The Mt. Maunganui beach has been cut back by erosion over the last two years (Owen pers. comm.). Considerably high levels of recreational activity puts pressure on dune vegetation (Owen pers. comm.). Residential sub-division and roading have resulted in the loss of secondary dunes in this area, as is the case for Papamoa beach (Smale pers. comm.). In some areas along Papamoa beach the vegetation has been disturbed and in some of these areas sand-drift has occurred. Along the Te Tumu beach the dunes are subject to periodic cyclic erosion. Boxthorn (*Lycium ferocissimum*) and blackberry (*Rubus fruticosus*) are common weed species. Grazing stock and off-road vehicles on the dunes are also a current problem (Owen pers. comm.).

Human Modification and Human Use: a,d,e,g,h,i,j,k

At Mt. Maunganui is a recreational fishing wharf and some small boat moorings on the sheltered inner harbour shore. Along the Mt. Maunganui beach much of the land use is residential, with stormwater outfalls along the beach. Some localised beach replenishment occurs as a result of harbour dredging spoil dumped offshore (Owen pers. comm.). Further south at Papamoa beach land use is primarily residential. A sewage outfall, which services Mt. Maunganui, is located 800m offshore. At Te Tumu beach land use is predominantly agriculture. Recreation in all areas consists of fishing, swimming, walking, diving, boating and surf-casting (Owen pers. comm.). Mt. Maunganui and the adjacent beach have high levels of recreational use, especially in the summer (Owen pers. comm.). Traditional Maori (Ngai te Rangi) use of the area includes the collection of kina (*Evichinus chloroticus*), paua (*Haliotis iris*) and reef-fish from the rocky shores and tuatua (*Paphies subtriangulata*) from the sandy beaches.

Existing Protection: c,d

Type & Comment: Mt. Maunganui is a recreation reserve administered by a Domain Board. The District Scheme zoning for the Papamoa beach area includes a coastal hazard zone. A number of esplanade reserves are scattered along the area. A recreational reserve is at Papamoa. Moturiki Island is a recreation reserve.

Availability of Information:

Natural 1 2 3
Cultural 1 2 3
Historic 1 2 3
Threats 1 2 3
Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: There is a great need here for more detailed work on cultural and historic resources.

Historic resources have been recorded in detail for the Tauranga Harbour area (Tauranga County Inventory 1986)

Sources of Information:

Natural 1 2 3 4 5 6 7
Cultural 1 2 3 4 5 6 7
Historic 1 2 3 4 5 6 7
Threats 1 2 3 4 5 6 7
Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

References:

Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. NZ Wildlife Service, Occasional Publication no. 12.
Given, D.R. (1990) Revised Threatened Plants List (Draft) DSIR Land Resources
Shaw, W. (1988) Botanical Conservation Assessment of Crown Lands in the Urewera/Raukumara Planning Study Area. Forest Research Institute, Private Bag, Rotorua.

Contacts:

K.Owen: Senior Conservation Officer, Bay of Plenty Conservancy, Department of Conservation, (DoC)
S. Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.
W.Shaw: Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.
A.Jones: Field Center Manager, Tauranga Field Center, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI:
3. PNA
4. Geopreservation
5. HPT County Inventory: Tauranga County Inventory March 1986
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Motuotau (Rabbit Island)	Site No: CRI 04/0018
Recorders Name: Susan Forbes	Conservancy: Bay of Plenty
Map No: U14	Grid Ref: E: 70921 N: 70918 Date: 06/ 08/90

Brief Description of Site: Motuotau is a 2.5 hectare Scenic Reserve two kilometres east from the north rock beacon at Tauranga Harbour entrance (04/0019) and 800m offshore from Mount Maunganui beach (04/0017). The island is surrounded by reefs and rocky outcrops with water depths ranging from a 2m sandy bottom to 10m rocky bottom to the north. The island is highly accessible to Tauranga and subject to intensive recreational exploitation of surrounding reefs.

Conservation Values: Natural: a Cultural: a,d Historic: a,b

Comment: NATURAL: The island is in a highly natural state however proximity to the mainland has ensured overfishing of much of the fish and shellfish stocks (Owen pers. comm.). The island has a rare terrestrial habitat comprising pohutukawa (Metrosideros excelsa) dominant coastal forest (a nationally rare vegetation association (Shaw pers. comm.). The island is rich in birdlife, with the following birds breeding there; the threatened reef heron (Egretta sacra sacra), northern blue penguin (Eudyptula minor iredalei) and red-billed gull (Larus novaehollandiae). The island is predator free and has no reptilian fauna (Owen pers. comm.).

CULTURAL: The island is described in the PNA survey as being a Maori occupation site, with pa, pits and terraces (Wassilieff, 1984).

HISTORIC: A number of Pa sites, pits and terraces exist on the island. At the time of printing no further details on historic resources were made available by the Historic Places Trust.

Site Importance: International National Regional Local Unknown

Comment: The island is regionally significant for its Scenic Reserve status (Wassilieff, 1984) and for providing a recreation resource close to the mainland (Owen pers. comm.). A marine reserve proposal has been suggested by local diving clubs and the Royal Forest and Bird Protection Society (Owen pers. comm.).

