

MOTITI

Area	Approx 90 ha
Altitude	0-20 ha
Grid reference	NZMS 260 V14 128912
Bioclimatic zone	Coastal
Ranking	District

Vegetation Type	Physical character
Pohutukawa forest and treeland	Volcanic hard coast
Secondary scrub	Volcanic hard coast
Pohutukawa forest and treeland	Sedimentary coastal hinterland
Raupo reedland	Freshwater wetland
Grey willow forest	Freshwater wetland

S M Beadel pers. obs. 1993

Justification

This site contains the largest remaining example of indigenous vegetation in the Motiti ecological district and comprises virtually the only example of indigenous vegetation remaining on Motiti Island.

A yellow-flowered pohutukawa tree occurs on Motiti Island (Matheson 1979). It is not known which introduced animals occur on the island (P. Jansen pers. comm).

Only a brief aerial inspection has been made of this site and other vegetative types and rare or interesting plant species may occur here (c.f. Spring-Rice 1991).

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MOTITI ISLETS

(Motukahakaha Island, Turitea Island, Motupatiki Island)

Area	Approx 1 ha
Altitude	0-5m
Grid reference	NZMS 260 V14, 137916, 129908, 129907
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Physical character

Motukahakaha Island

New Zealand iceplant - <i>Sarcocornia quinqueflora</i> herbfield	}	Volcanic hard coast
Taupata/ <i>Poa anceps</i> subsp. <i>anceps</i> - <i>Arthropodium cirratum</i> herbfield	}	Volcanic hard coast

Motupatiki Island

Pohutukawa-karo treeland	}	Volcanic hard coast
<i>Sarcocornia quinqueflora</i> -New Zealand iceplant rockland	}	Volcanic hard coast

Turitea Island

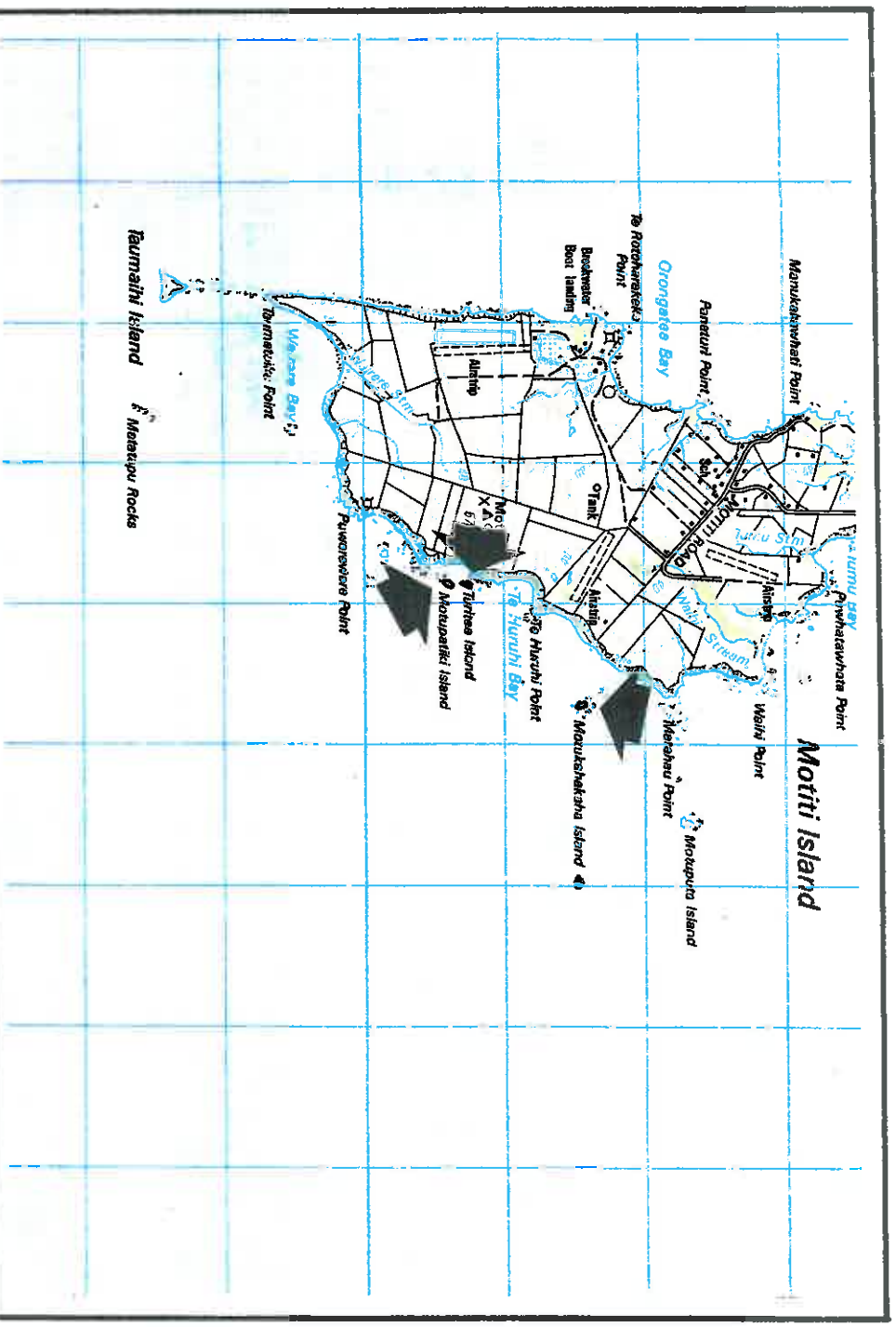
(Pohutukawa)-(taupata) rockland		Volcanic hard coast
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(W. B. Shaw pers. comm. 1992)

Justification

These small islets, together contain good quality small examples of coastal vegetation characteristic of the Motiti ecological district. No introduced animals have been recorded from these islands (P. Jansen pers. comm.).

SS MOTITI ISLETS



6.3 OTANEWAINUKU ECOLOGICAL DISTRICT

This ecological district is a dissected ignimbrite plateau which rises to about 200m a.s.l. in the coastal zone. A narrow band of sand dunes line the coast behind which are steep ignimbrite cliffs. Where streams drain into the sea there are small wetlands.

The original vegetation cover has been substantially modified in most places. A railway line and state highway have been constructed on the sand dunes in front of the ignimbrite cliffs at the eastern end of the district. Sand dune vegetation has been heavily modified by the establishment of adventive species (e.g. marram, pampas and eucalypts) and fires. Near the western edge of the coastal zone a sand mining operation utilises the foreshore and dunes. *Muehlenbeckia complexa* and spinifex are still common on the dunes, but in the past two other plants which are now very uncommon in the district (*pingao*, classed as local, Cameron *et al.* 1993; and *Austrofestuca littoralis*, classed as vulnerable) would have been an important part of the vegetation cover. Raupo dominates the wetlands immediately landward of the dunes, in association with *Baumea articulata* and *Bolboschoenus fluviatilis*.

Pohutukawa forest and treeland still line the ignimbrite cliffs in many places. However, inland from the cliffs the western end of the district has been cleared for agriculture. Pohutukawa, hard beech, tawa, rewarewa, pukatea and kohekohe would have dominated the forests here with small local wetland areas in the valley floors dominated by raupo, cabbage tree, manuka and possibly kahikatea.

The only remaining areas of forest occur on the south-eastern side of the district. Dominants include the above listed species. However there are also areas of secondary forest and shrubland dominated by kanuka, manaku, rewarewa, manuka, mingimingi and prickly mingimingi (*Cyathodes juniperina*). Matata Scenic Reserve contains the largest remaining example of coastal hard beech-pohutukawa forest, a forest type which occurs only along the Bay of Plenty coast (Nicholls, 1968 & 1976).

One of the largest known populations of *Pimelia tomentosa* (classed as vulnerable Cameron *et al.* 1993) in the country occurs in Matata Scenic Reserve.

6.3.1

SPECIAL VEGETATION TYPES & THREATENED AND LOCAL PLANTS	
OTANEWAINUKU ECOLOGICAL DISTRICT	
Vulnerable taxa:	
<i>Pimelea tomentosa</i>	Best known population in the ecological district and one of the best populations known in the country occurs in Matata Scenic Reserve (Beadel 1991). It is also known from Ohinekoao Scenic Reserve (Beadel <i>et al.</i> 1990).
Rare taxa:	
<i>Austrofestuca littoralis</i>	About five plants occur on the sand dunes north-west of Otamarakau (S.M. Beadel pers. obs.).
Local taxa:	
<i>Desmoschoenus spiralis</i> (pingao):	A few plants occur at a small number of sites along the coast.
Vegetation:	
Hard beech forest:	Coastal hard beech forest (with pohutukawa common) occurs along the Bay of Plenty coast (Nicholls 1968, 1976). Matata Scenic Reserve contains the largest remaining example of this type in New Zealand.

6.3.2 SIGNIFICANT SITES: NATIONAL

MATATA (Scenic Reserve)

Area	Approx 139 ha
Altitude	0-200m
Grid reference	NZMS 260 V15 395614
Bioclimatic zone	Coastal
Ranking	National

Vegetation type

Physical character

Hard beech forest (pohutukawa common)

Volcanic soft coast;

Kanuka forest

Sedimentary coastal hinterland

Pohutukawa forest

Volcanic soft coast

Volcanic soft coast;

Pohutukawa-kanuka forest

Sedimentary coastal hinterland

Manuka-mingimingi-prickly mingimingi
scrub and shrublands

Sedimentary coastal hinterland
Sedimentary coastal hinterland

(Beadel 1991b)

Vegetation map: Beadel 1991b

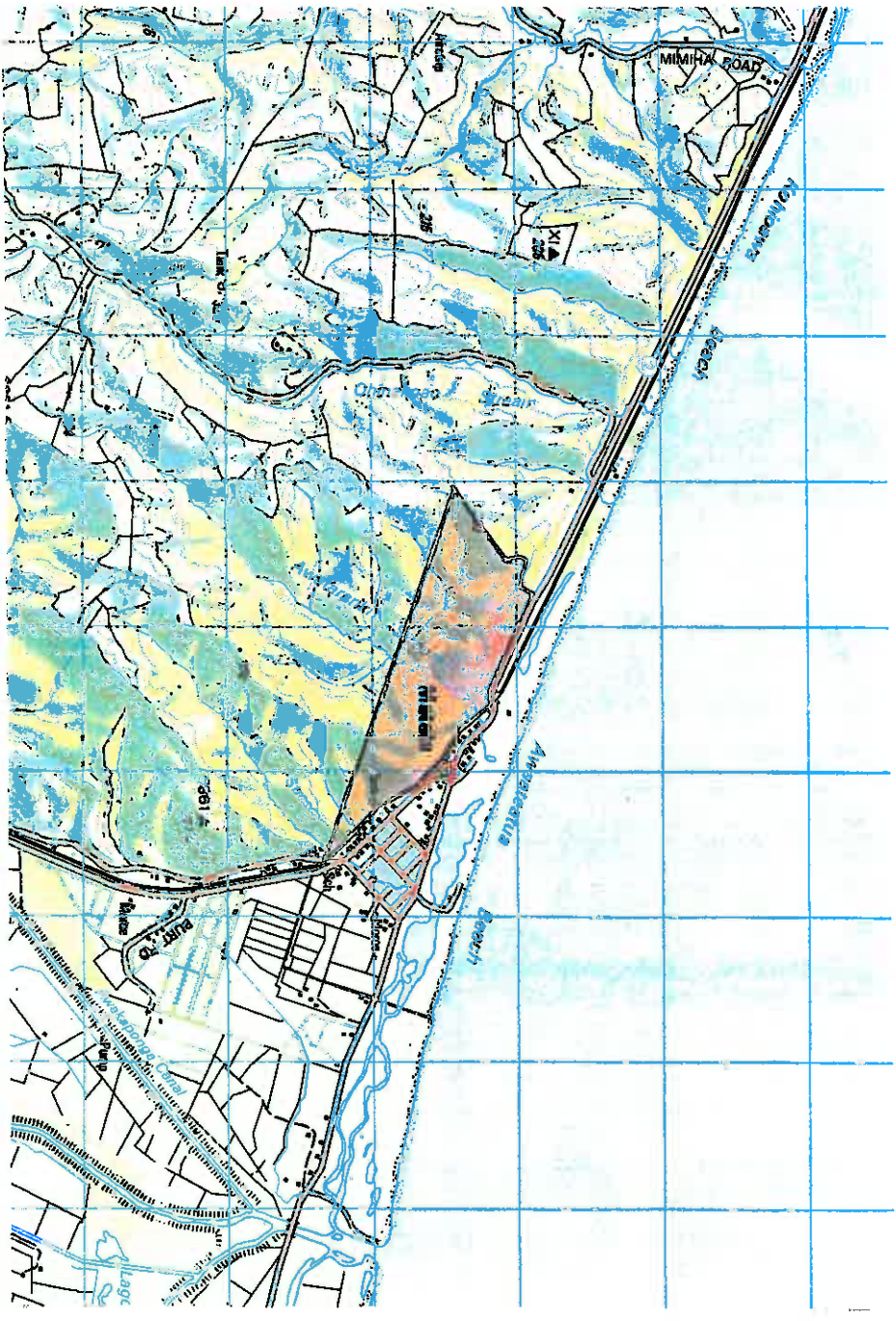
Justification:

Matata Scenic Reserve comprises over 500 ha, of which approximately 140 ha occurs in the coastal zone. The reserve was ranked as being of exceptional botanical conservation value (Beadel 1991b); defined in Appendix 6. It contains the largest area of coastal forest remaining in the Otago Region. Much of it is in relatively good condition and it contains representative examples of the vegetation of the ecological district and region. One of the vegetation types (hard beech forest with pohutukawa common) only occurs along the Bay of Plenty coast (Nicholls 1968, 1976) and Matata Scenic Reserve contains the largest remaining example of this type.

Matata Scenic Reserve contains the best known population of *Pimelea tomentosa* (vulnerable) in the Otago Region and one of the best populations known in the country.

(Source: Beadel 1991b)

SS MATATA 1



6.3.3 SIGNIFICANT SITES: REGIONAL

HEREPURU 1.

Area	Approx 32 ha
Altitude	0m
Grid reference	NZMS 260 V15 350642
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type	Physical character
<i>Bolboschoenus fluviatilis</i> sedgeland	Freshwater wetland
<i>Baumea juncea</i> sedgeland	Freshwater wetland
<i>Baumea articulata</i> - <i>Bolboschoenus fluviatilis</i> - raupo reedland	Freshwater wetland
Raupo reedland	Freshwater wetland
Bachelor's button herbfield	Freshwater wetland
<i>Carex pumila</i> sandfield	Dune and beach sands
Spinifex sandfield	Dune and beach sands
<i>Muehlenbeckia complexa</i> vineland	Dune and beach sands
<i>Isolepis nodosa</i> - <i>Baumea juncea</i> - <i>Cyperus ustulatus</i> - <i>Muehlenbeckia complexa</i> sedge-vineland	
(S. M. Beadel pers. obs. 1992)	

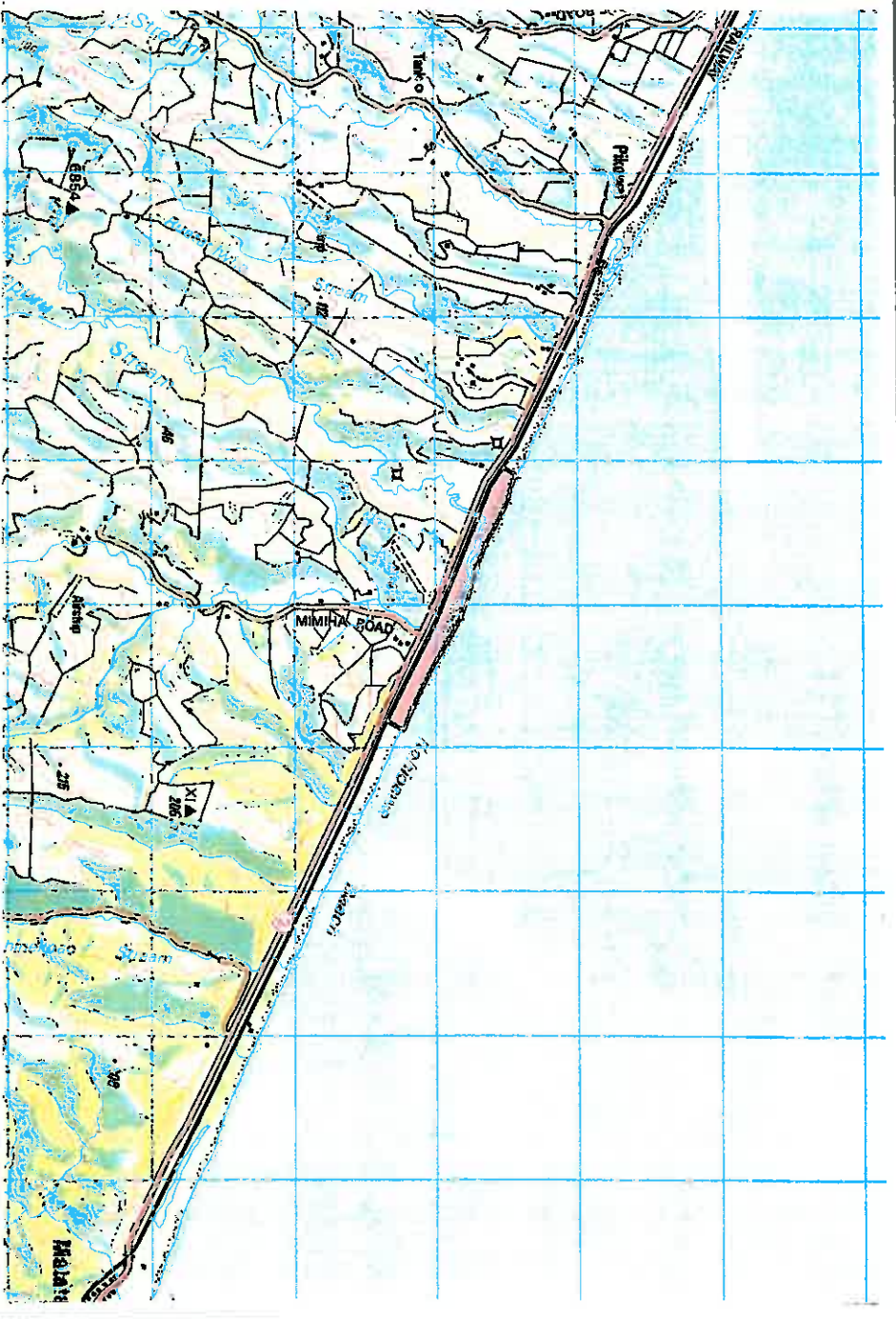
Justification

This site contains a representative, relatively good quality example of the coastal sand dune and wetland vegetation of Otagowainuku Ecological District. Sand dunes and scattered associated wetlands occur along the entire coastal margin of the ecological district.

Coastal wetland vegetation contiguous with sand dune vegetation has been greatly reduced in extent in New Zealand and is now a relatively uncommon feature.

Desmoschoenus spiralis (pingao) occurs at this site (S. M. Beadel pers. obs. 1992); classed as local (Cameron *et al.* 1993).

SS HEREPURU 1



6.3.4 SIGNIFICANT SITES: DISTRICT

OTAMARAKAU

Area	Approx 14 ha
Altitude	0m
Grid reference	NZMS 260 V15 262691
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
(Taupata) / <i>Isolepis nodosa</i> / <i>Muehlenbeckia complexa</i> vineland Spinifex sandfield	Dune and beach sands Dune and beach sands
(S. M. Beadel pers. obs. 1992)	

Justification

This site contains a small population (five plants) of *Austrofestuca littoralis*, a species classed as rare (Cameron *et al.* 1993). This species was once relatively widespread in sand dune communities in New Zealand. However, only 13 colonies are now known to occur in the North Island (Partridge 1992; Beadel 1990c & 1992d).

Pingao (*Desmoschoenus spiralis*) also occurs at this site, classed as local.

SS OTAMARAKAU



HAUONE

Area	Approx 32 ha
Altitude	0m
Grid reference	NZMS 260 V15 315659
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

<i>Muehlenbeckia complexa</i> vineland	
Spinifex sandfield	
<i>Isolepis nodosa/Muehlenbeckia complexa</i> vineland	
Searush tussockland	
Arrow grass- <i>Isolepis cernua</i> herbfield	
Bachelor's button herbfield	
<i>Bolboschoenus</i> sp. (<i>B. medianus?</i>)- <i>Baumea articulata</i> -raupo sedgeland	

Physical character

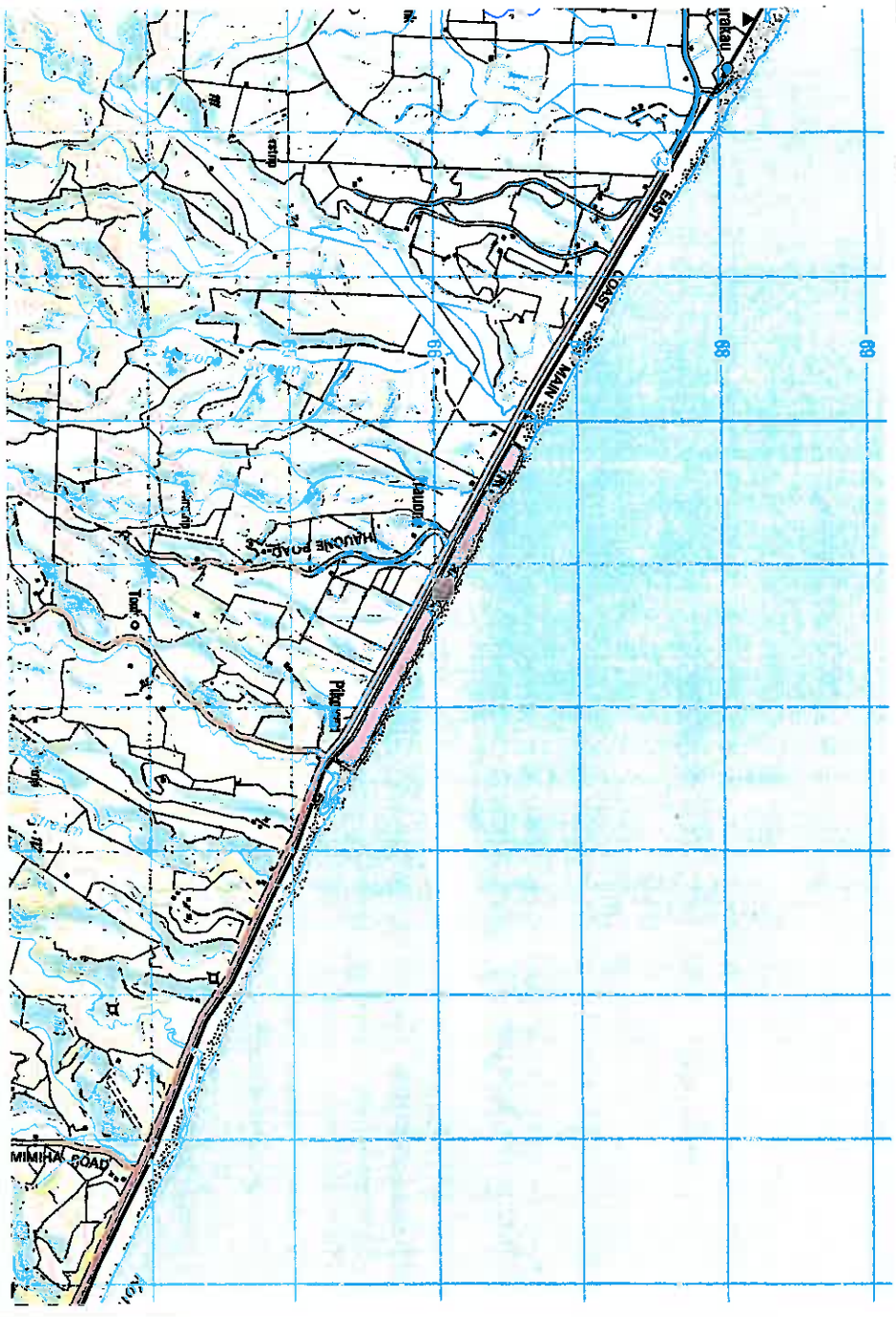
Dune and beach sands
Dune and beach sands
Dune and beach sands
Saline wetland
Saline wetland
Saline wetland
Saline wetland
Saline wetland

(S. M. Beadel pers. obs. 1992)

Justification

This site contains relatively good quality, representative examples of the coastal sand dune vegetation characteristic of the ecological district.

SS HAUONE



HEREPURU 2.
(includes Ohinekoao Scenic Reserve and Burt Covenant)

Area	Approx 200 ha	
Altitude	0-208m	
Grid reference	NZMS 260 V15 372628	
Bioclimatic zone	Coastal	
Ranking	District	
Vegetation type		Physical character
Kanuka forest		Volcanic soft coast
Kanuka forest		Sedimentary coastal hinterland
Pohutukawa forest		Volcanic soft coast
Pohutukawa forest		Sedimentary coastal hinterland
Pukatea/tawa forest		Volcanic soft coast
Rewarewa forest		Volcanic soft coast
Rewarewa/kanuka forest		Volcanic soft coast
Tawa forest		Volcanic soft coast
Mamaku treefernland		Volcanic soft coast
Mamaku treefernland		Sedimentary coastal hinterland
Manuka scrub and shrubland		Volcanic soft coast
Raupo reedland		Freshwater wetland

(Shaw 1991; S. M. Beadel pers. obs. 1992)

Justification

The extent of forest cover in the coastal zone of the Otanewainuku Ecological District has been greatly reduced from its original extent. Apart from Matata Scenic Reserve, this area of forest is the only other example of coastal forest in the district.

Parts of this site are protected (i.e. Ohinekoao Scenic Reserve and Burt Covenant). However, the remaining area is private land.

Pimelia tomentosa, classed as vulnerable (Cameron *et al.* 1993), has been recorded from Ohinekoao Scenic Reserve (Beadel 1991). A good population of this taxon occurs in Matata Scenic Reserve (Beadel 1991b), therefore the Ohinekoao site has been assessed as of district significance.

The map displays a coastal landscape with a prominent road running diagonally from the bottom left towards the top right. This road is labeled 'Kohowewo Beach' along its length and 'MIMHIA ROAD' at a specific junction. To the left of the road, there are several orange-shaded regions, possibly indicating wetlands or specific land parcels. The terrain is characterized by numerous contour lines and elevation markers, such as 689.4, 700, 717, 727, 737, 747, 757, 767, 777, 787, 797, 807, 817, 827, 837, 847, 857, 867, 877, 887, 897, 907, 917, 927, 937, 947, 957, 967, 977, 987, and 997. Other labels include 'Pineapple' near the top right, 'Tank O' near the top center, and 'Mimihia' near the middle left. The map also shows various smaller features like 'XIA 245' and 'MALETO'.



MATATA 4.

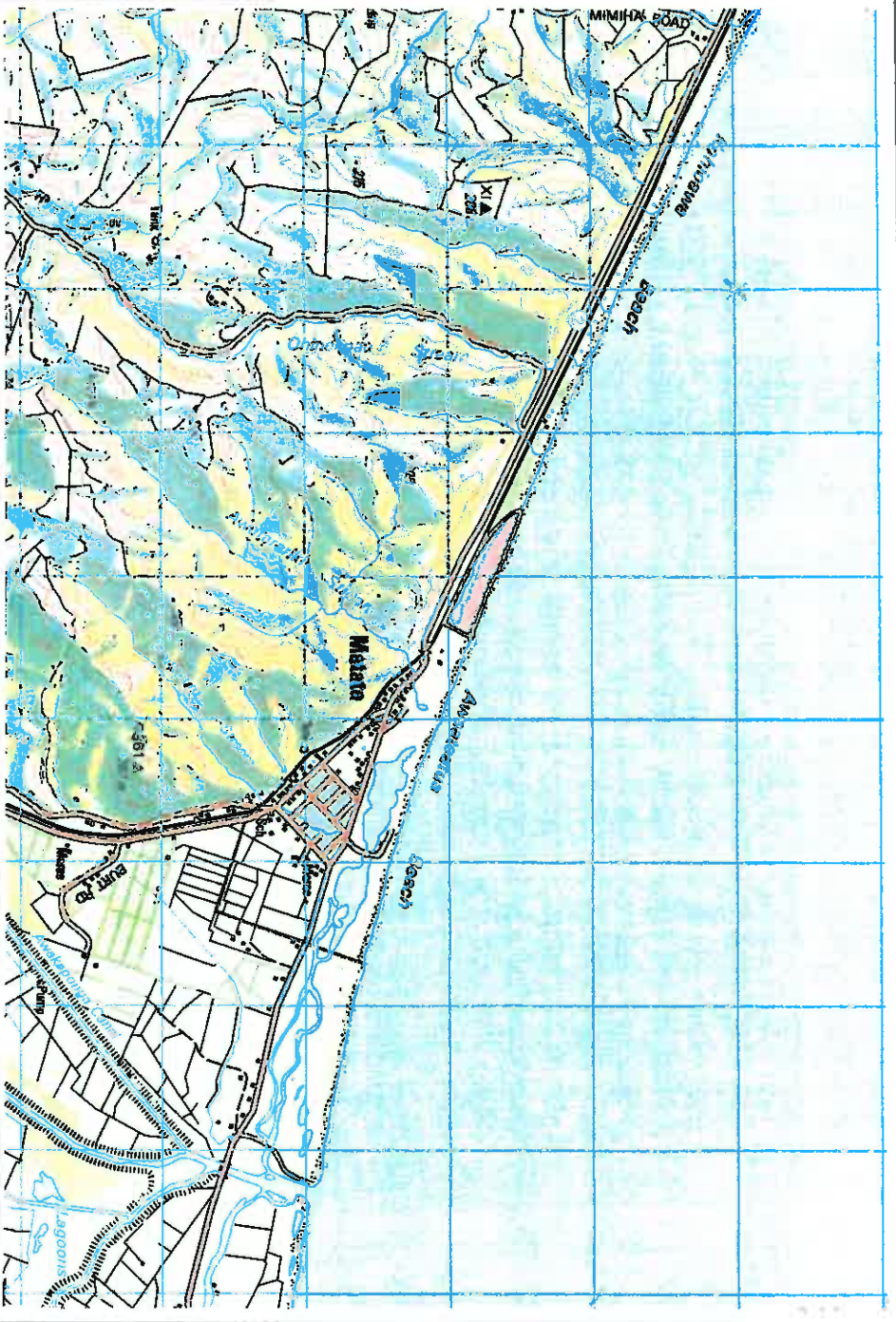
Area	Approx 19 ha
Altitude	0m
Grid reference	NZMS 260 V15 390622
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
<i>Muehlenbeckia complexa</i> vineland	Dune and beach sands
Raupo reedland	Freshwater wetland
Spinifex sandfield	Dune and beach sands
(S. M. Beadel pers. obs. 1992; Beadel 1987)	

Justification

This site contains relatively good quality, representative examples of the coastal sand dune and wetland vegetation characteristic of the ecological district. It forms part of a vegetation sequence extending inland into Matata Scenic Reserve, although part of the sequence has been modified and the two sites are separated by State Highway 2.

SS MATATA 4



6.4 WHITE ISLAND ECOLOGICAL DISTRICT

White Island Ecological District includes several islands and rocks. The largest of these is Whakaari (White Island), a 238ha active andesite volcanic island situated about 50km NNE of Whakatane. The island, which reaches 321m a.s.l., is the summit of the large mainly submarine volcano. Moutohora (Whale Island) is a remnant volcanic cone which has been heavily eroded leaving two peaks (353m a.s.l. and 189m a.s.l.) which fall away to cliffs in the north and at the western and eastern ends of the island. Three small sandy bays are located on the southern coast. Hydrothermal activity occurs on the south-west flanks of the central cone in Sulphur Valley with some hot springs at sea level. Rurimu Island, Tokata Island, Moutoki Island, Volkner Rocks and Club Rocks are the other small islands within the district.

Large areas of pohutukawa forest were killed during volcanic activity on Whakaari between 1976 and 1981, reducing the total vegetation cover on the island by more than 50 percent. Today only about 48ha of simple forest and scrub entirely dominated by pohutukawa remains, along with the herbfields and grasslands associated with gannetries (in which the dominant species are *Disphyma australe* subsp. *australe*, *Eriodia trigonos* subsp. *trigonos* and *Poa anceps* subsp. *anceps*). The island has a very low species diversity, with a recent survey (Clarkson *et al.* 1989) recording only seven species.

Pohutukawa forest was probably once the dominant vegetation on Moutohora with occasional mangao and possibly podocarps (Rijkse 1980). However the vegetation of Moutohora has been highly modified, beginning with clearing and burning by the Maori, followed by European farming and the introduction of goats, sheep and Norway rats. The combined effects of humans and introduced animals devastated the indigenous vegetation. Introduced animals have been eradicated and the vegetation is recovering rapidly and today the island is covered by a mosaic of pohutukawa forest, mahoe forest, kanuka shrubland, bracken and grasses. "There is natural regeneration of canopy species such as pohutukawa, mahoe (*Melicytus ramiflorus* subsp. *ramiflorus*) and kanuka. Existing grasslands are being replaced by kanuka, bracken (*Pteridium esculentum*) and *Isolepis nodosa*, and new grasslands are covering areas previously bare." (Ogle 1990).

Pohutukawa forest, scrub dominated by *Melicytus novae-zelandiae* and taupata, and *Sarcocornia quinqueflora* and New Zealand iceplant rocklands comprise the main vegetation cover on Moutoki and Rurima Islands. There is a small area of spinifex-(pingao) sandfield on Rurima Island.

Moutoki Island is the present-day southern limit of distribution for mawhai (*Sicyos australis*) (classified as local). *Lepidium oleraceum* (classified as rare, Cameron *et al.* 1993) occurs on the Volkner Rocks.

6.4.1

SPECIAL VEGETATION TYPES & THREATENED AND LOCAL PLANTS	
WHITE ISLAND ECOLOGICAL DISTRICT	
Rare taxa:	
<i>Lepidium oleraceum</i> :	Volkner Rocks (W B Shaw pers. comm. 1993).
Local taxa:	
<i>Desmoschoenus spiralis</i> (pingao):	Rurima Island (W B Shaw prs.comm. 1993).
<i>Sicyos australis</i> (maawhai):	Moutoki Island; (S M Beadel 1990, NZFFR).
Distribution, Southern limit:	
<i>Sicyos australis</i>	Moutoki Island (c.f. Cameron 1992).
<i>Asplenium flaccidum</i> subsp. <i>haurakiense</i>	Moutoki and Rurima Islands (Brownesey 1977).
Vegetation:	
White Island	The continuing volcanic activity and its effects on the vegetation makes White Island an internationally important site for scientific purposes.

6.4.2 SIGNIFICANT SITES: INTERNATIONAL

WHAKAARI (White Island Private Scenic Reserve)

Area	238 ha
Altitude	0-321m
Grid reference	NZMS 260 W13 795005
Bioclimatic zone	Coastal
Ranking	International

Vegetation type	Physical character
Pohutukawa forest and scrub	Volcanic hard coast
Dead and damaged pohutukawa forest and scrub	Volcanic hard coast
New Zealand iceplant- <i>Eimadua trigonos-Poa anceps</i> subsp. <i>anceps</i> herbfield and grassland	Volcanic hard coast

(Clarkson *et al.* 1989)

Vegetation map: Clarkson *et al.* 1989

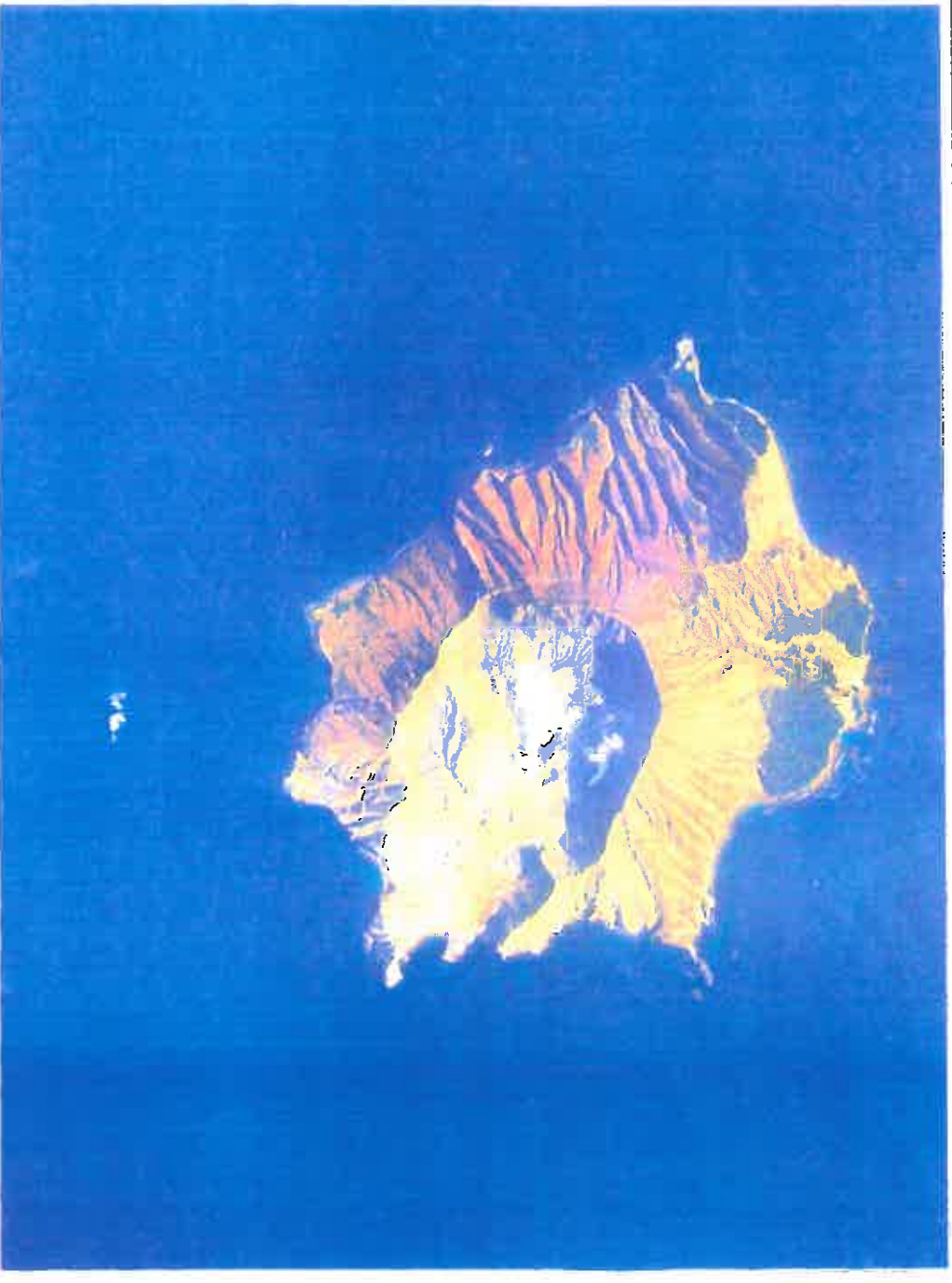
Justification

Whakaari is of international scientific importance as a place where an active volcano and its effects on plant (and animal) populations can be studied.

Much of the island is unvegetated due to the impact of volcanic eruptions, however there are small areas of pohutukawa forest and scrub. The understorey at these sites is very depauperate, comprising of only a handful of species. Only seven vascular plants were recorded from the island in 1989 (Clarkson *et al.* 1989).

Kiore are the only introduced animals that occur on the island.

SS WHAKAARI



6.4.3 SIGNIFICANT SITES: REGIONAL

MOUTOKI AND RURIMA ISLANDS [Wildlife Sanctuary (Maori Ownership)]

Area	15.4 ha
Altitude	0-40m
Grid reference	NZMS 260 W15 510673
Bioclimatic zone:	Coastal
Ranking	Regional

Vegetation types

Physical character

Rurima Island:	
Pohutukawa forest	Exposed rocky coast
Pohutukawa/taupata- <i>Melicytus novae-zelandiae</i> scrub	Exposed rocky coast
<i>Spinifex-Isoplepis nodosa-Bromus diandrus</i> grassland	Dune and beach sands
<i>Sarcocornia quinqueflora</i> herbfield	Exposed rocky coast
New Zealand iceplant rockland	Exposed rocky coast
(W.B. Shaw pers. comm.)	

Moutoki Island:	
Pohutukawa forest	Exposed rocky coast
Taupata- <i>Melicytus novae-zelandiae</i> scrub	Exposed rocky coast
<i>Sarcocornia quinqueflora</i> rockland	Exposed rocky coast

(S. M. Beadel and W. B. Shaw pers. obs. 1990; W.B. Shaw pers. obs. 1992)

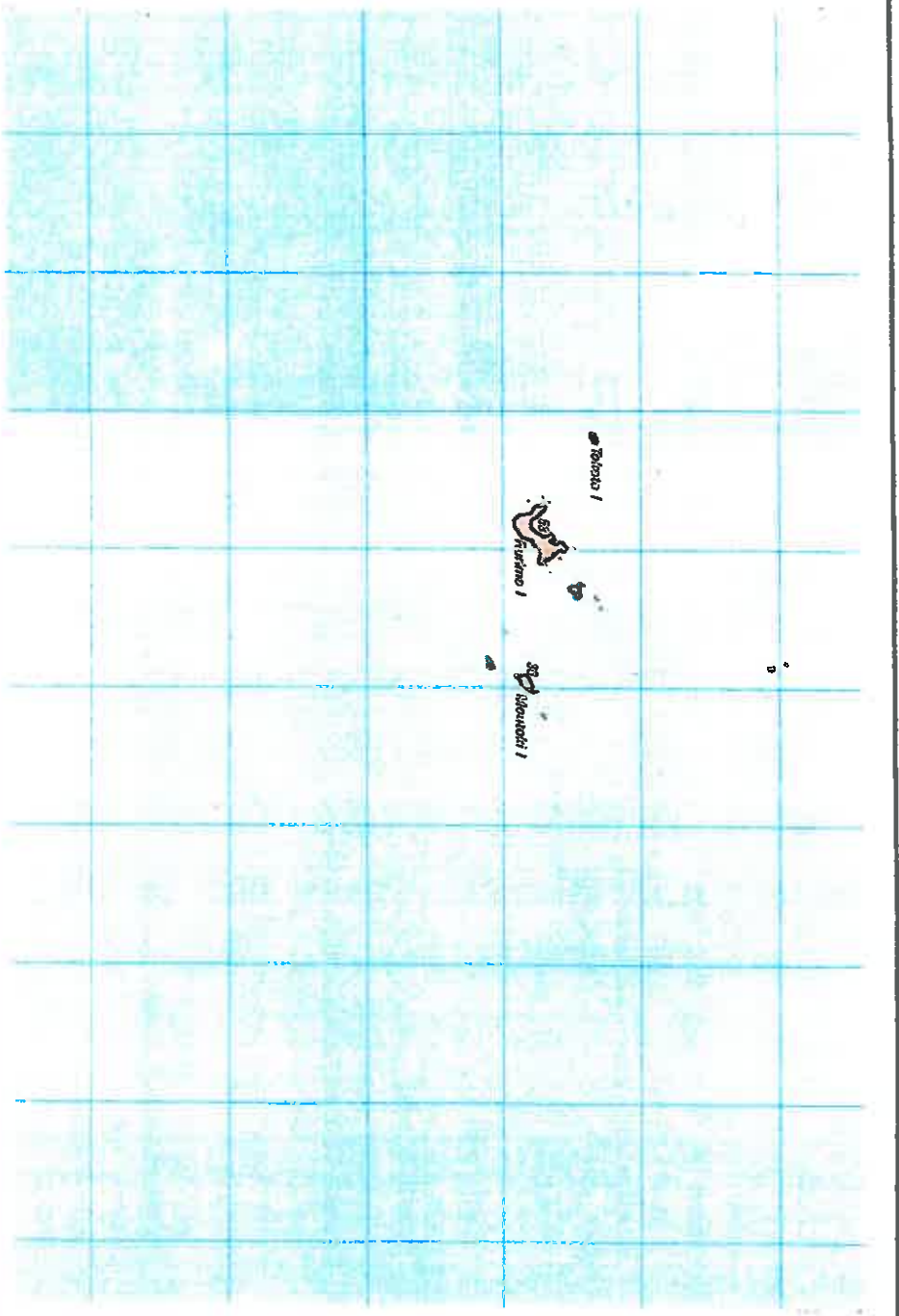
Justification

Moutoki and Rurima Islands contain good quality representative examples of the vegetation characteristic of the ecological district. The vegetation types present do not occur on either Moutohora or Whakaari. Kiore were eradicated from Rurima in 1983 and no introduced animals occur on the islands today.

Sicyos australis (maawhai) reaches its present day southern limit of distribution on Moutoki Island (Cameron 1992). This species, is classed as local (Cameron *et al.* 1993). Pingao, also classed as local, occurs on Rurima Island. *Asplenium flaccidum* subsp. *haurakiense* reaches its southern limit of distribution on these islands.

Melicytus novae-zelandiae, a species generally confined to islands, occurs on Moutoki and Rurima. This species is not known from elsewhere in the ecological district. Another species recorded on the islands, New Zealand spinach (*Tetragonia tetragonioides*), is uncommon in the Coromandel-Bay of Plenty-East Cape region.