Existing Threats: k,j

Type & Comment: The island is extensively used as a recreation ground for diving and fishing from the mainland. It is especially popular for collecting paua (Haliotis iris), kina (Evichinus chloroticus) and mussels (Perna canaliculus) which are now almost fished out (Jones pers. comm.). Cray fishing and setlines have also contributed to severe fish depletion from the area, according to local users. Dredged spoil from Tauranga Harbour is dumped several hundred metres offshore. This is carefully monitored to detect any smothering or other damage to reefs around the island.

Human Modification and Human Use: i

The major threat to the island and its surrounding marine life is from water based recreation from the mainland (Jones pers. comm.). Diving, spearfishing and fishing are all having serious effects on marine life, according to local users.

Existing Protection: a

Type & Comment: The island is a Crown owned Scenic Reserve gazetted in 1974.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
 2. Limited information (general)
 3. Little information (if any)

Comment: More detailed surveys are required on the reported effects of overfishing the area, as well as cultural and historic surveys.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
 2. Derived info as above & field check
 3. Derived from existing maps & aerial photographs
 4. Recent DOC survey including sampling & analysis
 5. Recent DOC survey excluding sampling & analysis..
 6. Experience
 7. Expert opinion

Comment:

References:

Wassilieff, M. (1984) Register of Protected Natural Areas in New Zealand. Department of Lands and Survey.

Contacts:

K.Owen: Senior Conservation Officer, Bay of Plenty Conservancy, Department of Conservation, DoC
 W.Shaw: Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.
 A.Jones: Field Center Manager, Tauranga Field Centre, DOC
 For further information on archaeological or historic values liaise with DoC Central Office archaeologists.

Recorded on Existing Databases:

1. WERI
 2. SSWI
 3. PNA: (Wassilief 1984)
 4. Geopreservation
 5. HPT County Inventory
 6. Other
 7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Tauranga Harbour	Site No: CRI 04/0019
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: U13, U14	Grid Ref: E: 70800 N: 70930 Date: 06 /08/90

Brief Description of Site: The harbour comprises an intertidal area of 218.03 km² and 250.2 km perimeter. The northern tidal compartment of the harbour (draining at the Bowen Town channel), comprises almost half the harbour area. The majority of the area is shallow, intertidal mudflats with several deep water channels. Much of the surrounding land is in horticultural & agricultural use, with some limited residential development around the margins, especially at Tanners Point & Katikati. Extensive areas of saltmarsh and mangrove (*Avicennia marina*) occur around the margins although stopbanking & drainage in localised areas has also occurred. The south-east sector of Tauranga harbour includes a large number of shallow bays & estuaries which contain a diverse range of coastal habitats such as seagrass (*Zostera* spp.) beds, mudflats, mangroves, & salt marshes. In the area of Tauranga city and the commercial port some areas have had their margins intensively developed for residential and commercial uses, including reclamations (Owen pers. comm.). The need for sea wall protection has excluded wildlife such as the Australasian bittern (*Botaurus stellaris*), marsh crake (*Porzana pusilla*) and banded rail (*Rallus philippensis*) from the harbour margins. Fresh water inlets include the Waiau, Wairoa, Wainui, Aongatete rivers & the Uretawa stream. Within the harbour the Waikareao estuary is a wildlife refuge, Gazette 1957 p.9.

Conservation Values: Natural: a,b,c,d,f,h Cultural: a,b,c,d,e Historic: a,b

Comment: NATURAL: In the northern harbour area adjacent land has been converted into agricultural & horticultural use. Some areas of native terrestrial vegetation occur (Bluegum Bay, Tanners Point & Tuapiro Creek) (Beadel, 1989). The area is part of an outstanding Site of Specific Wildlife Interest (SSWI) (Rasch, 1989). A large number of nationally threatened bird species are present including banded rail (*Rallus philippensis*), North Island fernbird (*Bowdleria punctata vealeae*), banded dotterel (*Charadrius bicinctus*), NZ dotterel (*C. obscurus*), variable oystercatcher (*Haematopus ostralegus*), reef heron (*Egretta sacra*), caspian tern (*Hydroprogne caspia*) (Rasch, 1989). All these species feed, roost & breed there. Large areas of tidal flats at low tide provide areas of habitat for feeding, wading birds as well as being vital for inshore fisheries (Richmond pers. comm.). The southern harbour has been greatly modified by urban, industrial and farming developments. Like the northern harbour the area is part of an outstanding SSWI and habitat for the species listed above (Rasch, 1989). Many of the margins have been modified but some good representative saltmarsh occurs in the Waimapu estuary as well as mangrove in the upper reaches (Beadel, 1989). Te Hopai Island has a high degree of naturalness & represents a full range of vegetation types found in the harbour (Beadel, 1989).

CULTURAL: The entire harbour is used for traditional food gathering such as pipi (*Paphies australis*), mussels (*Perna canaliculus*), snapper (*Chrysophrys auratus*), flounder (*Rhombosolea* spp.), oysters (*Ostreola* sp.) and whitebait (*Galaxias* spp.). Two urupa are recorded on Tutaitaka and Motuopae Islands. The harbour is also extensively used by school classes and ornithological groups and is highly valued locally for its aesthetic and landscape values (Smale pers. comm.).