SS MOUTOKI AND RURIMA ISLANDS



MOUTUHORA
 [(Whale Island) Wildlife Management Reserve)]

Area	143.3ha
Altitude	0-353m
Grid reference	NZMS 260 W15 598642
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type		Physical character
Mahoe forest		
Pohutukawa forest		Volcanic hard coast
Pohutukawa-cabbage tree forest- <i>Isolepis nodosa</i> sedgeland	}	Volcanic hard coast
hairy lotus grasses-herbfield	}	Volcanic hard coast
Kanuka scrub		Volcanic hard coast
Pohutukawa shrubland		Dune and beach sands
Pohutukawa/kanuka scrub		Volcanic hard coast
<i>Cyperus ustulatus</i> tussockland		Volcanic hard coast
<i>Cyperus ustulatus</i> - <i>Juncus</i> tussockland- <i>Isolepis nodosa</i> sedgeland	}	Freshwater wetland
Searush tussockland	}	Freshwater wetland
Bracken fernland		Bracken fernland
<i>Isolepis nodosa</i> -kanuka-(pohutukawa)- (pampas) shrub-sedgeland	}	Volcanic hard coast
<i>Isolepis nodosa</i> sedgeland	}	Volcanic hard coast
(<i>Isolepis nodosa</i>)/grasses-hairy lotus- <i>Anagallis</i> grassland and herbfield	}	Volcanic hard coast
Ring fern- <i>Pteris tremula</i> fernland	}	Volcanic hard coast
rautahi sedgeland	}	Volcanic hard coast
(<i>Carex pumila</i>) sandfield		Dune and beach sands
Spinifex-(tauhinu) sandfield		Dune and beach sands
Rockland and boulderfield		Volcanic hard coast
(Kanuka) sinter deposits		Volcanic hard coast

(Regnier 1985)

Vegetation map: Regnier 1985

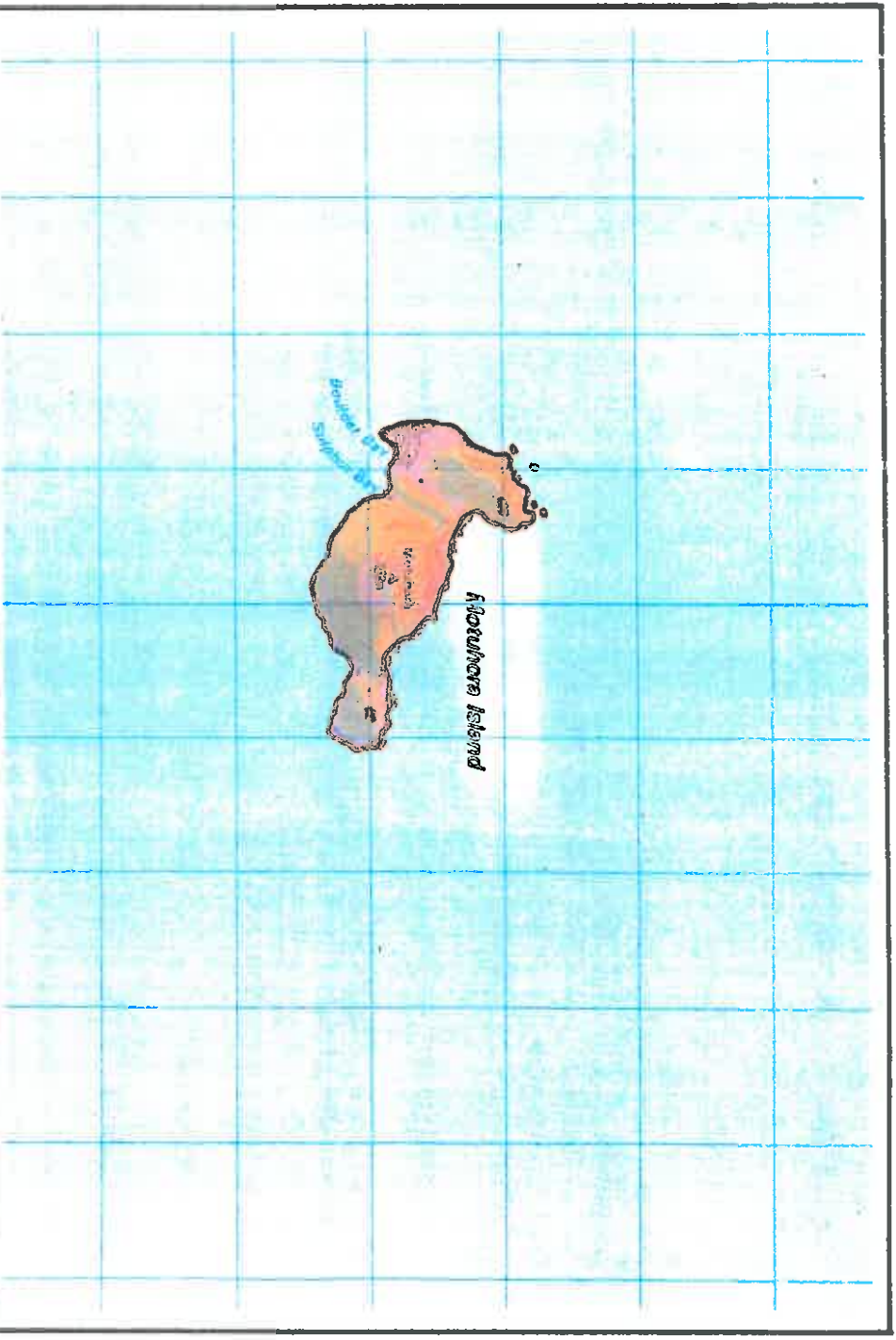
Justification

The vegetation of Moutuhora has been highly modified, beginning with clearing and burning by the Maori, followed by European farming and the introduction of goats, sheep, Norway rats and rabbits. All of these factors combined to greatly reduce and alter the indigenous vegetation cover. However now the island is uninhabited and the above-mentioned animals have been eradicated, and consequently the vegetation is recovering rapidly. Pohutukawa forest, mahoe forest, kanuka shrubland, bracken and grasses

dominate the present day vegetation. Canopy species such as pohutukawa, mahoe and kanuka are regenerating naturally and kanuka, bracken and *Isolepis nodosa* are replacing grasses and bare areas (Ogle 1990).

There is a small area of kanuka forest on sand, which is a regionally rare vegetation type. Another vegetation type of regional significance which occurs on the island is pohutukawa forest. A significant feature is the rapid natural regeneration of coastal forest in the absence of browsing animals. This has been supplemented by an extensive planting programme (McGlynn 1990; Smale and Owen 1990).

SS MOUTUHORA ISLAND



6.4.4. SIGNIFICANT SITES: DISTRICT

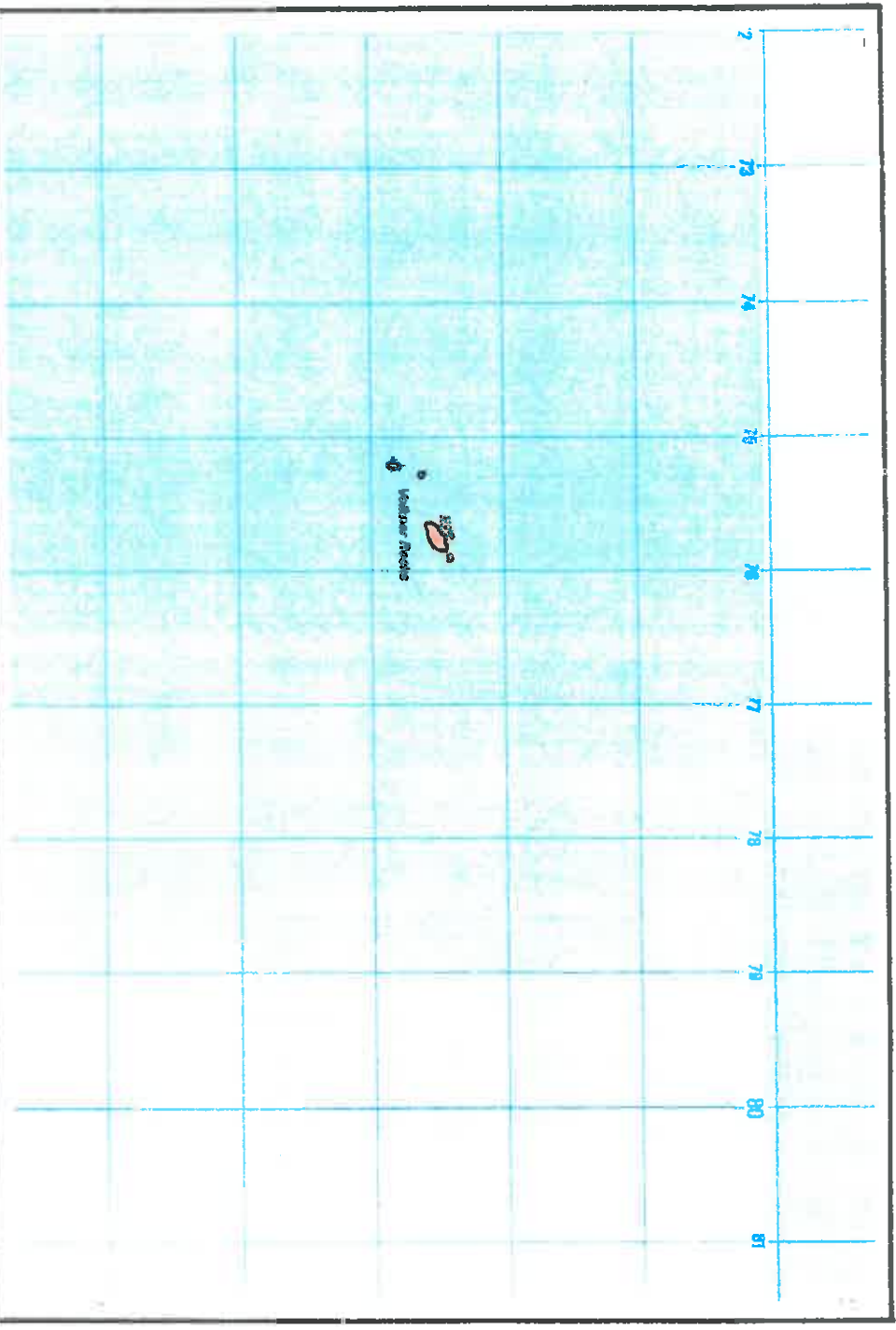
VOLKNER ROCKS

Area	Approx 4 ha	
Altitude	0-113m	
Grid reference	NZMS 260 W13 758055	
Bioclimatic zone	Coastal	
Ranking	District	
Vegetation type		Physical character
Pohutukawa/taupata scrub		Volcanic hard coast
Taupata shrubland		Volcanic hard coast
New Zealand iceplant rockland		Volcanic hard coast
<i>Sarcocornia quinqueflora</i> rockland		Volcanic hard coast
(W B Shaw 1993)		

Justification

Lepidium oleraceum occurs on the Volkner Rocks (Shaw 1993). *Lepidium oleraceum* is classed as rare (Cameron *et al.* 1993). The Volkner Rocks are complementary to Whakaari, currently containing several taxa not currently known from Whakaari. The islands could act as a reservoir of seed for Whakaari during times when Whakaari is relatively stable (Shaw 1993).

SS VOLKNER ROCKS



WHAKATANE ECOLOGICAL REGION

The Whakatane Ecological Region comprises the Te Teko, Taneatua and Opotiki Ecological Districts, all of which adjoin the coast. This region is characterised by coastal and lowland alluvial plains and terraces and rolling hill country. Major features of the region are the Rangitaiki Plains (through which flow the Whakatane, Tarawera and Rangitaiki Rivers) and Ohewa Harbour. The Waioeka and Otara Rivers flow through the Opotiki Ecological District.

7.1 TE TEKO ECOLOGICAL DISTRICT

Te Teko Ecological District comprises the Rangitaiki plains, a recent alluvial floodplain of the Whakatane, Rangitaiki and Tarawera Rivers. The plains were originally largely wetlands but virtually the entire area has been drained and developed for farming. Today less than one percent of the original wetlands remain (Gibbons 1990, Pike 1990).

The coastal zone of Te Teko Ecological District largely consists of coastal sand dunes. However, where the sand dunes extend less than one km from the coast, farmland (originally part of the Rangitaiki swamp) makes up the remainder of the zone. There is a small estuary at the mouth of the Whakatane River. Both the Rangitaiki and Tarawera Rivers have been diverted from their original shared outlet, but coastal wetlands still remain at this site (Matata Wildlife Refuge).

The sand dune vegetation (both foredune and back dunes) has been subjected to a long history of disturbance, burning and grazing. Spinifex and pingao would have been common on the foredune, grading into *Muehlenbeckia complexa*-*Isolepis nodosa* vineyard and sedgelands and kanuka forest and scrub. Today the foredune is generally dominated by spinifex. There is scattered pingao along much of the coast and it is common at several sites. Behind the foredune the dominant species are *Muehlenbeckia complexa*, African boxthorn (*Lycium ferocissimum*) and *Isolepis nodosa*. Whilst the majority of the back dunes have been completely cleared of vegetation and are intensively grazed, there are relatively large areas of "rough pasture" where *Muehlenbeckia complexa* is relatively common. In recent years some of these areas have been retired from farming and are beginning to recover. In addition kanuka forest, scrub and shrublands occur on the Waihiora sand dunes between the Rangitaiki and Tarawera Rivers. Kanuka forest on sand dunes is a nationally rare vegetation type. Behind the sand dunes the Rangitaiki swamp would have been dominated by raupo, cabbage tree, flax and *Carex* species.

A lagoon in the old Tarawera River estuary near Matata is surrounded by a moderate sized wetland dominated by raupo reedland, and mixtures of flax, marsh ribbonwood, searush and oioi. There are small saline wetlands in the Whakatane estuary dominated by searush, *Bolboschoenus fluviatilis*, *B. caldwelli* and *Schoenoplectus pungens*, with local marsh ribbonwood, *Sarcocornia quinqueflora*, oioi and bachelor's button (*Cotula coronopifolia*). Thornton Lagoon to the east of the Rangitaiki River mouth is bounded by a narrow band of raupo reedland.

Cyclosorus interruptus (classified as rare, Cameron *et al.* 1993) and pingao (local) both occur in the coastal zone of the district.

7.1.1

SPECIAL VEGETATION TYPES & THREATENED AND LOCAL PLANTS	
TE TEKŌ ECOLOGICAL DISTRICT	
Rare taxa:	
<i>Cyclosorus interruptus</i>	A few plants occur in Matata (WR) (within the area ranked as exceptional). It is known from five other locations in the Te Teko Ecological District (Irving and Beadel 1992, Beadel 1992 e & f).
Local taxa:	
<i>Desmoschoenus spiralis</i> (pingao)	Occurs locally on the foredune throughout the district. A relatively good quality, representative example occurs in Thornton Lagoon (WMR) (Irving and Beadel 1992).
Vegetation:	
Waihiora Dunes	Kanuka forest on sand dunes, a nationally rare vegetation type, occurs on the Waihiora dunes.

7.1.2 SIGNIFICANT SITES: NATIONAL

MATATA 2.
(Part Matata Wildlife Refuge)

Area	Approx 65 ha
Altitude	0m
Grid reference	NZMS 260 V15 420611
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Marsh ribbonwood shrubland	Saline wetland
Searush-oioi tussockland	Saline wetland
(<i>Harakeke</i>) / searush-oioi-Baumea tussock-sedgeland	Saline wetland
Raupo reedland	Freshwater wetland
Bachelor's button- <i>Selliera radicans</i> - <i>Elatine</i>	Saline wetland
<i>gratioloides</i> - <i>Apium prostratum</i> - <i>Isolepis cernua</i> -	
arrow grass herbfield	
(Irving and Beadel 1992)	

Vegetation map: Irving and Beadel 1992

Justification

Matata Wildlife Refuge contains the best representative example of saline wetlands with contiguous freshwater wetlands in the Te Teko Ecological District. These wetlands are contiguous with sand dunes (also protected by Wildlife Refuge status) which are of district significance (see SS Matata 3).

Two small populations of *Cyclosorus interruptus* (rare), occur in the reserve.

(Source: Irving and Beadel 1992)

This is a detailed topographic map of the Malaga area, showing the coastline, Malaga Bay, and surrounding land. The map includes a grid overlay and various labels such as 'Malaga', 'Beach', 'Lagoons', and 'Scripps Ranch'. The map is oriented with North at the top.



WAHIEROA DUNES 1.
(part recreation reserve and part private land)

Area	Approx 103 ha
Altitude	0m
Grid reference	NZMS 260 V15 472601
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Kanuka forest, scrub and shrublands	Dune and beach sands
Spinifex-(pingao) tussockland	Dune and beach sands
(Lupin)/ <i>Carex pumila</i> -haretail-	}
<i>Muehlenbeckia complexa</i> -catsear	}
grass-sedgelands	}

(Beadel 1985 and S. M. Beadel pers. obs. 1992) (See also Smale 1990).

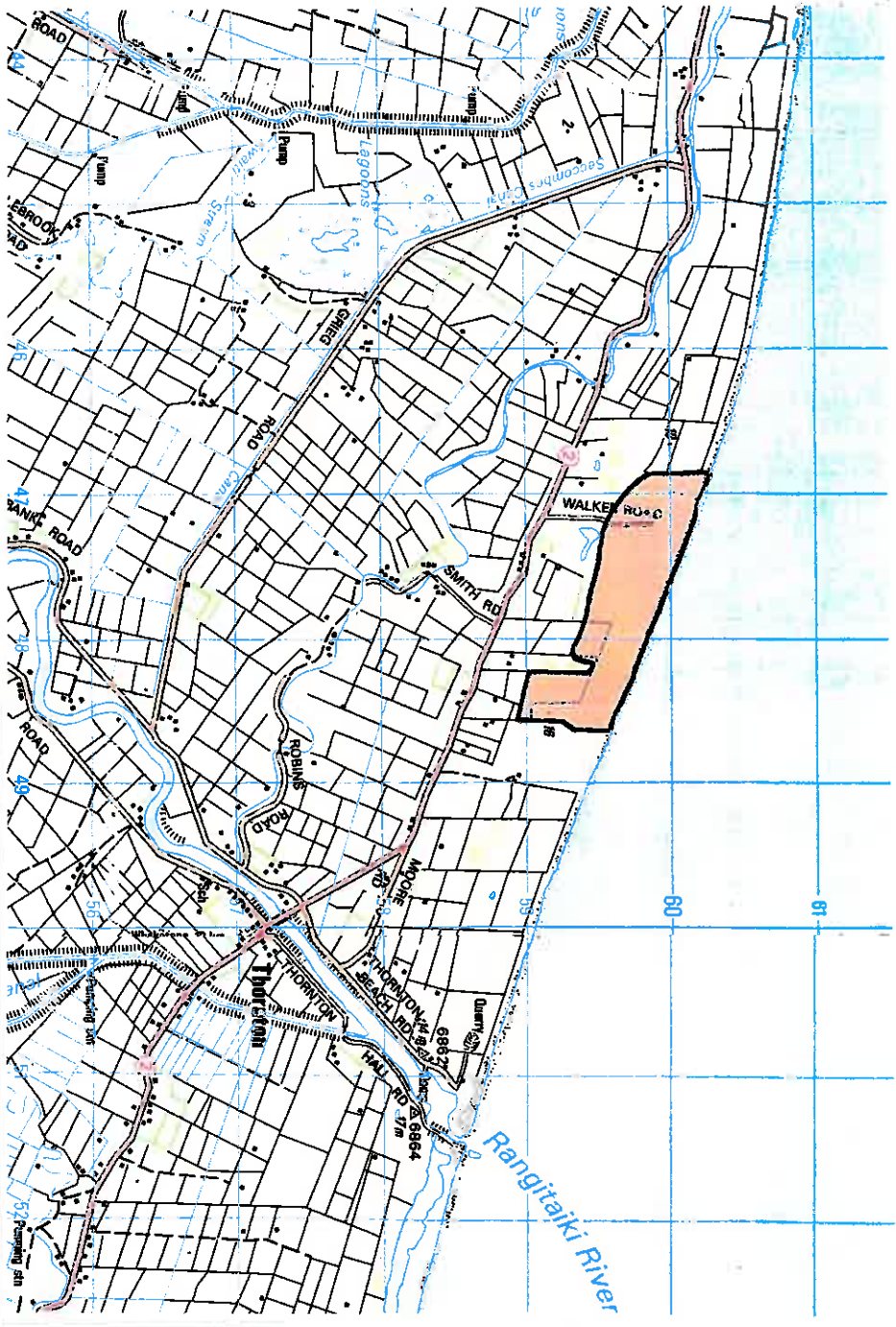
Justification

Kanuka forest and scrub on sand dunes are now rare in New Zealand and this site is of considerable significance. These vegetation types would probably once have been common in the Te Teko Ecological District (there are large remnant kanuka trees near the Whakatane estuary) and possibly also in the Taneatua ecological district (there are large scattered kanuka trees on Tern Island Wildlife Management Reserve.

This site contains relatively good quality, representative examples of these types of coastal vegetation, characteristic of the Te Teko Ecological District and Bay of Plenty Region.

Desmoschoenus spiralis (pingao) occurs locally at this site (Beadel 1992), classed as local (Cameron *et al.* 1993).

SS WAHIEROA DUNES 1



7.1.3 SIGNIFICANT SITES: REGIONAL

THORNTON 1.

(Part Thornton Lagoon Wildlife Management Reserve)

Area	Approx 15 ha
Altitude	0m
Grid reference	NZMS 260 W15 520584
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type

Physical character

Spinifex-pingao tussockland

Dune and beach sands

(Irving and Beadel 1992)

Vegetation map: Irving and Beadel 1992

Justification

This site contains spinifex-pingao tussockland and is the best remaining example of indigenous foredune communities in the Te Teko Ecological District and Whakatane Ecological Region. This type would once have been more common within this district and region. However pingao, one of the major components of the type, has since decreased in abundance. It now occurs locally along the Te Teko Ecological District coastline and there are only four known natural populations of pingao in the rest of the ecological region (i.e. within the Opotiki and Taneatua Ecological Districts) (Walls 1991, Beadel 1988a & 1990a).

Desmoschoenus spiralis (pingao) is common at this site (Beadel 1992); it is classed as local (Cameron *et al.* 1993). *Tetragonia tetragonioides* (New Zealand spinach) occurs at this site.

This taxon is uncommon in the Coromandel-Bay of Plenty-East Cape region.

This site is contiguous with SS Thornton 2, a site of district significance.



7.1.4 SIGNIFICANT SITES: DISTRICT

MATATA 3. (Part Matata Wildlife Refuge)

Area	Approx 45 ha
Altitude	0m
Grid reference	NZMS 260 V15 420613
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
(African boxthorn)/ <i>Muehlenbeckia complexa</i> vineland	Dune and beach sands
Corse-pampas-blackberry shrubland	Dune and beach sands
Marsh ribbonwood shrubland	Saline wetland
(Grey willow)/ <i>Baumea juncea</i> treeland	Freshwater wetland
Spinifex sandfield and tussockland	Dune and beach sands
Spinifex-(pingao) tussockland	Dune and beach sands
Grasslands	Dune and beach sands
Reed sweet grassland	Freshwater wetland

(Irving and Beadel 1992)

Vegetation map: Irving and Beadel 1992

Justification

The primary value of this area as a buffer around SS Matata 2, a site of national significance.

Adventive species are common and often dominant throughout this site. If African boxthorn is eradicated from the reserve, the site may deserve a higher classification (e.g. Regional).

Pingao (classified as local by Cameron *et al.* 1993) is scattered along the foredune.

WAHIEROA DUNES 2.

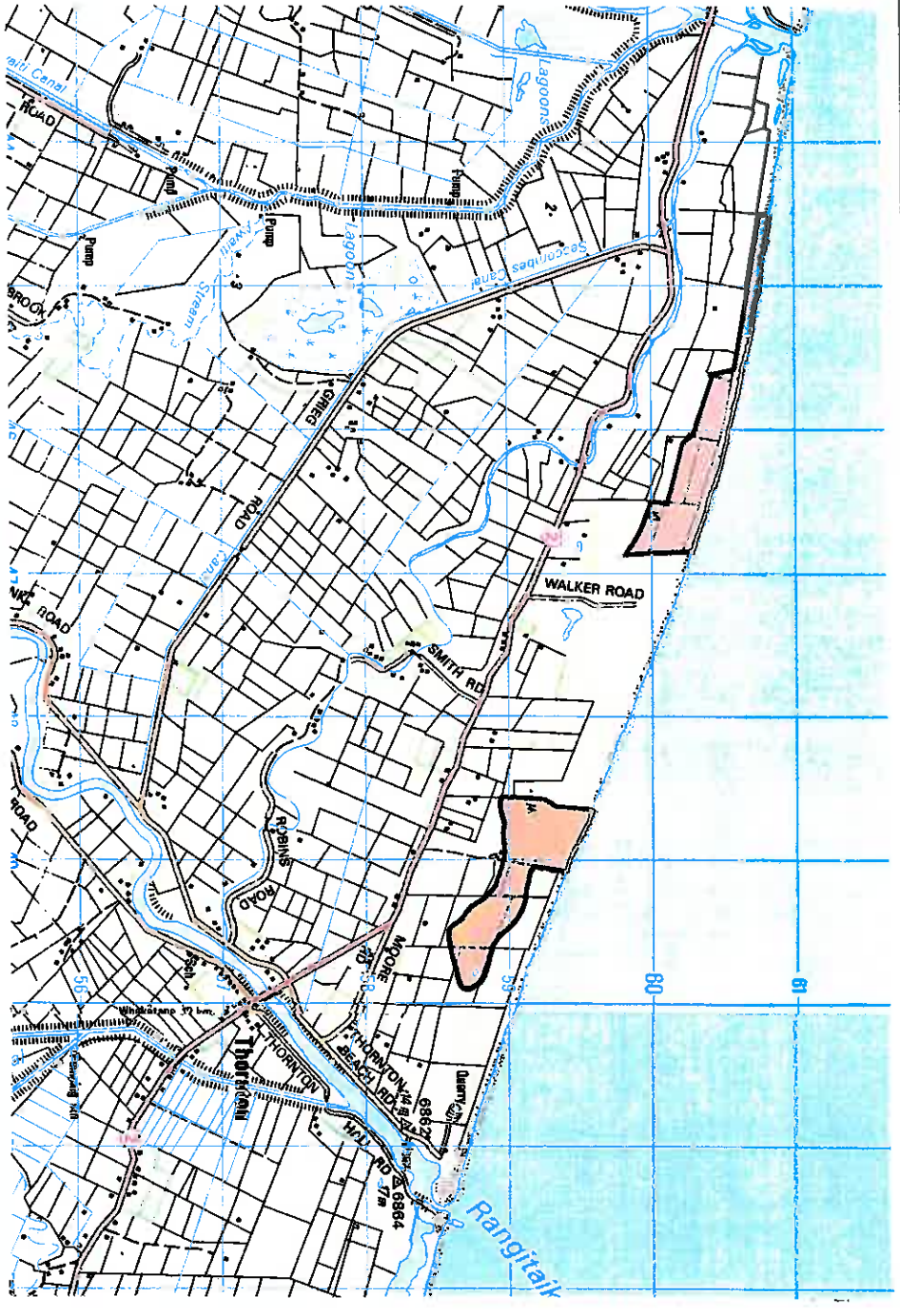
Area	Approx 104 ha
Altitude	0m
Grid reference	NZMS 260 V15 470600
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
(African boxthorn)/ <i>Muehlenbeckia complexa</i> vineland	Dune and beach sands
Spinifex-(pingao) tussockland	Dune and beach sands
(Lupin)/ <i>Carex pumila</i> -haretail- <i>Muehlenbeckia complexa</i> -	Dune and beach sands
catsear grass-seedgeland	}

Justification

This site provides a buffer to the kanuka forest in SS Wahieroa Dunes 1, a site of national significance. Wahieroa Dunes 2 contains a good example of the sand dune vegetation characteristic of the Te Teko Ecological District.

SS WAHIEROA DUNES 2



THORNTON 2.

(includes recreation reserve and part Thornton Wildlife Management Reserve)

Area	Approx 47 ha
Altitude	0m
Grid reference	NZMS 260 W15 520584
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

(African boxthorn)/*Muehlenbeckia complexa* vineland
Muehlenbeckia complexa vineland
 Spinifex sandfield and tussockland
Carex pumila / catsear-haretail sedge-grass-herbfield
 Raupo reedland

Physical character

Dune and beach sands
 Dune and beach sands
 Dune and beach sands
 Raupo reedland
 Freshwater wetland

(Irving and Beadel 1992; S. M. Beadel pers. obs. 1992)

Vegetation map: Irving and Beadel 1992

Justification

The primary value of this site is as a buffer zone to protect the spinifex-pingao tussockland on the foredune (SS Thornton 1 site).

Pingao (classed as local, Cameron *et al.* 1993) is present on the sand dunes.



WHAKATANE ESTUARY

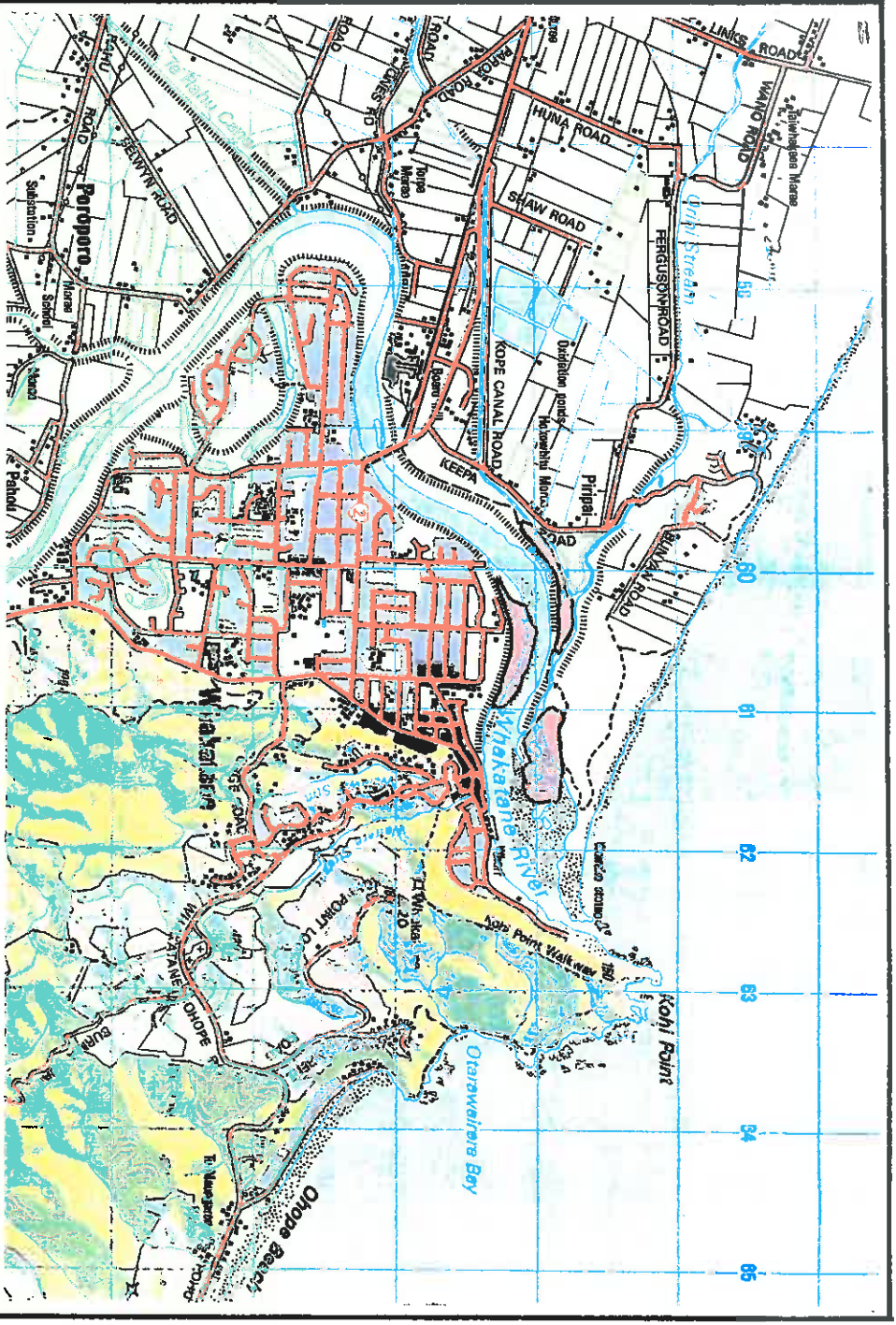
Area	Approx 33 ha	
Altitude	0m	
Grid reference	NZMS 260 W15 613540	
Bioclimatic zone	Coastal	
Ranking	District	
Vegetation type		Physical area
Marsh ribbonwood/searush shrubland		Saline wetland
Marsh ribbonwood/searush-oioi shrubland		Saline wetland
Searush tussockland		Saline wetland
Searush-oioi tussockland		Saline wetland
<i>Bolboschoenus caldwellii</i> sedgeland		Saline and freshwater wetland
<i>Bolboschoenus fluviatilis</i> - <i>B. medius</i> sedgeland		Saline and freshwater wetland
<i>Schoenoplectus pungens</i> sedgeland		Saline wetland
Bachelor's button herbfield		Saline wetland
<i>Sarcocornia quinqueflora</i> herbfield		Saline wetland

Justification

There are few saline wetlands remaining in the Te Teko Ecological District and these wetlands are the only remaining examples in the Whakatane Estuary. There are local concentrations of pampas.

This site is part of a large area, the remainder of which is outside of the coastal zone.

SS WHAKATANE ESTUARY



(PART) KOHIKA

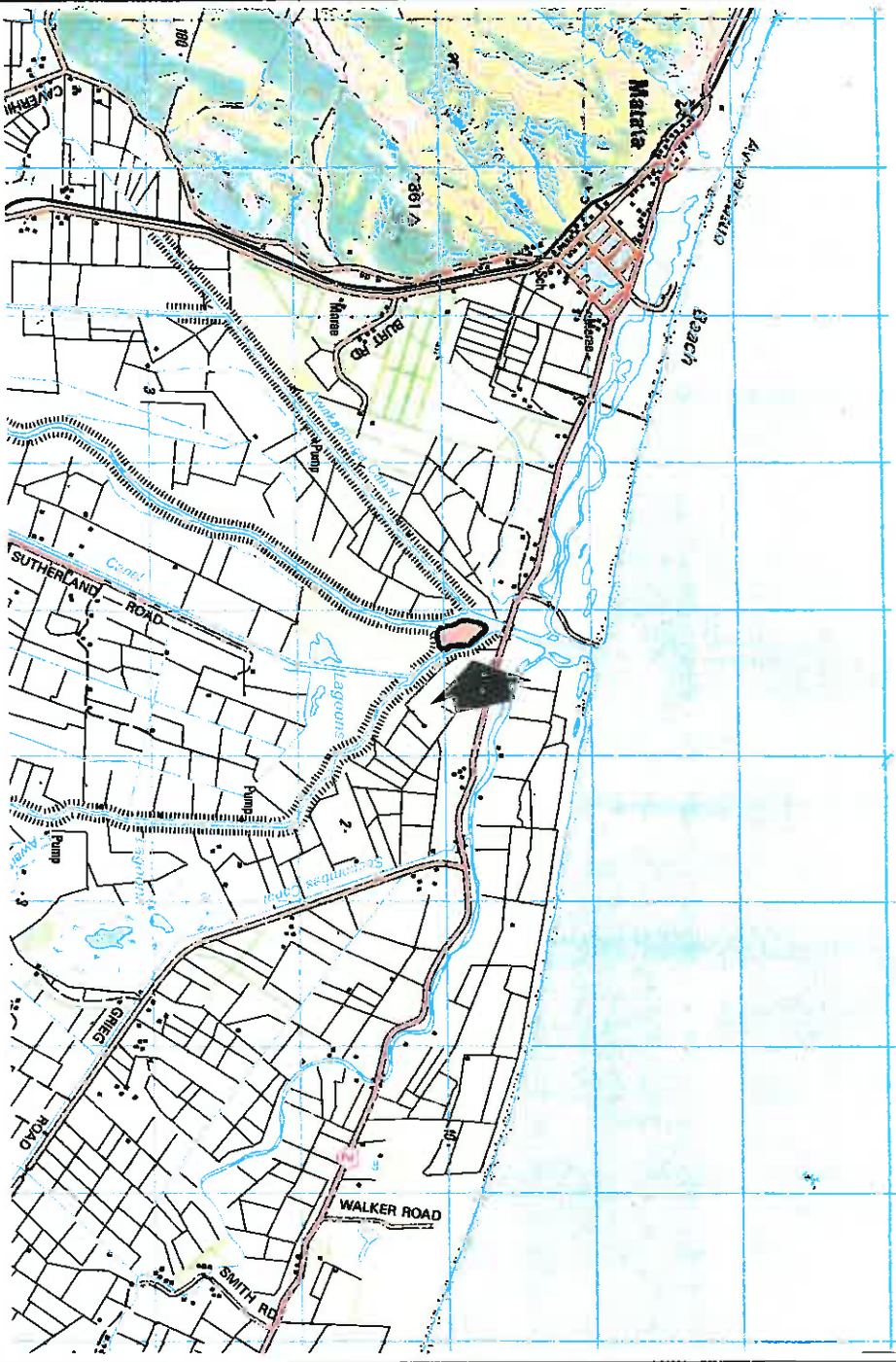
Area	Approx 5 ha	
Altitude	0m	
Grid Reference	NZMS 260	V15 433600
Bioclimatic zone	Coastal	
Ranking	District	
Vegetation Type	Physical character	
Cabbage tree-raupo-harakeke	<i>Coprosma propinqua</i>	Freshwater wetland
subsp. <i>propinqua</i> shrub-flax-reedland		
Raupo- <i>Bolboschoenus fluviatilis</i> /swamp millet sedge-reedland		Freshwater wetland
Raupo- <i>Baumea articulata</i> /swamp millet reedland		Freshwater wetland
(Beadel 1993b)		

Justification

This site contains some of the few remaining examples of wetland vegetation characteristic of the Te Teko Ecological District. *Cyclosorus interruptus* (classed as rare, Cameron *et al.* 1993) occurs at this site.

This site is contiguous to a larger area, outside of the coastal zone.

SS (PART) KOHIKA



7.2 TANEATUA ECOLOGICAL DISTRICT

There is considerable variation in landform where Taneatua Ecological District adjoins the coast. Most of the coastal strip is a long sandy beach (Ohope Beach) running into a large spit at the eastern end. Much of the formerly extensive dune system has been levelled for residential development. A major estuary system, Ohiwa Harbour, occurs behind the spit. This largely shallow estuary is a post-glacial drowned valley system. West of Ohiwa Harbour, and behind much of Ohope Beach, a system of coastal cliffs extends to meet a series of rugged greywacke headlands in the vicinity of Otarawaitere Bay and Kohi Point.

Before the arrival of humans, most of the ecological district would have been forested. Non-forest vegetation would have been limited to coastal cliffs, dunelands, estuaries, riverbeds, wetlands and areas of secondary vegetation induced by natural fires (e.g., caused by lightning strike) or wind damage to forests. The coastal dune system would have been dominated by native sand-binders such as *spinifex* and *pingao*. Mangroves would probably have occurred in Ohiwa Harbour but may not have covered as extensive an area as they do now. The coastal forests would have been dominated by *pohutukawa*, *houpara* (*Pseudopanax lessonii*), *puriri* and *kohekohe* with a range of other species.

The present day vegetation is vastly different. The limited sand dune system which remains is dominated by *spinifex* sandfield and grassland, and *Muehlenbeckia complexa*-bracken vineland and fernland. In the past *pingao* (classed as local, Cameron *et al.* 1993), now reduced to only a few plants, would have been common. Ohope Scenic Reserve contains the largest area of coastal forest. Kohi Point has been burnt (probably repeatedly) and is now dominated by secondary forest (dominants include *rewarewa*, *mahoe*, *houpara* and *kanuka*) with scattered pockets of *pohutukawa*, *mangeo* and *houpara*. The coastal cliffs support windshorn scrub comprising *kanuka*, *wharariki* (*Phoridium cookianum*) and *mingimingi*.

A narrow fringe of saline wetland vegetation lines the margins of much of Ohiwa Harbour, dominated by searush and *oioi* with local mangroves. There are several more extensive areas of saline wetland, notably in Nukuhou estuary and Motuotu Island. Locally there are small freshwater wetlands (comprising *manuka* and *raupo*) contiguous with the saline wetlands. A few small remnant pockets of *pohutukawa* forest and treeland occur on the steep hillslopes around the harbour and secondary forest, scrub and shrubland occurs locally (e.g. Uretara Island). Dominants include *kanuka*, *manuka*, *rewarewa*, *kamahi* and *manaku* (*Cyathia medullaris*).

Ohiwa Harbour is the southern limit of distribution for mangrove communities in New Zealand. *Pimelia tomentosa* (classed as vulnerable, Cameron *et al.* 1993), occurs at a number of sites in the coastal zone of this District.

(Source: Beadel and Shaw 1988; Beadel 1993a)

7.2.1

SPECIAL VEGETATION TYPES & THREATENED AND LOCAL PLANTS	
TANEATUA ECOLOGICAL DISTRICT	
Vulnerable taxa:	
<i>Pimelea tomentosa</i>	Occurs in Ohope Scenic Reserve, Kohi Point Scenic Reserve, Uretara Island Scenic Reserve, Pataua Island Scientific Reserve, Oscar Reeve Scenic Reserve, Hiwirau Category One Area. Toritori Category Two Area (Beadel and Shaw 1988; Clarkson and Regnier 1989, S M Beadel 1993).
Local taxa:	
<i>Desmoschoenus spiralis</i>	A few small clumps occur in Port Ohope Recreation Reserve (Beadel 1988a) and one plant occurs on Ohiwa Spit (Beadel 1990a).
Distribution; Southern limit:	
<i>Avicennia marina</i> var. <i>resinifera</i>	The southern limit for mangrove communities in New Zealand occurs near Kutarere in Ohiwa Harbour (Crisp <i>et al.</i> 1990). The best populations of mangrove in the harbour occur in Motuotu Island Nature Reserve, Pataua Island Scientific Reserve, Uretara Island Scenic Reserve and adjacent to Nukuhou Conservation Area.
<i>Stipa stipoides</i>	This taxon reaches its southern limit on the eastern side of the North Island in Ohiwa Harbour (it occurs as far south as Waikawa Beach on the western side of the island - latitude 38 30' and also occurs in Tasman Bay in the South Island) (A P Druce pers. comm.). It is known to occur at five sites in Ohiwa Harbour the best of which the <i>Stipa</i> category two area. (Beadel 1993). Other sites include, Uretara Island SR and Motuotu Island NR (Beadel 1990a; Beadel and Shaw 1988; Clarkson and Regnier 1989).

Vegetation:**Pohutukawa forest:**

Ohope Scenic Reserve contains one of the best examples of pohutukawa forest on the mainland in New Zealand.

7.2.3 SIGNIFICANT SITES: NATIONAL

OHOPE (Part Ohope Scenic Reserve)

Area	Approx 117 ha
Altitude	0-154m
Grid reference	NZMS 260 W15 642513
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Pohutukawa forest	Sedimentary coastal hinterland
Rewarewa/kanuka-pohutukawa forest	Sedimentary coastal hinterland
(Beadel and Shaw 1988)	
Vegetation map:	Beadel and Shaw 1988

Justification

Ohope Scenic Reserve comprises about 490 ha, of which approximately 116 ha is in the coastal zone. The entire reserve is ranked as being of exceptional botanical conservation value (Shaw 1988). This site contains the best example of pohutukawa forest in the Taneatua Ecological District and one of the best examples of pohutukawa forest on the mainland in New Zealand. It is of national significance.

Pimelia tomentosa occurs in the reserve, classed as vulnerable (Cameron *et al.* 1993).



URETARA ISLAND
(includes Uretara Island Scenic Reserve)

Area	Approx 116 ha
Altitude	0-58m
Grid reference	NZMS 260 W15 720475
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Black wattle forest	Dune and beach sands
Kanuka forest	Sedimentary coastal hinterland
Rewarewa/Kanuka forest	Sedimentary coastal hinterland
Pohutukawa forest	Sedimentary coastal hinterland
Brush wattle forest and scrub	Sedimentary coastal hinterland;
	Dune and beach sands
Manuka scrub	Freshwater wetland; Saline wetland;
	Dune and beach sands
Brush wattle-gorse-manuka-bracken scrub and shrubland	Dune and beach sands
Marsh ribbonwood/oioi shrub-sedgeland	Saline wetland
Mangrove scrub	Saline wetland
Mangrove shrubland	Saline wetland
Manuka- <i>Olearia solandri</i> shrubland	Saline wetland
Searush tussockland	Saline wetland
Raupo reedland	Freshwater wetland
Mangrove mudflat	Saline wetland
Estuary margin	Saline wetland; Freshwater wetland;
	Dune and beach sands

(Beadel 1993a; Beadel and Shaw 1988)

Vegetation map: Beadel and Shaw 1988a; Beadel 1993a

Justification

Uretara Island contains freshwater and saline wetlands contiguous with indigenous forest and scrub. It is a good quality, representative example of these vegetation types, characteristic of the Taneatua Ecological District. This site was identified as a category one area in Beadel 1993a (defined in Appendix 5.4).