HISTORIC: The Tauranga region has a high density of Maori archaeological sites such as pits, middens, cultivation areas, terraces, and settlements, especially a large number of pa sites on headland areas (Tauranga County Inventory March 1986). Several urupa have also been recorded. In the Waikareao estuary is Tauranga's first airstrip and there is an old stone wharf at Mt. Maunganui.

At the time of printing the CRI first stage no further details on historic resources were available. Contact DoC Central Office archaeologists for more information.

Site Importance:	International	<u>National</u>	Regional	Local	Unknown
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Comment: The southern part of the harbour is vital to the Bay of Plenty as a commercial port and the whole harbour is of high recreational use (Smale pers. comm.). The area though is part of an outstanding SSWI, providing a range of habitats for nationally threatened bird species (Rasch, 1989) and other more common estuarine and coastal birds (Richmond pers. comm.).

Existing Threats: a,b,c,d,e,g,i,j,k,l

Type & Comment: Erosion has occurred on the eastern headland of Motuhoa and landslips at Omokaroa have damaged pohutukawa (*Metrosideros excelsa*) populations. Siltation, particularly from the Wainui river, and several unauthorised reclamations have caused some modification to the harbour (Owen pers. comm.). The margins of the harbour are affected by invasions of noxious plants such as, nightshade, gorse (*Ulex european*), willow (*Salix* spp.), silverpoplar (*Populus alba*), castor oil plant (*Ricinus communis*), and pampas (*Cortaderia* spp.). *Spartina alterniflora* also a noxious plant is a threat to the open tidal flats of the harbours upper reaches (Owen pers. comm.). Concern has been expressed about the growing populations of introduced water fowl (black swan (*Cygnus atratus*) and Canada geese (*Branta canadensis*)) and farm stock grazing the wetlands (Owen pers. comm.). Pollution in the harbour causes localized water quality problems. Causes of pollution are horticultural and agricultural development (herbicides, piggery effluent), septic tanks and spillages from industrial plants (Richmond pers. comm.). In some areas shore stabilisation works have affected fresh water ground flows and cut off areas of wetlands (Richmond pers. comm.). Commercial fishing appears to have depleted local populations of flounder and mullet (*Aldrichetta forsteri*). Urban and commercial subdivisions have modified the area through reclamations for protective works, port areas, housing, railway and roading as well as ensuring an increase in the dumping of refuse (at Hunters Creek) (Owen pers. comm.). This in turn results in the loss of marginal vegetation and associated wildlife. High recreational use (including vehicle access on mudflats) impacts on waterfowl habitat (Owen pers. comm.).

 Human Modification and Human Use: a,b,c,d,e,h,i,j

Land development around the northern harbour area is predominantly agricultural and horticultural with some forestry in the north-east. In the southern harbour urban and industrial port development are extensive. Reclamation and causeways have occurred in order to make room for this development. These include 3 bridges, causeways, stopbanking, drains, and floodgates. Tauranga port occupies a large area in the southern sector and has involved extensive reclamation (Owen pers. comm.). Several boat ramps, jetties, sheds and mooring areas occur throughout the harbour. Tauranga city sewage discharges near the port area. As well as this there are numerous pipelines, buried cables and channel markers in the harbour. Shorebased recreation includes many types of recreation such as picnicing, ornithology and waterfowl hunting (Owen pers. comm.). Water based recreation is varied, including swimming, wind surfing, sailing, fishing and water skiing (Owen pers. comm.). Traditional Maori use of the area focuses on shellfish gathering, fishing and eeling.

 Existing Protection: a,d

Type & Comment: Within the northern harbour area the upper saltmarsh zone of the Athenree estuary is a wildlife refuge reserve, whilst most of the remaining area has esplanade and recreation reserves around the margin. In the southern sector Waikareao estuary is a wildlife refuge (Gaz. 1957, p.9) and Ratahi Island is a Maori reserve. Like the northern sector esplanade and recreation reserves exist on much of the shoreline. An estuarine protection zone exists over parts of the estuary once administered by the Tauranga City Council.

See: Tauranga County Council, 1988

 Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: Historical and archaeological surveys need regular updating and extensive survey and liaison work is required for Cultural research, although natural values are recorded and updated in detail. Physical, chemical and some biological data will be collected by the Bay of Plenty Regional Council in preparation for its Harbour management plan.

 Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment: Natural resources are well documented and updated. Human use is noted through Tauranga County Council surveys.

References:

Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region, Regional Report Series 11, Department of Conservation (DoC)
 Beadel, S.M. (1989) 'Notes on the Vegetation and Flora of Tauranga Harbours and Little Waihi Estuary, Bay of Plenty.
 Tauranga County Council, (1988) Proposed Waikareao Estuary Expressway -Route P. Environmental Impact Assessment.

Contacts:

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 C.Richmond: Protection Division Manager, Bay of Plenty Conservancy, DoC.
 S.Smaile: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC.

 Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 3 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory: Tauranga County March 1986
6. Other
7. None

 Other Considerations:

 Accompanying Maps and Photographs:

Site Name/s: Matakana Beach	Site No: CRI 04/0020
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: U13, U14	Grid Ref: E: 70850 N: 70950 Date: 06/ 08/90

Brief Description of Site: Matakana beach is a typical ocean sandy beach backed by sand dunes (24 km long). The dunes are backed by exotic pine forests along its entire length. In some areas where erosion of the beach has occurred the dunes have been lost and exposed the trees to undermining.