Pimelia tomentosa occurs in the reserve, classed as vulnerable (Cameron *et al.* 1993)

Along with Patana Island, Motuotu Island and Nukuhou Conservation Area, this site contains one of the best examples of mangrove stands in the harbour (refer to Motuotu Island for a brief discussion of these mangrove stands).

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MOTUOTU ISLAND (Nature Reserve)

Area	70 ha
Altitude	0m
Grid reference	NZMS 260 W15 730466
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Pohutukawa/ <i>Olearia solandri</i> -manuka forest	Dune and beach sands; Saline wetland
and shrubland	
Mangrove scrub	
Manuka scrub	
Mangrove shrubland	
Searush tussockland	Saline wetland
Mangrove mudflat	Saline wetland

(Beadel 1993a)

Vegetation map: Beadel 1993a; Clarkson and Regnier 1989

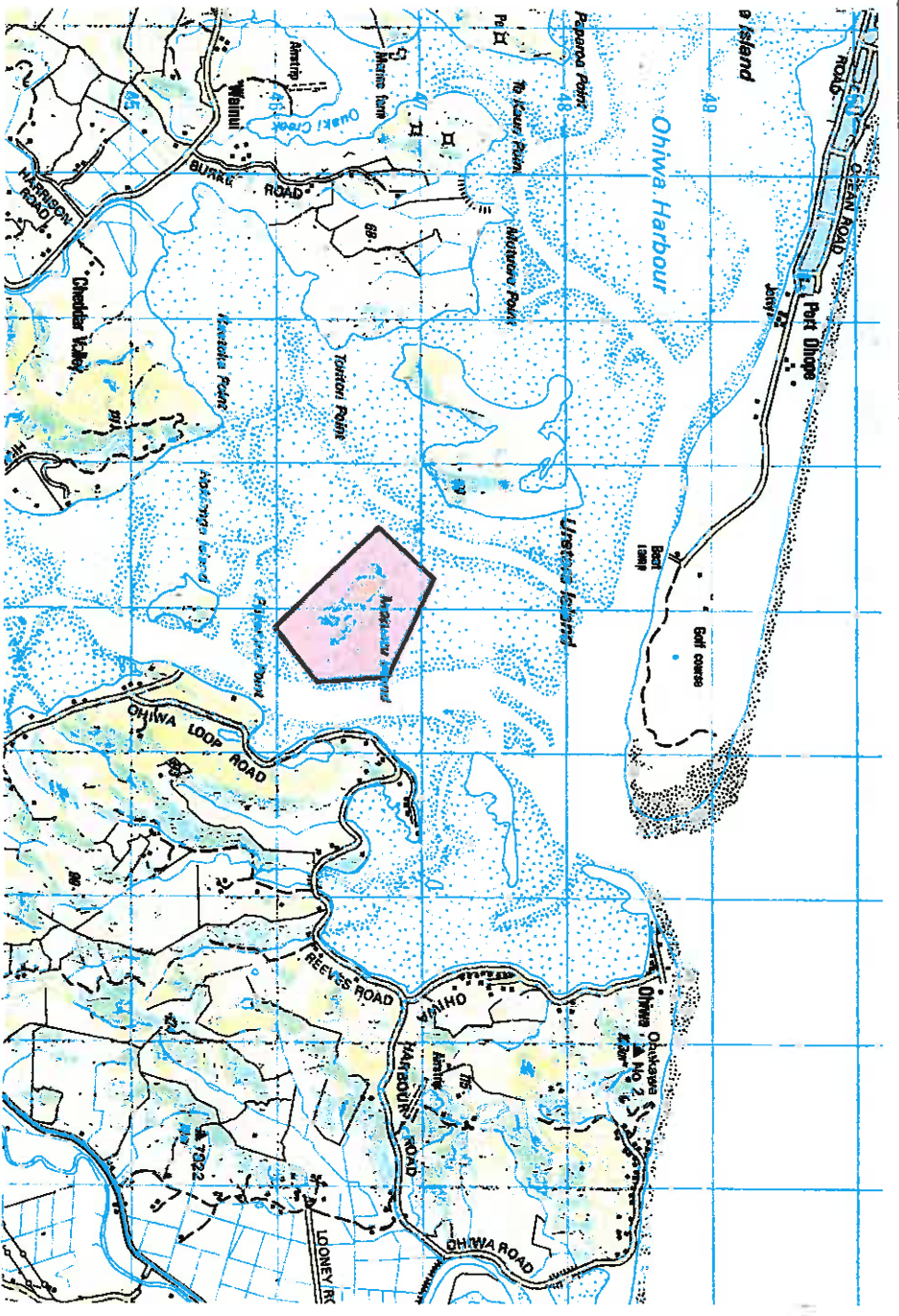
Justification

Motuotu Island Nature Reserve contains good quality, representative examples of the estuarine vegetation of the ecological district. This site was identified as a category one area by Beadel 1993a (see Appendix 5.4).

The mangrove stands on the island are diverse in stature and density. There is a relatively large area of low-stature spreading mangroves. These vary in height and density from 0.25-0.30m to 0.45-0.55m tall and 80-90% to 60-80% cover. The other stands of mangroves within this site are similar to stands found elsewhere in the harbour (i.e. height varies from 0.10m (seedlings) to about 2m, and density varies from 0-100%).

These mangrove stands are close to the southern limit of distribution of mangrove communities in New Zealand (the limit is near Kutarere in Ohiwa Harbour) (Crisp *et al.* 1990). *Stipa stipoides* occurs in the reserve, a species which reaches its southern limit on the eastern side of the North Island in Ohiwa Harbour (it occurs as far south as Waikawa Beach on the western side of the island- latitude 38° 30 and also occurs in Tasman Bay in the South Island).

SS MOTUOTU ISLAND



PATAUA ISLAND
(Scientific Reserve)

Area	22 ha
Altitude	0-54m
Grid reference	NZMS 260 W15 738439
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Mamaku treefernland	Sedimentary coastal hinterland
Kanuka-rewarewa forest	Sedimentary coastal hinterland
Pohutukawa forest	Sedimentary coastal hinterland
Mangrove scrub	Saline wetland
Mangrove shrubland	Saline wetland
<i>Olearia solandri-Coprosma propinqua</i> subsp.	Freshwater wetland
<i>propinqua</i> -manuka- <i>Hebe</i> sp. (<i>H. parviflora</i>	
agg.) shrubland	}
Searush tussockland	}
<i>Schoenoplectus pungens</i> sedgeland	Saline wetland
Oioi sedgeland	Saline wetland
Raupo reedland	Saline wetland
Mangrove mudflat	Saline wetland
Estuary margin vegetation	Saline wetland; Freshwater wetland

(Clarkson and Regnier 1989; Beadel 1993a)

Vegetation map: Clarkson and Regnier 1989; Beadel 1993a

Justification

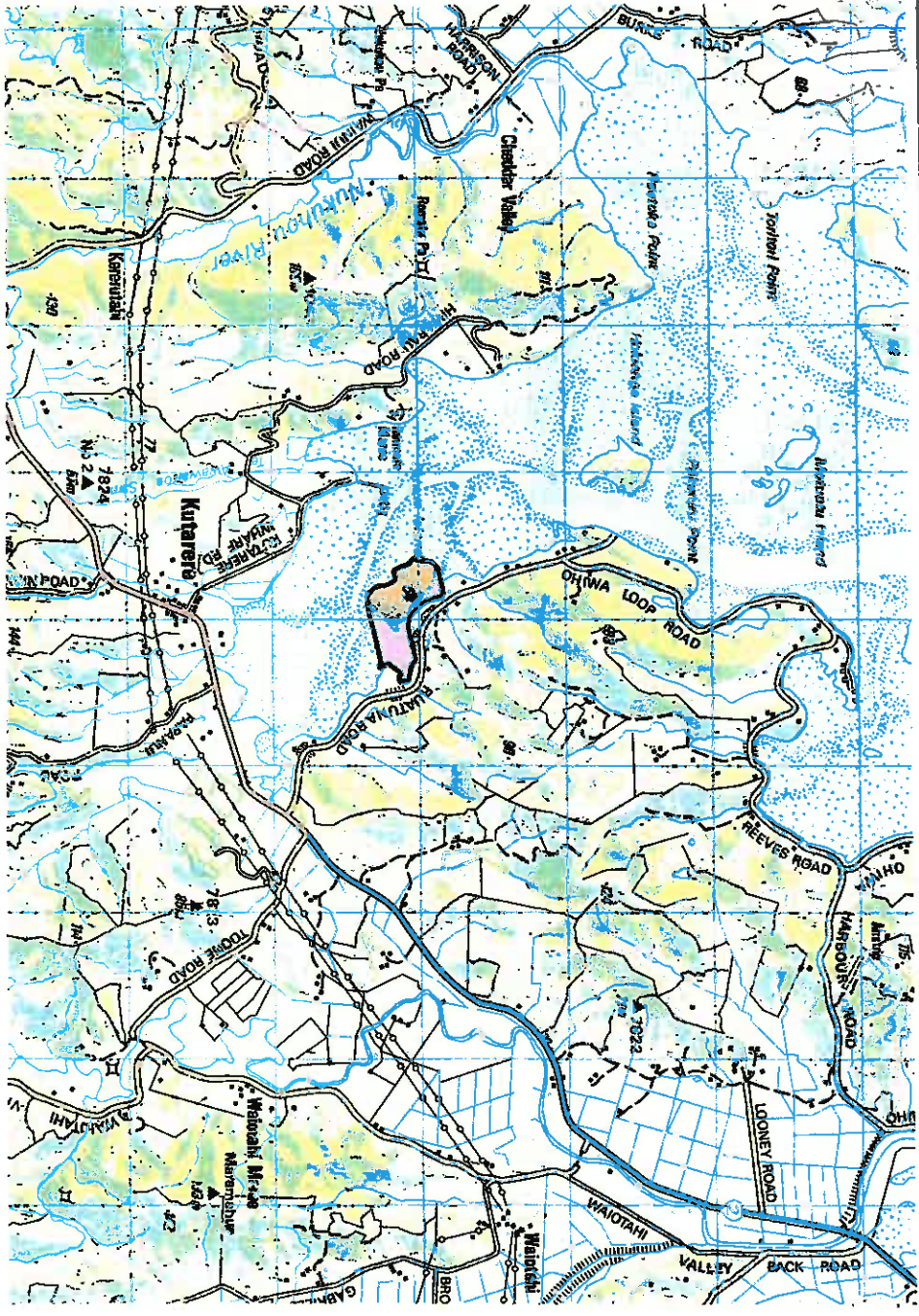
Patua Island Scientific Reserve contains estuarine wetlands contiguous with indigenous forest and scrub. It contains good quality, representative examples of mangrove communities close to the southern limit of distribution of mangrove communities (refer to Motuotu Island). This site was identified as a category one area by Beadel 1993a (see Appendix 5.4).

Pimelea tomentosa occurs in the reserve, classed as vulnerable (Cameron *et al.* 1993).

Stipa stipoides occurs in the reserve. (It reaches its southern limit on the eastern side of the North Island in Ohiva Harbour; refer to Motuotu Island).

An interesting feature of the wetland communities is the presence of *Hebe* sp. (*H. parviflora* agg., cf. *Veronica arborea*) (cf. Clarkson and Regnier 1989). This species occurs on a wide range of sites, including freshwater wetlands (e.g. Kaingaroa plateau), stream margins (Kaingaroa plateau) and well-drained hillslopes (e.g. Mokorua Bush Scenic Reserve).

SS PATAUA ISLAND



HIWIRAU
(includes Nukuhou Conservation Area)

Area	Approx 284 ha
Altitude	0-168m
Grid reference	NZMS 260 W15 715445
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Broadleaved species-treefern forest	Sedimentary coastal hinterland
Grey willow forest	Freshwater wetland
Pohutukawa forest	Sedimentary coastal hinterland
Rewarewa/kamahi forest	Sedimentary coastal hinterland
Rewarewa/manaku forest	Sedimentary coastal hinterland
Tawa-puriri-mangeao-kohokohe forest	Sedimentary coastal hinterland
Tawa-puriri-mangeao-pohutukawa forest	Sedimentary coastal hinterland
Mangrove scrub	Saline wetland
Manuka scrub	Freshwater wetland
Manuka scrub	Freshwater wetland
Mangrove shrubland	Sedimentary coastal hinterland
Manuka shrubland	Saline wetland
Manuka/ <i>Gleichenia dicarpa</i> - <i>Baumea rubiginosa</i> - <i>B. teretifolia</i> shrubland	Sedimentary coastal hinterland
Manuka/swamp millet- <i>Baumea rubiginosa</i>	Freshwater wetland
grass-shrubland	Freshwater wetland
Searush tussockland	Saline wetland
Marsh ribbonwood shrubland	Saline wetland
Oioi-searush tussock-sedgeland	Saline wetland
Oioi sedgeland	Saline wetland
<i>Bolboschoenus fluviatilis</i> sedgeland	Freshwater wetland
Raupo reedland	Freshwater wetland
Bachelor's button-arrow grass herbfield	Freshwater wetland
Estuary margins	Saline wetland and freshwater wetland

(Beadel 1993a)

Vegetation map: Beadel 1993a

Justification

This site contains a large estuarine and freshwater wetland contiguous with forest. It contains some of the best wetland vegetation in the harbour, including one of the best quality, largest examples of mangrove scrub and shrublands (mangrove communities reach their southern limit in Ohiwa Harbour), the best freshwater wetlands contiguous with the harbour and the best remaining example of wetland manuka scrub and shrublands.

The freshwater wetlands are probably the best remaining examples in the Taneatua Ecological District.

The tall forest on hillslopes is the largest remaining example contiguous with the harbour. It contains some of the only remnants of primary forest (e.g. tawa-puriri-mangeao-kohekohe forest and tawa-puriri-mangeao-pohutukawa forest) apart from pohutukawa adjacent to the harbour. It is also contiguous with Matekerepu Historic Reserve (approx. 23 ha) and Kotare Scenic Reserve (19 ha), although these two reserves are outside of the coastal zone.

Pimelea tomentosa occurs at this site, classed as vulnerable (Cameron *et al.* 1993).

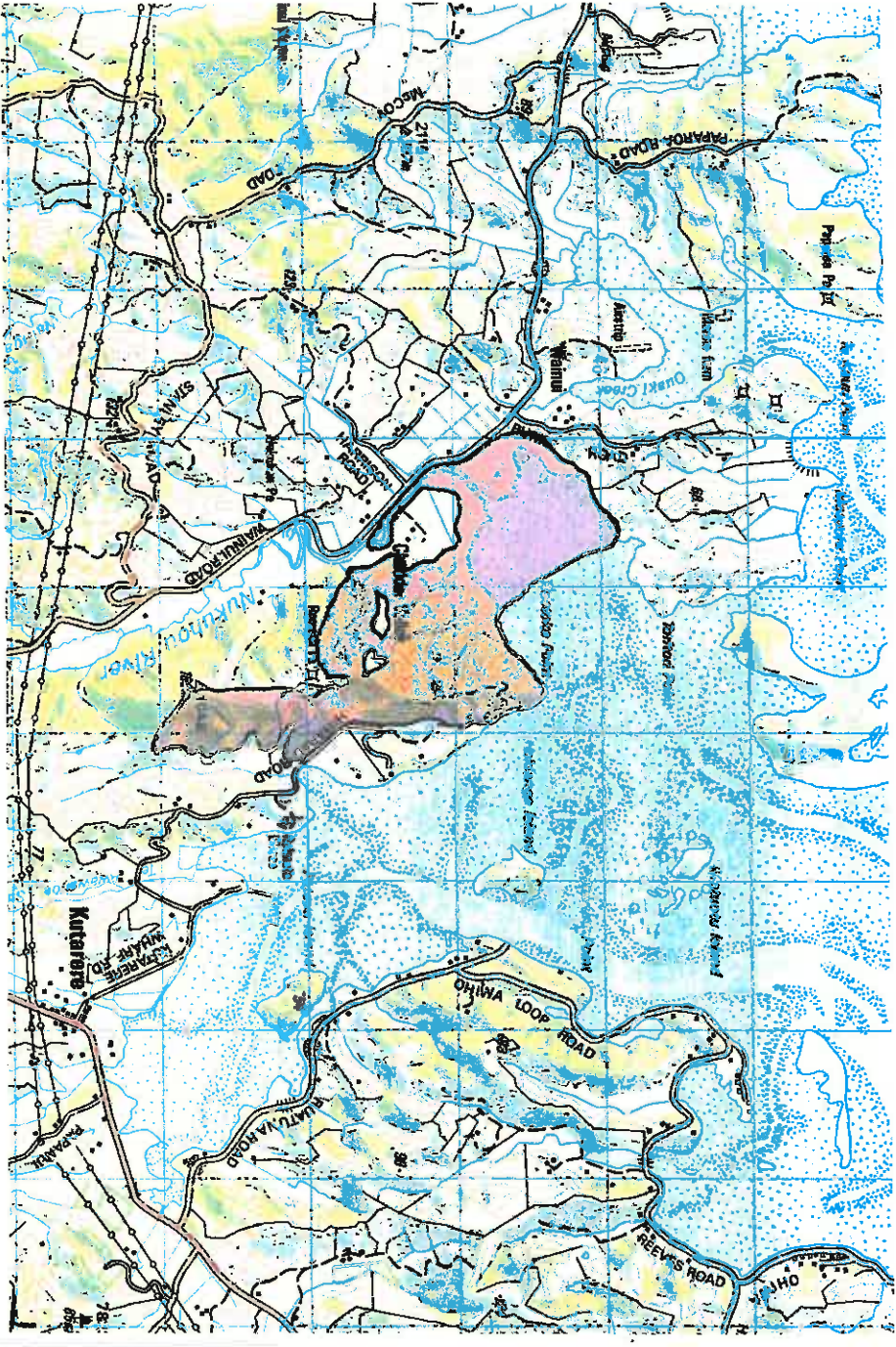
The species diversity of this site is relatively high and contains some species which have not been recorded from elsewhere in the ecological district, or recorded from only a few other sites.

Taxa recorded only from this site within the ecological district include:

Astelia grandis
Tetraria capillaris
Hierochloa redolens
Schoenus apogon
Leptinella squalida subsp. *squalida*

Sparganium subglobosum and *Drosera binata* also occur at this site. *Sparganium subglobosum* has only been recorded from one other site in the ecological district, whilst *Drosera binata* is known from only a few sites.

SS HIWARAU



7.2.4 SIGNIFICANT SITES: REGIONAL

KOHI POINT (includes Kohi Point Scenic Reserve)

Area	Approx 166 ha
Altitude	0-180m
Grid reference	NZMS 260 W15 628537
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type	Physical character
Pohutukawa/houpara forest and treeland	Exposed rocky coast and hinterland
Rewarewa/mahoe-five finger-kanuka forest	Sedimentary coastal hinterland and exposed rocky coast and hinterland
pohutukawa-mangeao forest	Exposed rocky coast and hinterland
(Pohutukawa)/five finger-brush wattle-kawakawa-akeake forest and scrub	
Kanuka-wharariki-mingimingi flaxland-scrub	Exposed rocky coast and hinterland
Bracken fernland	Sedimentary coastal hinterland
(Pohutukawa) rockland	Exposed rocky coast and hinterland
((<i>Carex pumila</i>) sandfield	Dune and beach sands
(Beadel and Shaw 1988 and S.M. Beadel pers. obs. 1992).	

Vegetation map: Beadel and Shaw 1988

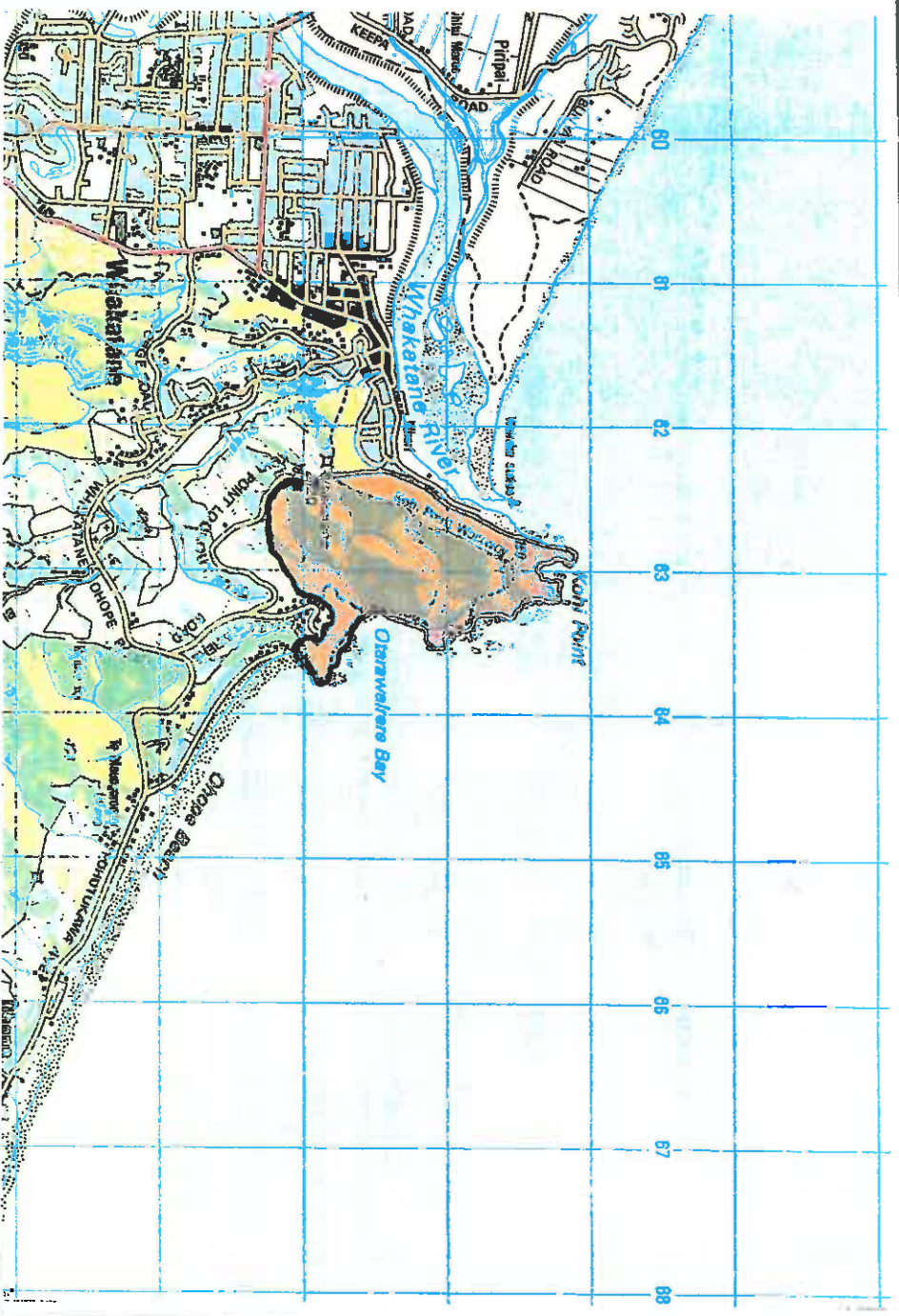
Justification

Kohi Point Scenic Reserve contains small areas of pohutukawa forest, with a more extensive area of secondary forest that has developed following burning. This is now a representative example of the coastal vegetation of the district.

Pimelea tomentosa occurs in the reserve (Beadel and Shaw 1988), classed as vulnerable (Cameron *et al.* 1993). However only low numbers were recorded and four other sites containing larger or similar-sized populations in the ecological district are classed as national.

This site has been assessed as of regional significance.

SS KOHI POINT



WHITIWHITI

Area	Approx 64 ha
Altitude	0-60m
Grid reference	NZMS 260 W15 676471
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type		Physical character
Grey willow forest		Freshwater wetland
Pole kahikatea forest (minor area)		Sedimentary coastal hinterland
Kanuka forest		Sedimentary coastal hinterland
Rewarewa / kamahi-kanuka-mamaku forest		Sedimentary coastal hinterland
Manuka scrub		Freshwater wetland
Manuka scrub		Sedimentary coastal hinterland
(Cabbage tree)-(grey willow) / manuka- <i>Coprosma tenuicaulis</i> / raupo- <i>Carex virgata</i>	}	Freshwater wetland
adventive grasses and herbs shrubland	}	
(Cabbage tree) / manuka- <i>Coprosma tenuicaulis</i> /	}	Freshwater wetland
<i>Baumea rubiginosa</i> - <i>Gleichenia dicarpa</i> -raupo-	}	
swamp millet shrubland	}	
Manuka shrubland		Freshwater wetland
Searush tussockland		Saline wetland
Oioi sedgeland		Saline wetland
<i>Schoenoplectus pungens</i> sedgeland		Saline wetland
Raupo reedland		Freshwater wetland
Estuary margins	}	Freshwater wetland;
	}	and Saline wetland

(Beadel 1993a)

Justification

A moderate sized area containing relatively good quality representative examples of contiguous estuarine and freshwater wetlands with hillslope vegetation. Sequences such as these are uncommon in the ecological district, especially on the mainland. This site was identified as a category one area in Beadel 1993a (refer to Appendix 5.4).



7.2.5 SIGNIFICANT SITES: DISTRICT

ISLETS NEAR OHAKANA ISLAND

Area	Approx 0.5 ha
Altitude	0-10m
Grid reference	NZMS 260 W15 682487
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Physical character

Pohutukawa forest

Sedimentary coastal hinterland

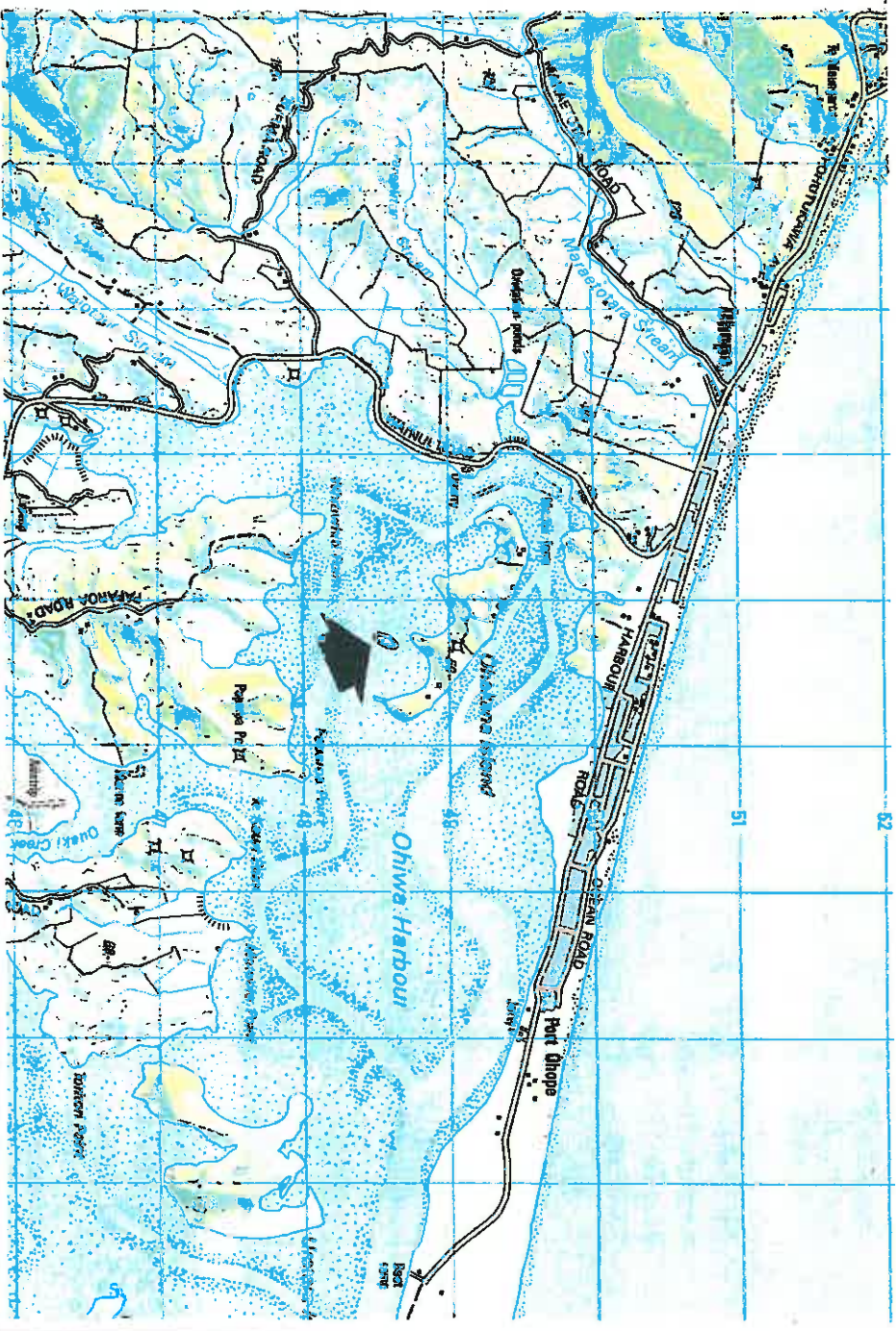
(Beadel 1993a)

Vegetation map: Beadel 1993a

Justification

These small islets contain significant examples of pohutukawa adjacent to the harbour margins and the understorey is in good condition. New Zealand iceplant is common on the steep sides of the islets. This site was identified as category two area in Beadel 1993a (refer to Appendix 5.4).

SS ISLETS NEAR OHAKANA ISLAND



OHOPE SPT
(including recreation reserve)

Area	Approx 136 ha	
Altitude	0-20m	
Grid reference	NZMS 260 W15 740487	
Bioclimatic zone	Coastal	
Ranking	District	
Vegetation type		Physical character
<i>Pinus pinaster</i> treeland		Dune and beach sands
Torrey pine treeland		Dune and beach sands
Manuka scrub		Dune and beach sands
Manuka shrubland		Dune and beach sands and freshwater wetland
Bracken fernland ↔ Bracken- <i>Muehlenbeckia</i> <i>complexa</i> -sea couch-blackberry fernland ↔ Sea couch- <i>Muehlenbeckia complexa</i> grassland }		Dune and beach sands
Pampas/sea couch- <i>Muehlenbeckia complexa</i> tussockland }		Dune and beach sands
Sea couch- <i>Muehlenbeckia complexa</i> grassland <i>Baumea articulata</i> /B. <i>junccea</i> -sea couch }		Dune and beach sands
grass-seedgeland ↔ raupo reedland }		Freshwater wetland
Spinifex sandfield		Dune and beach sands

(Beadel 1988a and Beadel 1993a)

Vegetation map: Beadel 1988a & 1993a

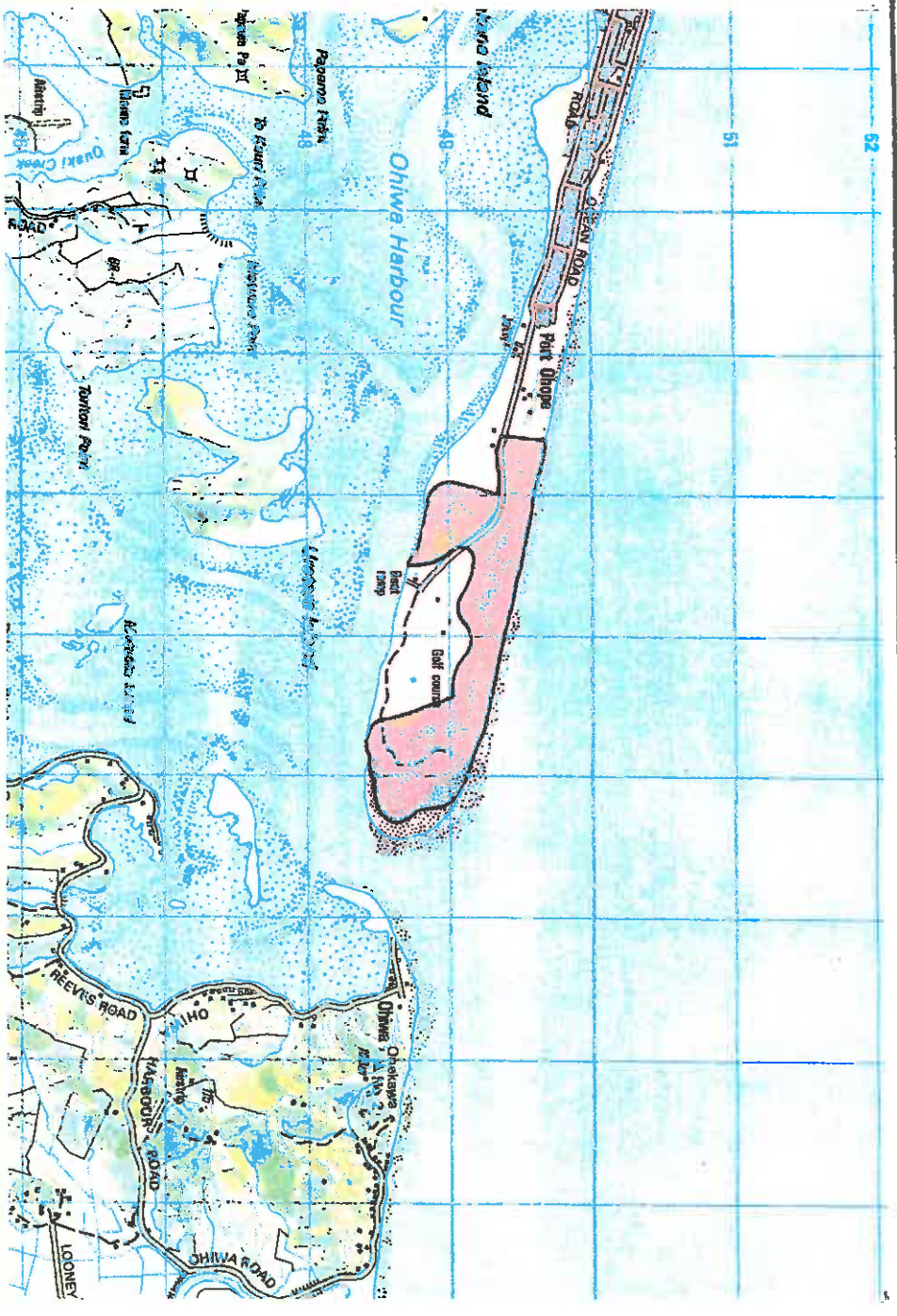
Justification

The best example of sand dune vegetation in the ecological district. Freshwater wetlands occur at one site. However, adventive species are common, both on the sand dunes (where they are often dominant) and in the freshwater wetlands.

There are a few pingao (*Desmoschoenus spiralis*) plants, classed as local (Cameron *et al.* 1993).

This site was identified as a category two area in Beadel 1993a (defined in Appendix 5.4).

SS OHOPE SPIT



TERN ISLAND
(Wildlife Management Reserve)

Area	Approx 17.3 ha
Altitude	0-3m
Grid reference	NZMS 260 W15 745475
Bioclimatic zone	Coastal
Ranking	District

Vegetation type		Physical character
Manuka shrubland		Saline wetland
Searush tussockland		Saline wetland
Sea couch-lupin-blackberry-bracken-	}	Dune and beach sands
<i>Muehlenbeckia complexa</i> -Yorkshire fog grassland	}	
(Kanuka)/sea couch-lupin-blackberry-bracken	}	Dune and beach sands
bracken- <i>Muehlenbeckia complexa</i> -Yorkshire	}	
fog grassland	}	
Searush-oioi/ <i>Selliera radicans</i> - <i>Samolus repens</i>	}	Saline wetland
tussockland	}	
<i>Samolus repens</i> herbfield	}	Saline wetland

(Beadel 1993a)

Vegetation map: Beadel 1993a

Justification

Tern Island is the largest sand island in the harbour supporting vegetation. The wetland vegetation around the margins, whilst small is of relatively good quality and includes some of the larger areas of low herbfields in the harbour, (i.e. *Samolus repens* and *Selliera radicans* herbfields). The vegetation on the higher parts of the island is highly modified and is dominated by adventives (Sea couch-lupin-blackberry-bracken-*Muehlenbeckia complexa*-Yorkshire fog grassland). A few emergent windshorn kanuka (3-4m tall) remain at the western end of the island. Indigenous species will form the dominant cover on the island if it continues to be undisturbed (e.g. no fires or clearing of vegetation).

New Zealand spinach (*Tetragonia tetragonioides*) was recorded on the island. This species is uncommon in the Coromandel-Bay of Plenty-East Cape region.

Tern Island was identified as a category one area in Beadel (1993a) (defined in Appendix 5.4).

[illegible]

ISLAND NEAR TERN ISLAND (UNNAMED)

Area	Approx 1 ha
Altitude	0-1m
Grid reference	NZMS 260 W15 749471
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Searush-Baumea juncea-sea couch-oioi grass-sedge-rushland	} Saline wetland
Pohutukawa/ <i>Olearia solandri</i> -manuka shrubland	} } Dune and beach sands
Searush tussockland (minor areas)	} Saline wetland
<i>Baumea juncea</i> sedgeland (minor area)	Saline wetland
Mangrove mudflat	Saline wetland
(Beadel 1993a)	

Vegetation map: Beadel 1993a

Justification

Although very small, this island contains a relatively good quality example of indigenous vegetation, grading from saltmarsh to Pohutukawa/*Olearia solandri*-manuka shrubland. It was identified as a category the area in Beadel 1993a; refer to Appendix 5.4.

STIPA

Area	Approx 2 ha
Altitude	0m
Grid reference	NZMS 260 W15 735449
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Manuka scrub
 Searush tussockland
Stipa stipoides/Selliara radicans-sea couch tussockland
Samolus repens herbfield
Sarcocornia quinqueflora herbfield
 Estuary margin vegetation

Physical character

Freshwater wetland
 Saline wetland
 Saline wetland
 Saline wetland
 Saline wetland
 Saline wetland

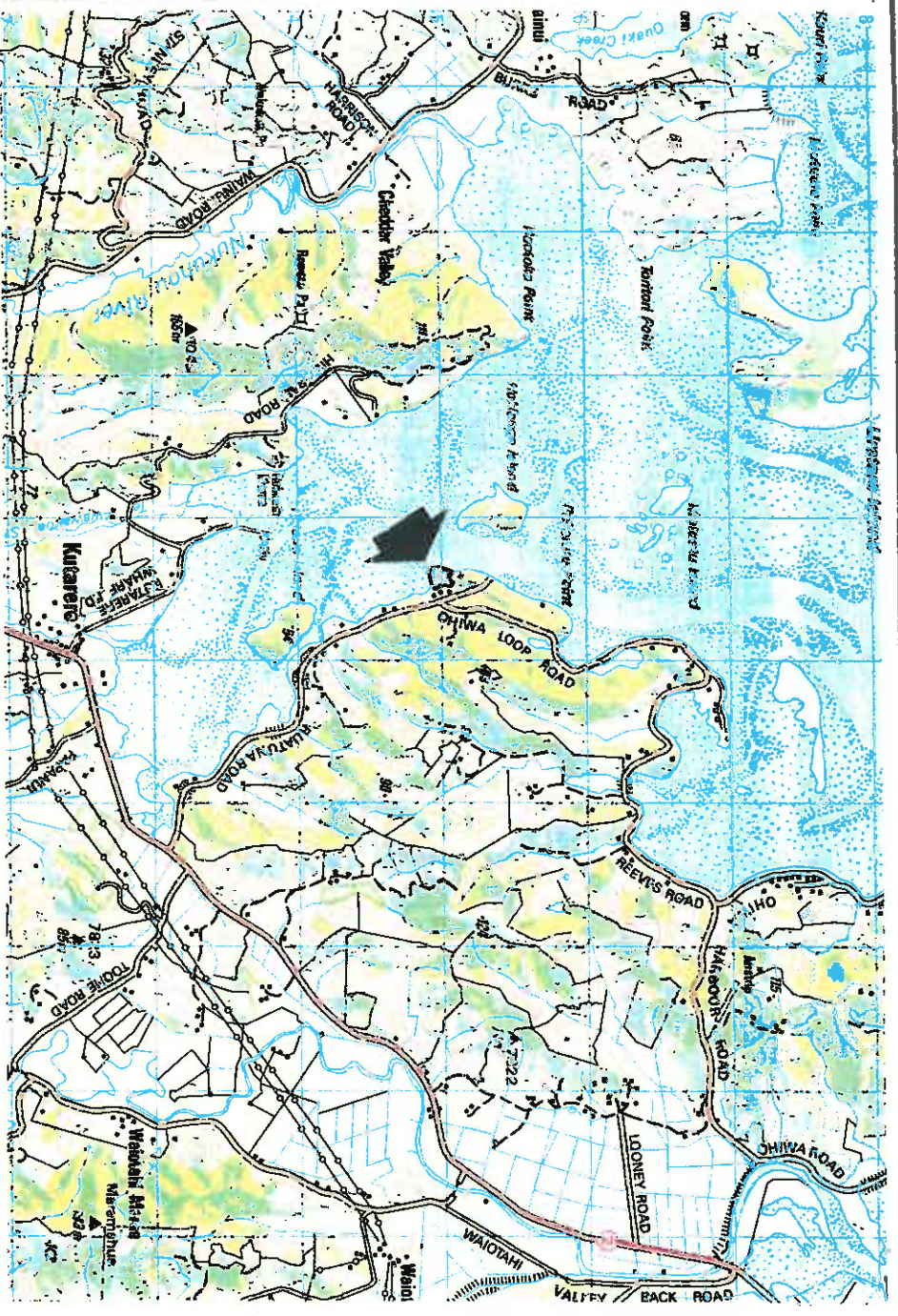
(Beadel 1993a)

Vegetation map: Beadel 1993a

Justification

Stipa stipoides reaches its southern limit on the east coast of the North Island in Ohiwa Harbour (see Motuotu Island). It is known from only a few sites in the harbour and this is the largest known population in the harbour.

This site also contains good examples of saline herbfields and was identified as a category two area by Beadel 1993a; refer to Appendix 5.4.



OSCAR REEVE
(includes Oscar Reeve Scenic Reserve; part)

Area	Approx 9 ha
Altitude	20-60m
Grid reference	NZMS 260 W15 763468
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Black beech forest	Sedimentary coastal hinterland
Hard beech forest	Sedimentary coastal hinterland
Pohutukawa-puriri-rewarewa-tawa/ kohokohe forest	} Sedimentary coastal hinterland }

(Clarkson and Regnier 1989; S.M. Beadel pers. obs.)

Vegetation map: Clarkson and Regnier 1989

Justification

The two beech-dominant forest types do not occur in other reserves (and rarely elsewhere) within the district.

Pimelia tomentosa, classed as vulnerable (Cameron *et al.* 1993) occurs in the reserve. It also occurs at several other sites in the coastal zone of Taneatua ecological district. Four of these sites contain large populations and have been classed as of national significance. This site has been assessed as being of district significance.

[illegible]

TORITORI

Area	Approx 0.3 ha
Altitude	0m
Grid Reference	NZMS 260 W15 711470
Bioclimatic Zone	Coastal

Vegetation type

Physical character

Pohutukawa forest

Sedimentary coastal hinterland

Beadel 1993a

Justification

Pimelea tomentosa occurs at this site. This taxon is classed as vulnerable (Cameron *et al.* 1993). Only one plant has been recorded. It occurs at several other sites in the coastal zone of Taneatua ecological district, all of which have larger populations. Therefore this site has been assessed as being of district significance.

This site was classed as a category two area by Beadel 1993a; refer to Appendix 5.4.



7.3 OPOTIKI ECOLOGICAL DISTRICT

The coastal zone of the Opotiki Ecological District comprises recent coastal alluvial plains and terraces with Pleistocene marine sandstone headlands. Coastal sand dunes which line the coast in most places are dissected by the Waioatahi, Waioeka and Otara Rivers and the Tirohanga Stream. Small estuaries occur near the mouths of these rivers, the largest being the Waioatahi Estuary.

The indigenous vegetation of the Opotiki Ecological District is now restricted to a few highly modified remnants. In the past the Waioatahi, Otara and Waioeka flood plains would have supported kahikatea forest and freshwater wetlands, but there is now extensive farmland. The saline wetlands and freshwater wetlands (dominated by sea rush, oioi and raupo) in the estuaries would have been more extensive. The coastal dune system would have been dominated by native sand-binders and pingao whereas today adventive species are common in many places, with only limited areas spinifex and pingao. Pohutukawa, puriri, and karaka would have dominated the hillslopes with small areas of wetland in valley floors.

7.3.1

SPECIAL VEGETATION TYPES & THREATENED AND LOCAL PLANTS	
OPOTIKI ECOLOGICAL DISTRICT	
Local taxa:	
<i>Desmoschoenus spiralis</i> (pingao)	A few small clumps occur on the sandspit at the mouth of the Waiaua Estuary (eastern side) and one plant occurs on west Waitohi Beach. Pingao have recently been planted at several sites along the Opotiki coastline, (e.g. Waitohi Spit Scenic and Historic Reserve).
Distribution; Eastern limit:	
<i>Avicennia marina</i> var. <i>resinifera</i>	The eastern-most natural colony of mangroves in New Zealand occurs in Waiaua Estuary (Crisp <i>et al.</i> 1990).