For description and discussion of the inner margins see the site form for Tauranga Harbour (04/0019).

Conservation Values:	Natural: a,b,c,d,f,h	Cultural: Unknown	Historic: Unknown
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Comment: NATURAL: The Matakana Beach comprises a natural spinifex (*Spinifex sericeus*)/pingao (*Desmoschoenus spiralis*) vegetation community along the frontal foredunes (Beadel, 1989). This vegetation is rare in New Zealand (Beadel, 1989). The area provides nesting habitats for several nationally threatened bird species including the NZ Dotterel (*Charadrius obscurus*), variable oystercatcher (*Haematopus unicolor*), banded dotterel (*C. binnicus*), Caspian tern (*Hydroprogne caspia*) (Rasch, 1989). Over 2% of the North Island population of NZ Dotterel were present in 1989 as well as 50 pairs of Caspian tern (K. Owen, pers comm). Panepane point at the eastern end of Matakana Island. is an important high tide roost for seabirds and waders (Rasch, 1989). The dunes support the highest density of pingao plants in the Bay of Plenty as well as at least 60 plants of sand daphne (*Pimelea arenaria*) (Beadel, 1989). The dunes and beach are of a high degree of naturalness but are vulnerable to erosion and disturbance from vehicles (Owen pers. comm.). The spinifex-pingao association is representative of this type of association in the Bay of Plenty (Beadel, 1989).

CULTURAL: No data was available on cultural information but it is likely that the area is highly regarded by local Maori, because of its proximity to Tauranga Harbour..

HISTORIC: No systematic site surveys have been carried out in this area by the New Zealand Historic Places Trust (Tauranga County Inventory, 1986).

Site Importance:	International	<u>National</u>	Regional	Local	Unknown
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Comment: The beach foredunes are important for their spinifex and pingao vegetation (Beadel, 1989). The area is also important as a habitat for several nationally threatened bird species, including NZ dotterel, banded dotterel, variable oystercatcher and caspian tern (K. Owen, pers comm.).

Existing Threats: a,c

Type & Comment: The main threats to the area are from beach erosion and the invasion of exotic species into the dune flora (Owen pers. comm.). Dune disturbance from vehicles is also a problem (Owen pers. comm.).

Human Modification and Human Use: a,k

The beach foredunes are unmodified. The area behind the dunes is all in exotic pine plantation. The area is not used extensively for recreation (Owen pers. comm.). Some passive forms of recreation such as walking, and bird watching does occur as well as fishing (Owen pers. comm.).

Existing Protection: a

Type & Comment: There is a 50 metre wide reserve (unclassified) and administered by the Department of Conservation along most of the length of the beach.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
 2. Limited information (general)
 3. Little information (if any)

Comment: More extensive survey and public liaison work is needed for interpreting cultural and historic values for the area.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
 2. Derived info as above & field check
 3. Derived from existing maps & aerial photographs
 4. Recent DOC survey including sampling & analysis
 5. Recent DOC survey excluding sampling & analysis
 6. Experience
 7. Expert opinion

Comment: HPT historic and archaeological surveys have not covered this area systematically and no recorded data on cultural resources is obtainable at present. Information for natural resources is well documented and regularly updated.

References:

Beadel, S.M. (1989) Botanically Significant Areas Within the Proposed Purchase Zone, Matakana Island. Wildland Consultants Ltd.
 Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region, Regional Report series 11, Department of Conservation (DoC).

Contacts:

K. Owen: Senior Conservation Officer, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
 2. SSWI: Part of Site 3 (Rasch, 1989)
 3. PNA
 4. Geopreservation
 5. HPT County Inventory: See data on Tauranga Harbour March 1986
 6. Other
 7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Karewa Island	Site No: CRI 04/0021
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: U14	Grid Ref: E: 70870 N: 00032 Date: 06/ 08/90

Brief Description of Site: Karewa is a small, rugged islet of 3.6 hectares, rising to 93m above sea level. It is situated 11 km from Mt. Maunganui beach and is popular for recreational fishing and diving (Owen pers. comm.). The island rises steeply from a sandy seabed at approximately 25 m depth on the south side and is also steep sided on the northern and eastern flanks. The island is Crown owned and managed by the Department of Conservation as a Wildlife Sanctuary.

Conservation Values:	Natural: a,b,c,h	Cultural: Unknown	Historic: d
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Comment: NATURAL: Karewa Island is ranked as an outstanding Site of Specific Wildlife Interest (SSWI) (Rasch, 1989). Tuatara (Sphenodon punctatus), a nationally threatened species (Bell, 1986), is found in good numbers on the island. Grey faced petrels (Pterodroma macroptera gouldi), flesh footed shearwater (Puffinus carneipes), fluttering shearwater (P. gavia) and northern diving petrel (Pelecanoides urinatrix) all breed in colonies on the island (Rasch, 1989). The nationally rare plant Parapara (Pisonia brunoniana) (Given et al. 1987) is present on the island and is the only known site for this species in the Bay of Plenty Conservancy (Shaw pers. comm.). There are no rats or other predators on the island. The island is unmodified and highly natural, containing shrubland of Taupata (Coprosma repens), Hymenanthera (Meliclytus novae-zelandiae), Haupara (Pseudopanax lessonii) and Parapara (Pisonia brunoniana) (Shaw pers. comm.).