7.3.2 SIGNIFICANT SITES: REGIONAL

BRYAN 1 (private land)

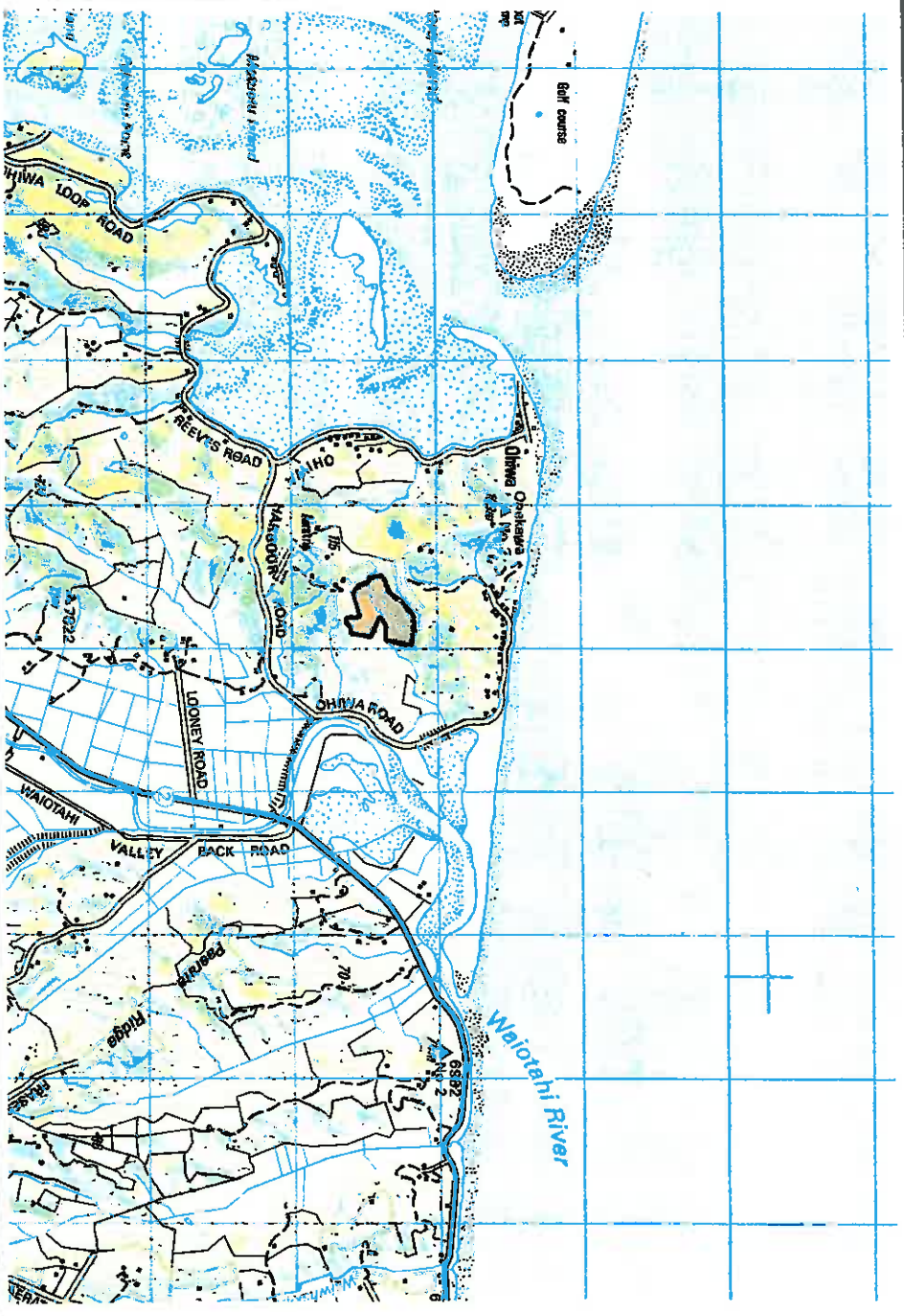
Area	Approx 17 ha
Altitude	20–80m
Grid reference	NZMS 260 W15 766476
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type	Physical character
Pohutukawa/tawa forest	Sedimentary coastal hinterland
(S. M. Beadel pers. obs. 1992)	

Justification

Coastal forest dominated by pohutukawa, puriri, karaka and tawa would once have been common in the Opotiki Ecological District. However very few examples now remain and the majority of the remnants are very small and highly modified. This site is the best and largest area remaining. It contains a few specimens of hard beech.

SS BRYAN 1



WAIOTAHİ SPIT AND ESTUARY
(Includes Waiohahi Historic and Scenic Reserve)

Area	Approx 136 ha
Altitude	0-20m
Grid reference	NZMS 260 W15 7855483
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type	Physical character
Pohutukawa forest	Sedimentary coastal hinterland
Bracken fernland	Dune and beach sands
<i>Muehlenbeckia complexa</i> /spinifex- }	Dune and beach sands
haretail grassland }	
Spinifex sandfield	Dune and beach sands
Mahoe-mamaku treefernland	Dune and beach sands
Oioi-searush tussockland	Saline wetland
Searush tussockland	Saline wetland
Oioi sedgeland	Saline wetland
Raupo- <i>Baumea articulata</i> sedge- }	
reedland }	Freshwater wetland

(Clarkson and Regnier 1989;
S. M. Beadel pers. obs. 1992)

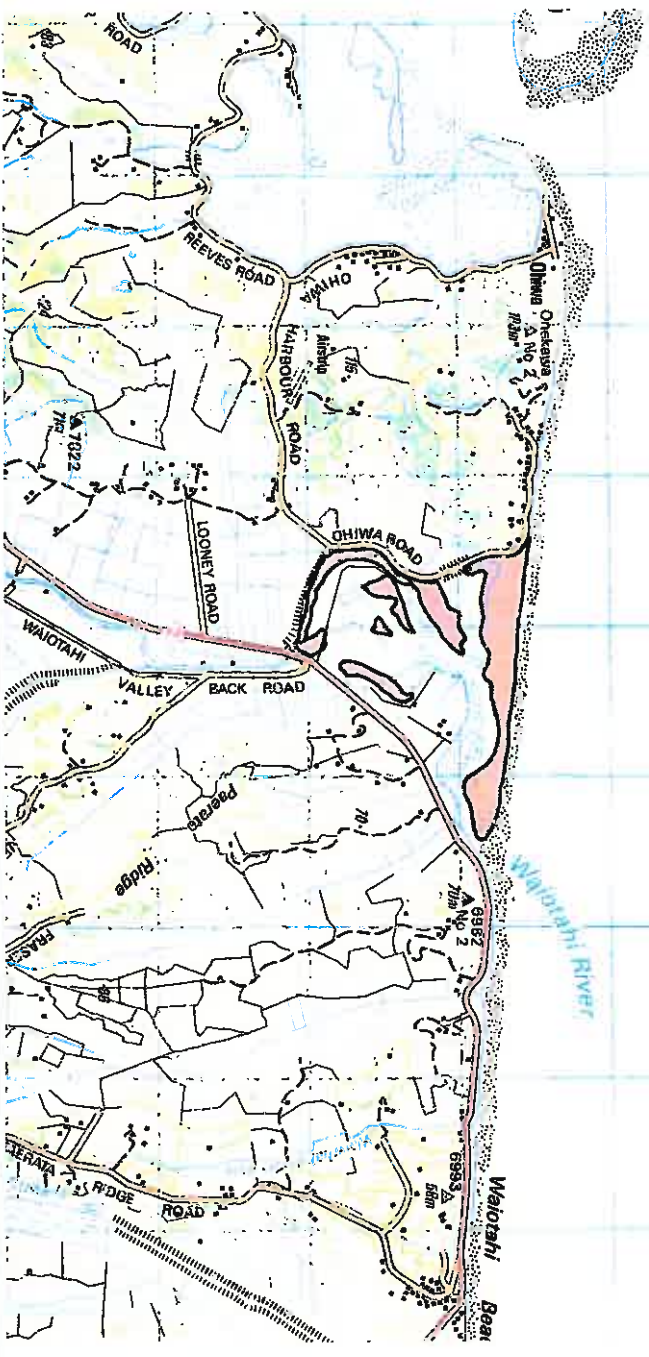
Vegetation map: Waiohahi Spit Historic and Scenic Reserve: Clarkson and Regnier 1989.

Justification

This site contains good quality, representative examples of these saline wetland and sand dune vegetation types, which are characteristic of the Opotiki Ecological District. They are the best examples of these vegetation types remaining in the ecological district. This site was given a conservation rank of one (outstanding) by Walls (1991); defined in Appendix 5.4.

A few plants of *Desmoschoenus spiralis* (pingao) have been planted in the Waiohahi Spit Scenic and Historic Reserve (G. Y. Walls pers. comm. 1992). In the past pingao would have occurred naturally along this coastline. Pingao is classed as local (Cameron *et al.* 1993).

SS WAIOTAHI SPIT AND ESTUARY



7.3.3 SIGNIFICANT SITES: DISTRICT

BRYAN 2.

Area	Approx 6 ha
Altitude	0-60m
Grid reference	NZMS 260 764487
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Pohutukawa forest	Sedimentary coastal hinterland
Pohutukawa treeland	Sedimentary coastal hinterland

(S. M. Beadel pers. obs. 1992)

Justification

This site contains a relatively good quality although small example of pohutukawa forest in the Opotiki Ecological District. Pohutukawa forest would once have been more common in the Opotiki ecological district; however it has been greatly reduced in extent and only small areas now remain. This site was given an outstanding conservation rank by Walls (1991); defined in Appendix 5.4.

BRYAN 3

Area	Approx 16 ha
Altitude	20-80m
Grid Reference	NZMS 260 W15 770471
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Black beech-tawa-kohেকে forest
Tawa-puriri-pohutukawa forest

Physical character

Sedimentary coastal hinterland
Sedimentary coastal hinterland

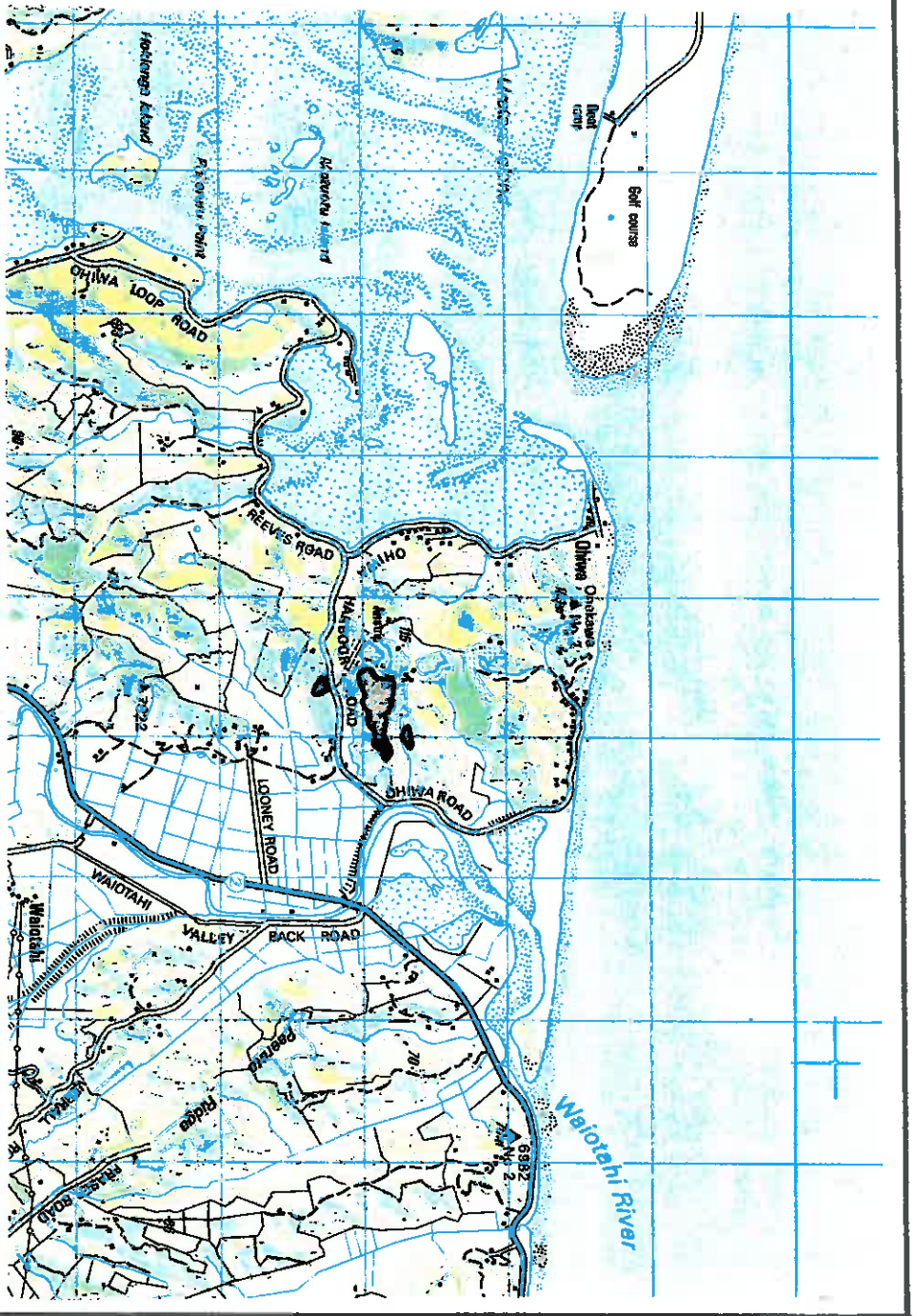
(S.M. Beadel pers. obs. 1992)

Justification

These small remnants are some of the few remaining examples of these types of coastal forest in the Opotiki Ecological District.

This site is complementary to SS Bryan 1 (ranked as being of regional significance).

SS BRYAN 3



WAIOTAHİ BEACH

Area	Approx 4 ha
Altitude	0-20m
Grid reference	NZMS 260 W15 810480
Bioclimatic zone	Coastal
Ranking	District

Vegetation type**Physical character**

Pohutukawa forest
Pohutukawa forest

Dune and beach sands
Sedimentary coastal hinterland

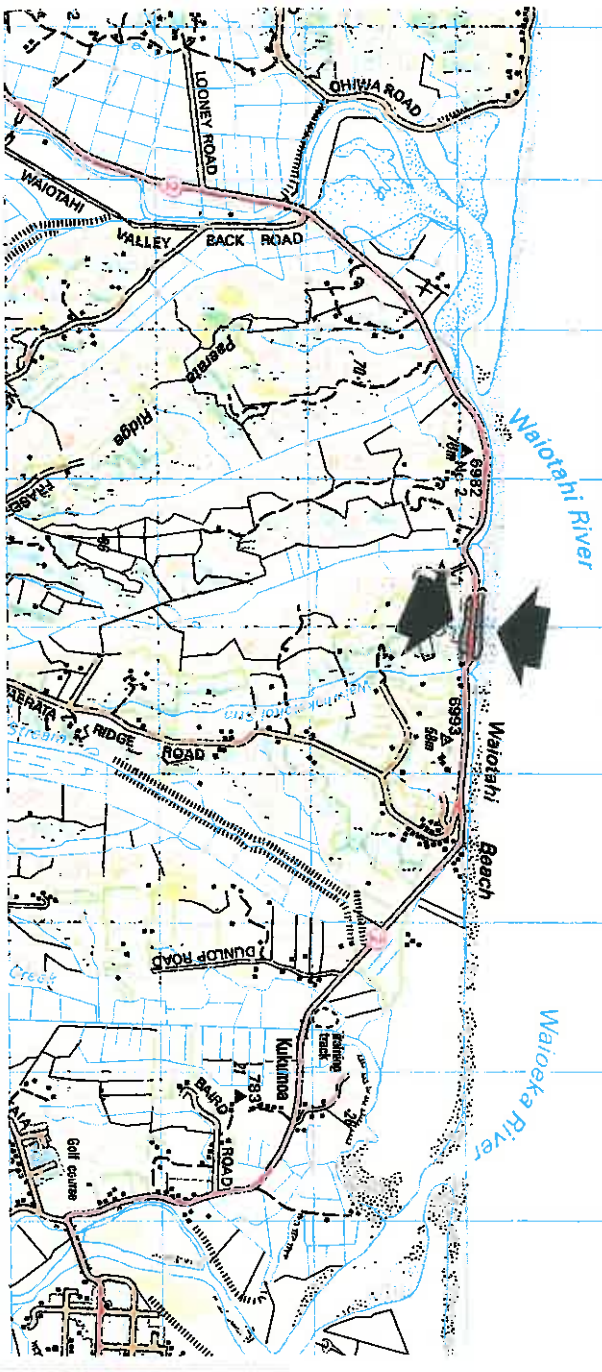
(Walls 1991; S. M. Beadel pers. obs. 1992)

Justification

Pohutukawa forest would once have been more common in the Opotiki ecological district; However it has been greatly reduced in extent and only small areas now remain. This narrow site is dissected by a main highway and contains what is probably the best remaining example of pohutukawa forest in the Opotiki Ecological District. This site was given a conservation rank of outstanding by Walls (1991); defined in Appendix 5.4.

This site is "protected from domestic stock by fences and has a diverse understorey of broadleaved trees and shrubs (karo, taupata, houpara, ngaio, kawakawa and hangehange), with several coastal ferns." (Walls 1991).

SS WAIOTAHĀ BEACH



HUNTRESS CREEK

Area	Approx 2 ha
Altitude	0m
Grid reference	NZMS 260 W15 838476
Bioclimatic zone	Coastal
Ranking	District

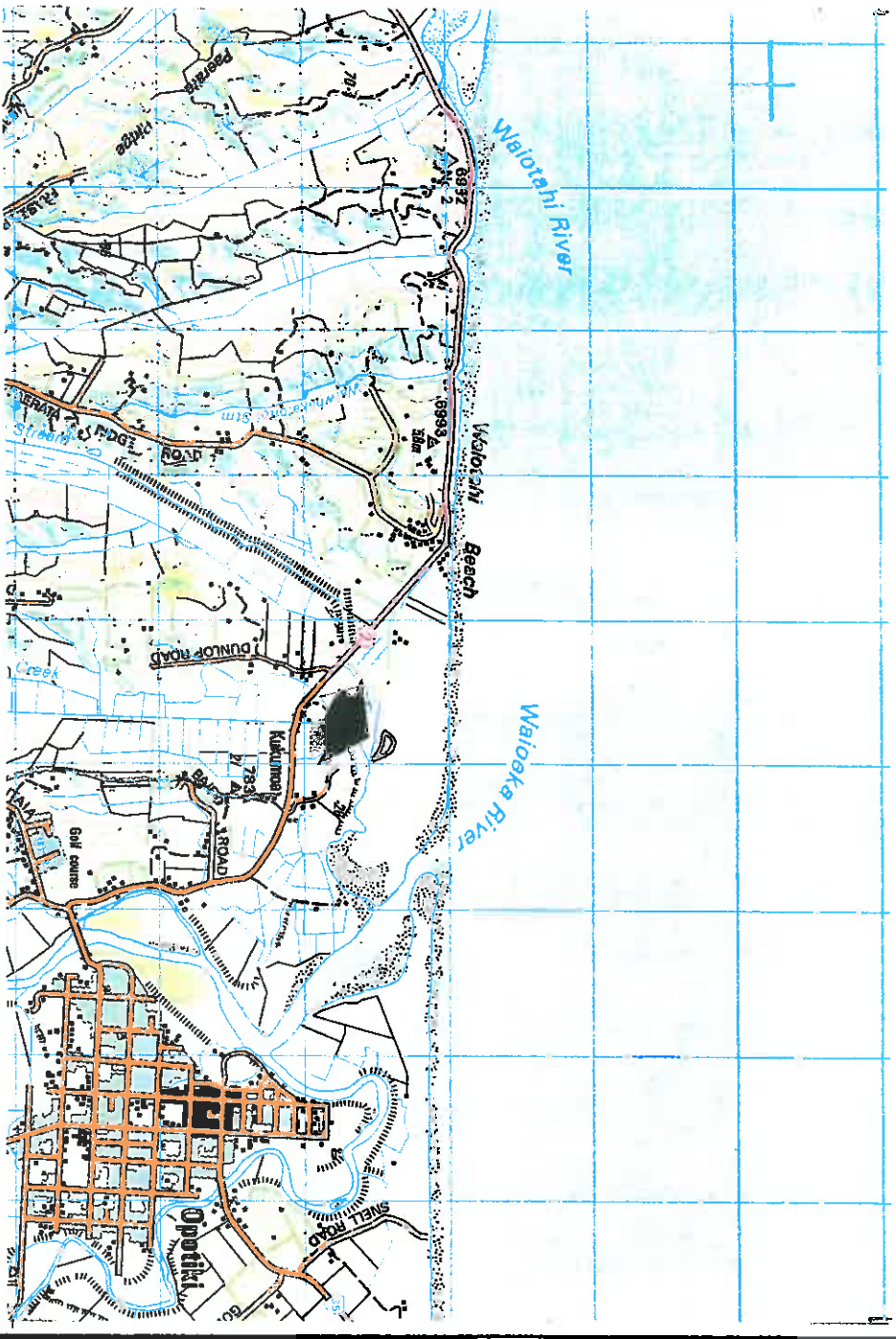
Vegetation type	Physical character
Marsh ribbonwood-harakeke shrubland	Freshwater wetland
<i>Baumea articulata</i> - <i>Bolboschoenus fluviatilis</i> -searush-	Freshwater wetland
oioi- <i>Cyperus ustulatus</i> sedge-reedland	}
Raupo reedland	}
	Freshwater wetland
(S. M. Beadel pers. obs. 1992; Walls 1991)	

Justification

This is a small wetland near the mouth of Huntress Creek (Te Karaka Stream). It has formed around an old meander that has been cut off by the artificial re-routing of the stream. It is good example of the present day wetland vegetation in the ecological district.

This site was given outstanding conservation rank by Walls (1991); defined in Appendix 5.4.