CULTURAL: No known cultural surveys or investigations have been conducted on the island.

HISTORIC: The island is the site of an old shipwreck (name and date unknown).

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Site Importance:	International	<u>National</u>	Regional	Local	Unknown
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Comment: The island is important as a predator free wildlife sanctuary and habitat for tuatara (Cree, in prep) and uncommon seabirds and also the rare plant (Given et al, 1987) Pisonia brunoniana (Rasch, 1989).

Existing Threats: c

Type & Comment: The main threat to the island is from the introduction of noxious pests from unauthorised landings by boaties (Owen pers. comm.).

Human Modification and Human Use: i,k

The waters around the island are used extensively for recreational diving and fishing. There is limited commercial longline and gill net fishing. The island is often visited by charter boats with dive parties catching bait fish (Owen pers. comm.). Some scallop (*Argopecten* spp.) dredging occurs inshore between the island and Matakana Beach.

Existing Protection: a

Type & Comment: The island is Crown owned and has been gazetted as a wildlife sanctuary of 3.57 hectares.

Availability of Information:

Natural 1 2 3
Cultural 1 2 3
Historic 1 2 3
Threats 1 2 3
Human Mod. & Use 1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: More survey work is required for historic and cultural resources and also on the effects of recreational and commercial fishing activities around the island.

Sources of Information:

Natural 1 2 3 4 5 6 7
Cultural 1 2 3 4 5 6 7
Historic 1 2 3 4 5 6 7
Threats 1 2 3 4 5 6 7
Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis.
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:**References:**

Rasch, G. (1989) *Wildlife and Wildlife Habitat in the Bay of Plenty Region*, Regional Report series 11, Department of Conservation (DoC).
Bell, B.D. (1986) *The Conservation Status of New Zealand Wildlife*. New Zealand Wildlife Service, Occasional Publication No. 12.
Cree, A. (in prep.) *Recovery Plan for Tuatara*, Department of Conservation, Wellington.
Given, D.R. (1990) *Revised Threatened Plants List* (Draft). DSIR Land Resources.

Contacts:

K. Owen: Senior Conservation Officer, Bay of Plenty Conservancy, DoC.
W. Shaw: Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 249 (rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Tuhua (Mayor Island)	Site No: CRI 04/0022
Recorders Name: Alan Jones, Susan Forbes	Conservancy: Bay of Plenty
Map No: U12, U13	Grid Ref: E: 94990 N: 24300 Date: 06/ 08/90

Brief Description of Site: Tuhua is a 17.5 km² island which is largely Maori owned but the Crown has a 1/12 shareholding. The Crown's share is in the process of being reverted in the other owners (Field, pers. comm.). The island is an emergent summit of rhyolitic submarine volcano located on the edge of the Continental shelf 26km from the mainland (at Waihi) (Jones and Garrick in prep.). The island rises steeply from a sand and mud bottom in the South East and drops steeply to deep troughs and rock pinnacles to the north and east. The island is unique in the Bay of Plenty because of its close proximity to the mainland on the slopes of a deep trench (Jones and Garrick in prep.). It is located on the edge of a warm subtropical current which sweeps into the bay from December to March. This results in an abundance of migratory fish and game fish (Walls pers. comm.). The island waters are also noted for being exceptionally clear and having higher than usual summer temperatures (Richmond pers. comm.). Two fresh water lakes are found inland in the caldera.

Conservation Values: Natural: a,b,d,e,g,h. Cultural: a,b,c,d,e Historic: a,b,d

Comment: NATURAL: The island is considered to be highly natural and has a Site of Specific Wildlife Interest (SSWI) ranking of high value (Rasch, 1989). The island has a good population of North Island kaka (*Nestor meridionalis*), bellbird (*Anthornis melanura melanura*) and is an important seabird nesting area (Rasch, 1989). Species include the nationally threatened Reef heron (*Egretta sacra sacra*) (Rasch, 1989). Grey-faced petrel (*Pterodroma macroptera gouldi*) also breed on the Island. The marine flora and fauna is also unusual with populations of spanish lobster (*Arctites antipodium*) and black coral (*Antipatharian* sp.) areas (Jones and Garrick in prep.). Landforms and geology are considered to be unique and the island is a source of obsidian. (The Maori name Tuhua means obsidian). The pohutukawa (*Metrosideros excelsa*) forest is a nationally rare vegetation association (Shaw, 1988) and there are five nationally threatened plants present; *Cyclosorus interruptus*, sand spurge (*Euphorbia glauca*), Cook's scurvy grass (*Lepidium oleraceum*), *Pomaderris rugosa* and the dwarf greenhood orchid (*Pterostylis nana*) (Beadel, 1989). There have been past reports (NZ Wildlife Service) of the nationally endangered and endemic (Bell, 1986) brown teal (*Anas chlototis*) and the nationally threatened Australasian bittern (*Botaurus stellaris*). The offshore reefs are sensitive to a decline in fish populations as a result of commercial and recreational fishing (Jones and Garrick in prep.)

CULTURAL: For the Maori, Tuhua was an important resource for its obsidian, fish and bird life. The island has waahi tapu sites. The land and seascape values are also high and features such as the pohutukawa/rewarewa (*Knightsia excelsa*) forest, rugged shoreline and deep, clear water have high aesthetic values (Smale, pers. comm.). The island is often used by school, University and ornithological groups.

HISTORIC: There are many recorded archaeological sites on the island including pa, cultivation areas, pits and middens, New Zealand Historic Places Trust (NZHPT) (Inventory date unknown). At the time of printing no further data was made available by the NZHPT. The island is also the site of several modern ship wrecks, including the San Bonito (Jones pers. comm.).

Site Importance: International National Regional Local Unknown
Comment: Tuhua is nationally significant for its wildlife, flora and marine fauna (detailed above), unique landforms and geology (Smale, pers. comm.). Its pohutukawa forest is a nationally rare vegetation association (Shaw, 1988). The island is also salient for its value to tourism and recreation (Jones pers. comm.).

Existing Threats: c,d,i,j,l.

Type & Comment: The island is vulnerable to the intrusion of invasive plants such as blackberry (*Rubus fruticosus*) and noxious animals such as wild pigs, cats and rats. Gill netting and over fishing near the island have had severe effects on local fish populations (Jones and Garrick in prep.). Rubbish dumping from the camping ground and the Lodge is causing an on-going problem with maintenance (Jones pers. comm.). Refuse discarded from fishing boats and pleasure craft in the bays is also now a major problem (Jones pers. comm.).

Human Modification and Human Use: a,h,i,j

The island has long been a popular tourist spot and system of walking tracks have been established (Jones pers. comm.). In South East Bay there is a campground and accommodation buildings, previously operated by the Maori trustees. The waters are heavily fished by recreational and charter boats and also by commercial long liners and gill netters (Jones and Garrick in prep.).

Existing Protection: a

Type & Comment: The whole island is a Wildlife Refuge and the Trust Deed requires that it be managed as if it were a National Park. A proposal has been made for a Marine Reserve off the northern coast (Jones and Garrick in prep.).

Availability of Information:

Natural	1	2	3
Cultural	1	2	3
Historic	1	2	3
Threats	1	2	3
Human Mod. & Use	1	2	3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: Tuhua is currently the subject of a marine reserve proposal and therefore existing data has been well researched for intertidal and subtidal features. The island has been the subject of several investigations by the Offshore Island Research Group (Wright and Beever eds. 1986)

Sources of Information:

Natural	1	2	3	4	5	6	7
Cultural	1	2	3	4	5	6	7
Historic	1	2	3	4	5	6	7
Threats	1	2	3	4	5	6	7
Human Mod. & Use	1	2	3	4	5	6	7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:**References**

- Bell, B.D (1986) The Conservation Status of New Zealand Wildlife, NZ Wildlife Service, Occasional Publication No.12.
- Jones and Garrick (in prep.) Mayor Island Survey Report. Dept of Conservation Technical Report.
- Wright, A.E. and Beever, R.E. (1986) The Offshore Islands of Northern New Zealand. Dept. Lands and Survey, Wellington.
- Mikaere, B. (1989) 'The Obsidian Island' New Zealand Geographic. No.3 July-Sept. 1989.
- Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region, Regional Report Series 11, DoC.
- Pos, H.G. (1965) Site Survey of Tuhua or Mayor Island NZ Archaeological Society Newsletter 8 (4)
- Adams, E.L. (1971) Tuhua (Mayor Island) Historical Review 19 (1)
- Shaw, W (1988) Botanical Conservation Assessment of Crown Lands in the Urewera/Raukumara Planning Study Area, Forest Research Institute, Private Bag, Rotorua.
- Beadel, S (1988) A Register of Threatened and Local Plant Taxa in the Eastern Region, Department of Conservation - Their Distribution and Status, Department of Conservation, Rotorua Technical Report series No.6.

Contacts:

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 C.Richmond; Protection Division Manager, Bay of Plenty Conservancy, DoC
 K.Walls; Conservation Manager, Central Office, DoC
 S. Smale; Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC
 W.Shaw; Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI: Site no. 250 (Rasch, 1989)
3. PNA
4. Geopreservation
5. HPT County Inventory: Unavailable at time of printing
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Northern Matakana Wetlands	Site No: CRI 04/0023
Recorders Name: Grant Bridgwater	Conservancy: Bay of Plenty
Map No: U13	Grid Ref: E: 70750 N: 00085 Date: 06/08 /90

Brief Description of Site: The northern Matakana wetlands are made up of an accretionary sequence of recurved dune ridges (7.5 km²). The ridges have been planted in pine while the hollows contain a diverse range of wetland habitat, including freshwater and saltwater lagoons. The wetlands are located at the north east tip of Site 0019, Tauranga Harbour.