SS HUNTRESS CREEK



TIROHANGA

Area	Approx 6 ha
Altitude	0m
Grid reference	NZMS 260 913478
Bioclimatic zone	Coastal
Ranking	District

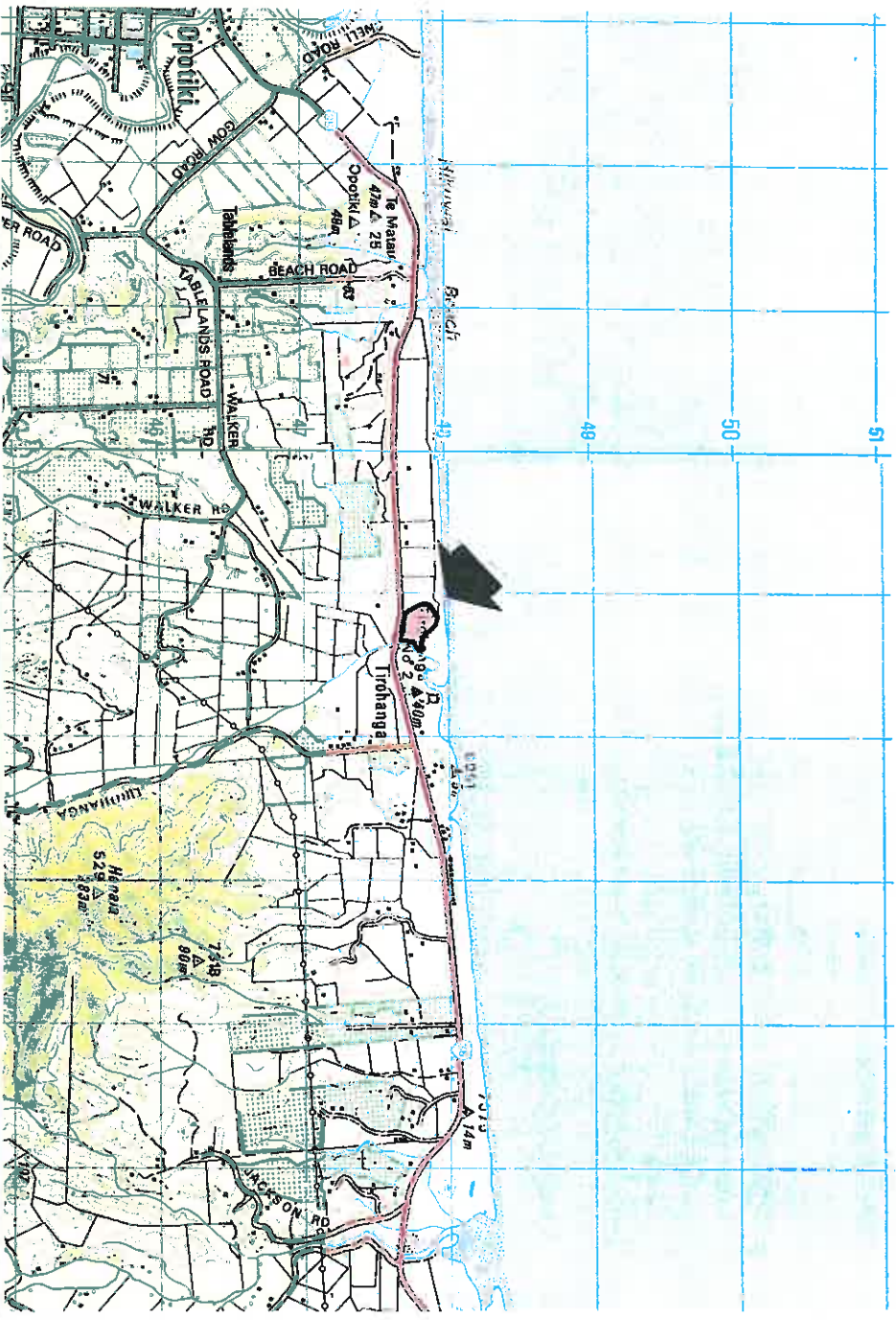
Vegetation type	Physical character
Raupo reedland	Freshwater wetland
Oioi- <i>Baumea articulata</i> - <i>B. juncea</i> sedgeland	Freshwater and Saline wetland
(Walls 1991; S. M. Beadel pers. obs. 1992)	

Justification:

This sickle-shaped wetland near the mouth of the Tirohanga Stream is a good example of the remnant wetlands in the Opotiki Ecological District. It is mainly freshwater wetland, although saline water occasionally penetrates under abnormal conditions (e.g. very high tides and on-shore storms) (Walls 1991).

This site was given an outstanding conservation rank by Walls (1991); defined in Appendix 5.4.

SS TIROHANGA



WAIALUA ESTUARY

Area	Approx 20 ha
Altitude	0m
Grid reference	NZMS 260 964483
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
<i>Bolboschoenus fluviatilis</i> sedgeland	Freshwater wetland
Searush tussockland	Saline wetland
Oioi sedgeland	Saline wetland
<i>Schoenoplectus pungens</i> sedgeland	Saline wetland
<i>Selliera radicans-Samolus repens</i> herbfield	Saline wetland

(Walls 1991; S. M. Beadel pers. obs. 1992)

Justification

This site contains a good example of saline wetlands around the margins of a small estuary. One of its primary values is as a buffer for the small mangrove colony, which is the eastern-most natural colony of mangroves in New Zealand. It is also near the southern limit of mangrove communities (Ohiwa Harbour) (Daniel 1984).

This site was given an outstanding conservation rank by Walls 1991; defined in Appendix 5.4.

OPAPE

Area	Approx 16 ha
Altitude	0-40m
Grid reference	NZMS 260 X15 985484
Bioclimatic zone	Coastal
Ranking	District

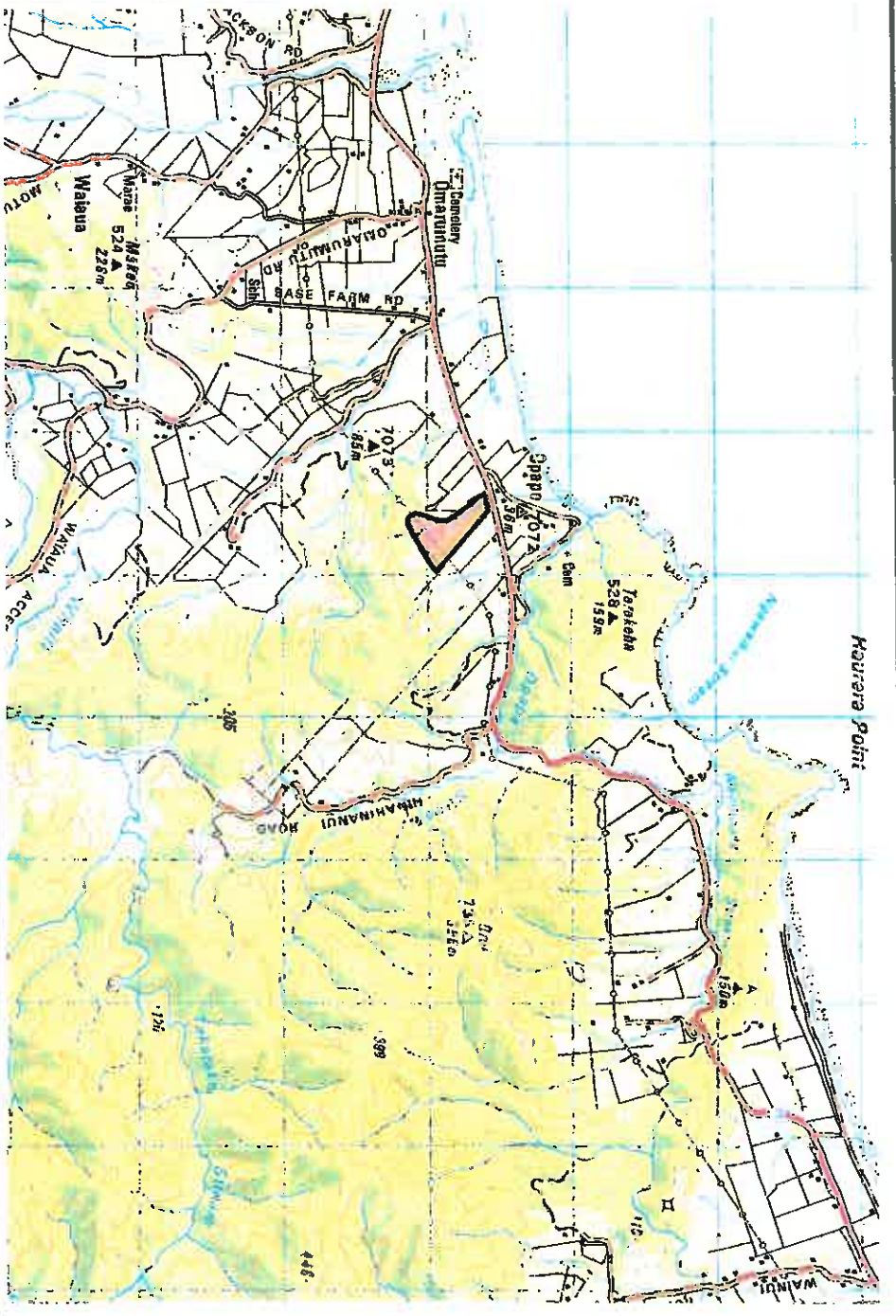
Vegetation type		Physical character
Rewarewa/ manaku-pohutukawa forest		Sedimentary coastal hinterland
Brush wattle-kohuhu- <i>Coprosma robusta</i> -manaku scrub	}	Sedimentary coastal hinterland
Manuka scrub	}	Sedimentary coastal hinterland
Manuka scrub		Freshwater wetland
Cabbage tree/manuka-raupo shrubland		Freshwater wetland
Harakeke-raupo-manuka- <i>Baumea</i> -swamp	}	Freshwater wetland
millet shrubland	}	

(S. M. Beadel pers. obs. 1992)

Justification

Freshwater wetlands would once have been common in the Opotiki Ecological District. This site contains one of the best remaining freshwater wetlands in the district.

SS OPAPE



RAUKUMARA ECOLOGICAL REGION

The Raukumara Ecological Region comprises the Motu and Waioeka Ecological Districts. However, the latter has no coastal boundary and does not extend into the coastal zone. The Raukumara Ecological Region is characterised by the steep rugged topography of the Raukumara Range which "forms a rugged and somewhat irregular mountain spine along the southeast side of the region. The range separates the catchments of the eastern Bay of Plenty from those of the East Cape region. Its altitude varies from about 1000m in the south to its highest point, Mount Hikurangi (1764m) in the northeast". (Clarkson *et al.* 1986). The region incorporates the catchments of the Motu and Waioeka Rivers.

The basal geology of the region comprises mainly Jurassic and early Cretaceous greywacke.

8.1 MOTU ECOLOGICAL DISTRICT

The dominant landform of the Motu ecological district is the Raukumara Range which forms a rugged and somewhat irregular mountain spine along the southeast side of the district. From the central mountain range there is a series of generally west to north trending ridge systems and deep river valleys which extend more or less to the Bay of Plenty coast. Landforms are generally more subdued towards the coast, to end in steep rugged headlands shelved by rock platforms. The greywacke rocks offer high resistance to marine erosion and the coastline is eroding only very slowly (Tortell 1981). Between the headlands are narrow low alluvial terraces and higher old coastal terraces up to 10-50m a.s.l. (more or less continuous between Omaio and Whanarua Bay). They usually have a small scarp where they meet the sea. The coast between headlands is indented, with gravel beaches on the long exposed beaches, as at Torere, Hawai, Maraenui, Omaio and Raukokore, and finer sand and pebbles in the numerous small secluded bays. There are a number of small islets and rock stacks lying within 100-200m off the coast which are generally connected to the mainland by the surrounding wave-cut platforms at low tide." (Clarkson *et al.* 1986).

Dense forest would have covered much of the district prior to Maori occupation beginning about 1000 A.D. or earlier (Wellman 1962). Non-forest vegetation would have been restricted to coastal scrub, small wetlands, open riverbeds, subalpine scrub and alpine grassland zones. Coastal forests would have been dominated by pohutukawa, tawa, puriri, kohekohe and taraire. Elsewhere in New Zealand this species assemblage occurs only in eastern Northland and Coromandel. Today most of the coastal flats are farmed and forest occurs as small remnants or secondary stands. Forests elsewhere in the coastal zone have also been modified. Secondary communities range from bracken and manuka to tall secondary forest (dominants include kanuka, rewarewa, five finger and mamaku). Hard beech occurs in association with broad-leaved tawa and rewarewa at two sites.

Coastal scrub on headlands is dominated by *Hebe stricta* var. *macrocarpa*, manuka, houpare, wharariki and locally *Olearia pachyphylla* (classed as vulnerable, Cameron *et al.* 1993), with scattered emergent pohutukawa. The local wetlands are dominated by raupo and manuka. Cabbage tree, swamp millet, flax, and *Carex geminata* occur locally throughout the district in flood channels and alongside small streams. Dominant species in the wetlands at the Raukokore River mouth are *Juncus microcephalus*, *Ruppia polycarpa*, marsh ribbonwood, and *Cyperus ustulatus*.

Two species reach their southern limit of distribution in the district; taraire (*Beilschmiedia tarairi*) and *Carmichaelia williamsii* (classed as rare, Cameron *et al.* 1993). *Pimelea tomentosa* (classed as vulnerable) also occurs in district (Clarkson *et al.* 1986).

8.1.1

SPECIAL VEGETATION TYPES & THREATENED AND LOCAL PLANTS	
MOTU ECOLOGICAL DISTRICT	
Vulnerable taxa:	
<i>Olearia pachyphylla</i> :	There are only two known colonies of this species within New Zealand, being at Opape headland and Haurere headland.
<i>Pimelea tomentosa</i> :	"Rare in the Motu ecological district" (Clarkson <i>et al.</i> 1986); (e.g. Motu Corridor Category Two Priority Area) (CHR 417604).
Rare taxon:	
<i>Carmichaelia williamsii</i> :	A small population occurs at Whanarua Bay within the Whanarua-Kereu Corridor Category One Priority area.
Distribution: Southern limit:	
Taraire (<i>Beilschmiedia tarairi</i>)	Taraire occurs in the ecological district and reaches its southern limit of distribution just outside of this area, near Torere in the lowland bioclimatic zone as a disjunct distribution.
<i>Carmichaelia williamsii</i> :	<i>Carmichaelia williamsii</i> reaches its southern limit of distribution at Whanarua Bay.

8.1.3 SIGNIFICANT SITES: NATIONAL

OPAPE HEADLAND 1.

Area	Approx 25 ha
Altitude	0-45m
Grid reference	NZMS 260 X15 987497
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical Character
Pohutukawa-koromiko- <i>Olearia pachyphylla</i> - wharariki scrub	} Exposed rocky coast and hinterland }

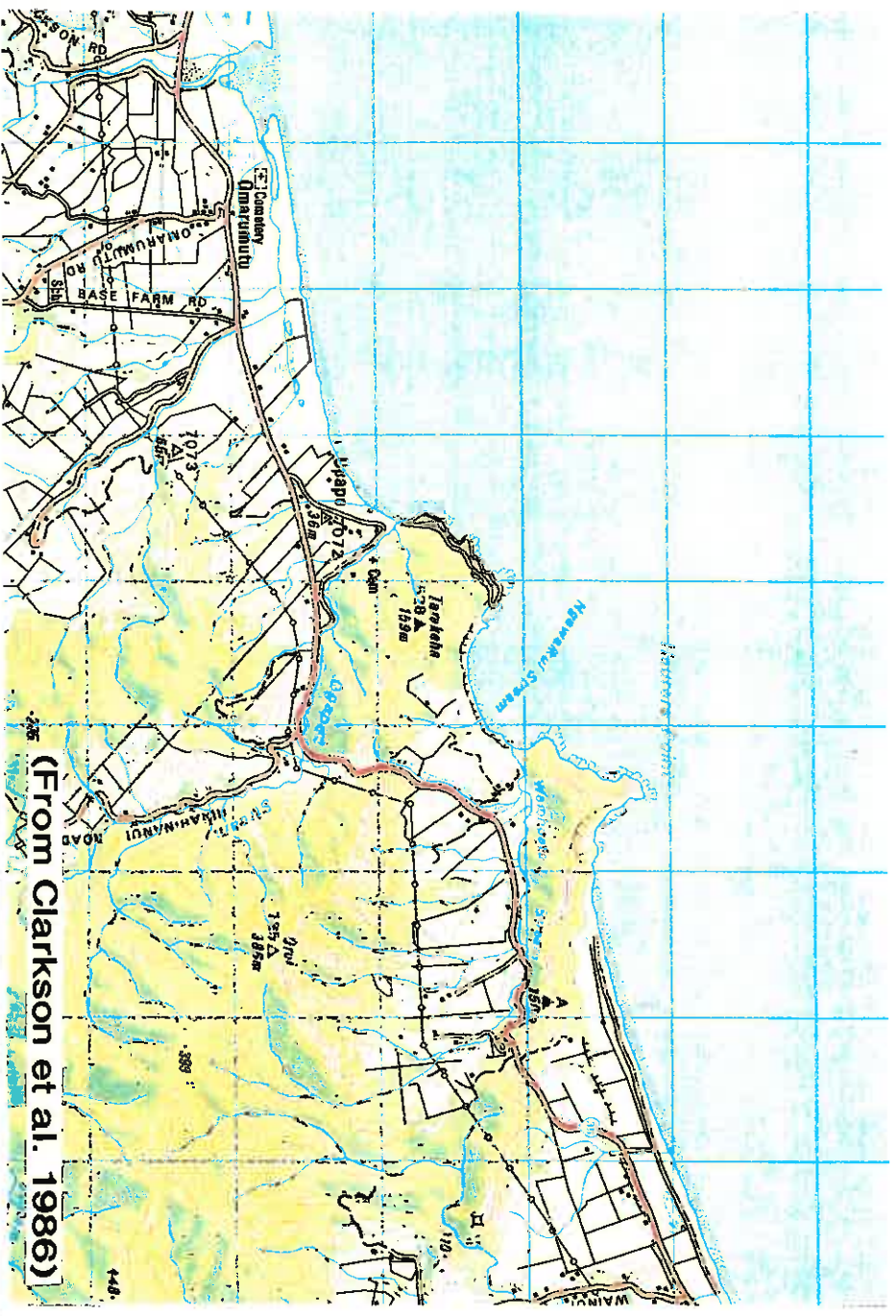
(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

This site contains the most substantial population of *Olearia pachyphylla* in New Zealand (Clarkson *et al.* 1986). *Olearia pachyphylla*, classed as vulnerable (Cameron *et al.* 1993), is known from only one other site in New Zealand (Haurere headland) (cf. Beadel 1988d). It was identified as a Category One Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

SS OPAPE HEADLAND 1



HAURERE HEADLAND 1.

Area	Approx 18 ha
Altitude	0-60m
Grid reference	NZMS 260 X15 006505
Bioclimatic zone	Coastal
Ranking	National

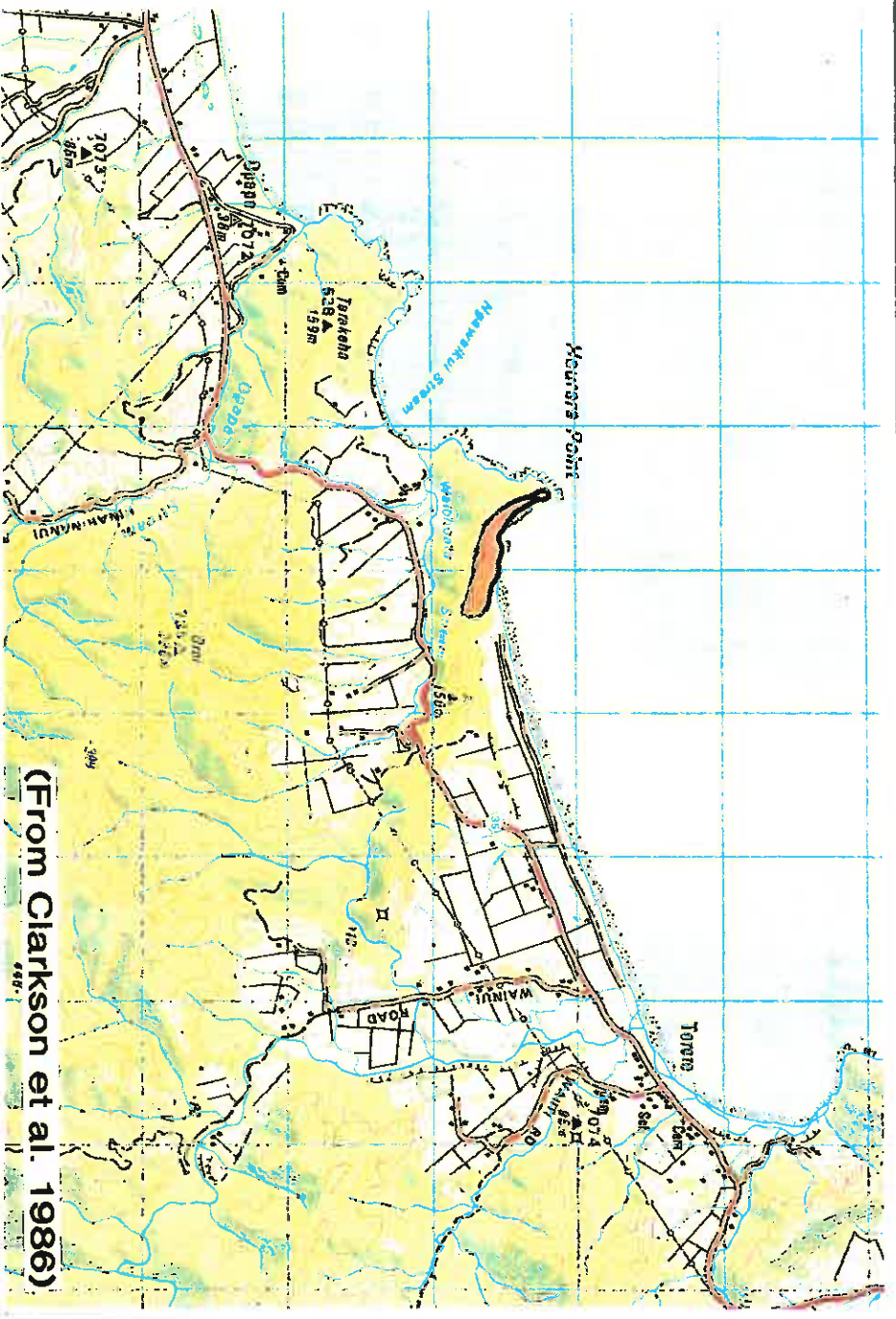
Vegetation type	Physical character
Pohutukawa-koromiko- <i>Olearia pachyphylla</i> - wharariki scrub	} Exposed rocky coast and hinterland }
(Clarkson <i>et al.</i> 1986)	

Vegetation map: Clarkson *et al.* 1986

Justification

This site contains one of only two known populations of *Olearia pachyphylla*, classed as vulnerable (Cameron *et al.* 1993). It is common at this site (Clarkson *et al.* 1986). This site is within a larger area identified as a Category Three Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

SS HAURERE HEADLAND 1



(From Clarkson et al. 1986)



(PART) WHANARUA-KEREU CORRIDOR

Area	Approx 375 ha
Altitude	0-360m
Grid reference	NZMS 260 Y14 310800
Bioclimatic zone	Coastal
Ranking	National

Vegetation type

Pohutukawa forest and treeland
 Pohutukawa-puriri-tawa forest
 Tawa-pohutukawa-puriri forest
 Kanuka scrub and forest
 Manuka scrub

Physical character

Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland

(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