Conservation Values:	Natural: b,c,f	Cultural: e	Historic: Unknown
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Comment: NATURAL: A large part of this area (approximately 50 hectares) is an outstanding Site of Specific Wildlife Interest (SSWI) (Rasch, 1989) which includes the 29 hectare Matakana Island Wildlife reserve. The wetlands themselves are highly natural but pine plantations on dune ridges have modified the area. Two nationally threatened bird species are resident; banded rail (*Rallus philippensis*) and North Island fernbird (*Bowdleria punctata vealeae*) (Bell, 1986). The endangered brown teal (*Anas aucklandica chlorotis*) has been released at the site in the past (Rasch, 1989). The area is used by a wide range of waterbird species particularly waterfowl and shags but also some wading birds. The wetlands form a unique mosaic of habitats and extensive areas of both freshwater and saline wetlands exist with at least 11 separate areas recognised (Beadel, 1989), many with quite distinctive vegetation associations. Two nationally rare ferns occur in the wetlands *Cyclosorus interruptus* and marsh fern (*Thelyptens confluens*). They are listed as vulnerable (Given et al, 1987) and this is the only known location for them in the Tauranga Ecological District (Beadel, 1989). The wetlands are vulnerable to water table and hydrological changes such as the introduction of salt water (Owen pers. comm.). They are also vulnerable to the invasion of exotic weed species such as willow (*Salix* spp.) (Owen pers. comm.). The area is representative of the best mosaic of freshwater wetlands in the Bay of Plenty (Beadel, 1989) and is of importance for its value to threatened bird (Rasch, 1989) and fern species (Beadel, 1989).

CULTURAL: No specific cultural evidence is known for this area. The area has noted educational values and is used by conservation groups and local Botanical societies.

HISTORIC: Unknown

Site Importance:	International	<u>National</u>	Regional	Local	Unknown
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Comment: The wetlands are extremely important in their value for nationally threatened birds (Rasch, 1989) and nationally rare fern species (Beadel, 1989).

Existing Threats: a,b,c,d,m

Type & Comment: The inner harbour shoreline is subject to erosion from the harbour entrance channel (Owen pers. comm.). Many of the wetlands are prone to siltation from logging operations (Owen pers. comm.). The wetlands are vulnerable to invasion by pussy and crack willow as well as pine trees. Wild pig and opossum are causing damage to indigenous vegetation (Owen pers. comm.).

Human Modification and Human Use: a,i

Land modification in this area is predominantly pine plantation. Main recreational activities are swimming, waterskiing, fishing and shellfish gathering on the margins of Tauranga Harbour (Owen pers. comm.).

Existing Protection: a,c

Type & Comment: Part of the area is a Wildlife Refuge and has been designated as such in the Western Bay of Plenty District Council Planning Scheme.

Availability of Information:

Natural 1 2 3
 Cultural 1 2 3
 Historic 1 2 3
 Threats 1 2 3
 Human Mod. & Use 1 2 3

1. Well documented
 2. Limited information (general)
 3. Little information (if any)

Comment: Natural resources are well documented and regularly updated, though information for cultural resources is not well known.

Sources of Information:

Natural 1 2 3 4 5 6 7
 Cultural 1 2 3 4 5 6 7
 Historic 1 2 3 4 5 6 7
 Threats 1 2 3 4 5 6 7
 Human Mod. & Use 1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
 2. Derived info as above & field check
 3. Derived from existing maps & aerial photographs
 4. Recent DOC survey including sampling & analysis
 5. Recent DOC survey excluding sampling & analysis
 6. Experience
 7. Expert opinion

Comment: Natural resources, Human uses and threats are well documented in a series of studies by local authorities and the Department of Conservation. HPT inventories have no specific surveys recorded here and no cultural resources studies have been conducted.

References:

Rasch, G. (1989) Wildlife and Wildlife Habitat in the Bay of Plenty Region, Regional Report Series 11, Department of Conservation (DoC)
 Bell, B.D. (1986) The Conservation Status of New Zealand Wildlife. New Zealand Wildlife Service, Occasional publication No. 12.
 Beadel, S.M. (1989) 'Notes on the Vegetation and Flora of Tauranga Harbours and Little Waihi Estuary'. Wildland Consultants Ltd.
 Given et al, 1987 The Red Data Book of NZ: rare and endangered species of endemic terrestrial vertebrates and vascular plants (Nature Conservation Council).

Contacts:

K.Owen: Senior Conservation Officer, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
 2. SSWI: Part of Site no. 3 (Rasch, 1989)
 3. PNA
 4. Geopreservation
 5. HPT County Inventory
 6. Other
 7. None

Other Considerations:

Accompanying Maps and Photographs:

Site Name/s: Waihi Beach – Bowentown Shore (Heads) Site No: CRI 04/0024

Recorders Name: Susan Forbes

Conservancy: Bay of Plenty

Map No: UT3

Grid Ref: E: 70725 N: 00145

Date: 30/ 07/90

Brief Description of Site: This site extends from Waihi Beach which is a sandy open beach backed by sand dunes to the rocky headland forming the northern shore of Katikati Harbour entrance (04/0019), (9km long). Behind Waihi beach, to the south-west is the Athenree estuary (04/0019). The area between the Waihi stream (in the north-west) and Island View has residential sub-division backing it. South of this towards Bowentown Heads the beach is unmodified. Bowentown Heads encompasses a range of different shore types including, exposed rocky coast, sheltered sandy beach and a sheltered harbour bay.

Conservation Values: Natural: a,b,d,f,h Cultural: c,e,g Historic: b
Comment: NATURAL: The area between Island View and Pios Beach is in a very natural state. However the remaining sectors of Waihi Beach are modified by residential development. The foredunes on Waihi Beach are sensitive to erosion and vegetation disturbance (Owen pers. comm.). Pingao (*Desmoschoenus spiralis*) is found on several locations along Waihi Beach (Owen pers. comm.). Part of Bowentown Heads are unmodified containing remnant pohutukawa (*Metrosideros excelsa*) forest (a nationally rare vegetation association, Beadel, 1989 and Shaw, 1988) on the steeper hill faces. These vegetation areas are included in the recreation reserve at the southern end of the Heads. The pohutukawa forest is a representative feature of past vegetation found at such sites and is one of a few intact remnants in the Tauranga Harbour area (Shaw pers. comm.). A pied shag (*Phalacrocorax varius*) colony at Bowentown Heads is one of only a few mainland Bay of Plenty colonies known. Little blue penguin (*Eudyptula minor*) and variable oystercatcher (*Haematopus unicolor*) are also found in the area (Owen pers. comm.).

CULTURAL: The area in general is noted for its scenic value and, in some areas, its natural undeveloped character (Smale pers. comm.). Geologically the Heads are unique and the riolite dome is a distinctive headland and harbour marker (Smale pers. comm.). The University of Waikato monitor sand dune dynamics at the harbour entrance.

HISTORIC: Maori pa sites have been recorded on the headland along with associated middens (Owen pers. comm.). No further data was made available by the New Zealand Historic Places Trust at the time of printing. Contact DoC Central Office archaeologists for further information.

Site Importance: International National Regional Local Unknown
Comment: This site has unique geological features (Bowentown Heads) and has nationally rare vegetation associations (pohutukawa coastal forest) (Shaw pers. comm.). Pingao is also found along the beach (Owen pers. comm.)

Existing Threats: a,c,d,e,k,l,m

Type & Comment: Along Waihi beach erosion has been recorded in the past and there is localised erosion at access points (Owen pers. comm.). Some modification to natural dune vegetation has occurred from the intrusion of pampas (*Cortaderia* spp.) and gorse (*Ulex european*) (Owen pers. comm.). Cats, ferrets and other noxious animals have reduced the wildlife value of the beach. Native vegetation is prone to disturbance from recreational users and fire hazard. Septic tank seepage is causing localised water pollution problems. Off-road vehicle use contributes to disturbance of the foredunes whilst residential development has significantly altered dune formation at the northern end of Waihi Beach (Owen pers. comm.). Development is also encroaching onto Bowentown Heads. Extensive recreational use is resulting in trampling of coastal vegetation and the camping ground has damaged Maori archaeological sites (Owen pers. comm.). The inner shore of the Heads is subject to erosion (although minor). Gorse and other noxious weeds are a problem on the recreation reserve. Pios Beach is subject to both storm water and septic tank contamination. Due to heavy use of the area fire is also a hazard.

Human Modification and Human Use: a,d,e,h,i

Residential development and recreation reserves are the dominant land uses along the Waihi Beach area. A major part of the Bowentown Heads area is also recreation reserve. Shore based recreation is popular at Waihi Beach and Bowentown Heads and includes swimming, fishing, surfing, walking and other more passive recreation (picnics) (Owen pers. comm.). Water based activities include fishing and diving and occur predominantly at Steels Reef and from boat launching ramps at Anzac Bay and Bowentown (Owen pers. comm.). Associated with the Bowentown ramp is a large dredging work and a number of moorings. Stormwater and sewage outfalls exist at the Bowentown boating club. Traditional Maori use of the area involves shell fish gathering (Smale pers. comm.).

Existing Protection: a,c,d

Type & Comment: Waihi beach has various types of protected status. Local, recreational and esplanade reserves occur along the foreshore and dunes. Part of the beach is Department of Conservation stewardship land and coastal trawling is prohibited within 2 nautical miles offshore. Bowentown heads has a large local purpose recreation reserve. Protection is thought to be adequate however more control is needed to prevent off-road vehicle use damaging the dunes.

Availability of Information:

Natural	1 2 3
Cultural	1 2 3
Historic	1 2 3
Threats	1 2 3
Human Mod. & Use	1 2 3

1. Well documented
2. Limited information (general)
3. Little information (if any)

Comment: Cultural and archaeological/historic resources have not been documented thoroughly in this area and warrant more extensive research.

Sources of Information:

Natural	1 2 3 4 5 6 7
Cultural	1 2 3 4 5 6 7
Historic	1 2 3 4 5 6 7
Threats	1 2 3 4 5 6 7
Human Mod. & Use	1 2 3 4 5 6 7

1. Derived info. from existing literature & databases
2. Derived info as above & field check
3. Derived from existing maps & aerial photographs
4. Recent DOC survey including sampling & analysis
5. Recent DOC survey excluding sampling & analysis
6. Experience
7. Expert opinion

Comment:

References:**Contacts:**

K.Owen: Senior Conservation Officer, Bay of Plenty Conservancy, DoC.
S. Smale: Conservancy Landscape Architect, Bay of Plenty Conservancy, DoC
W. Shaw: Conservancy Advisory Scientist, Bay of Plenty Conservancy, DoC.

Recorded on Existing Databases:

1. WERI
2. SSWI:
3. PNA
4. Geopreservation
5. HPT County Inventory; Unknown at time of printing
6. Other
7. None

Other Considerations:

Accompanying Maps and Photographs:
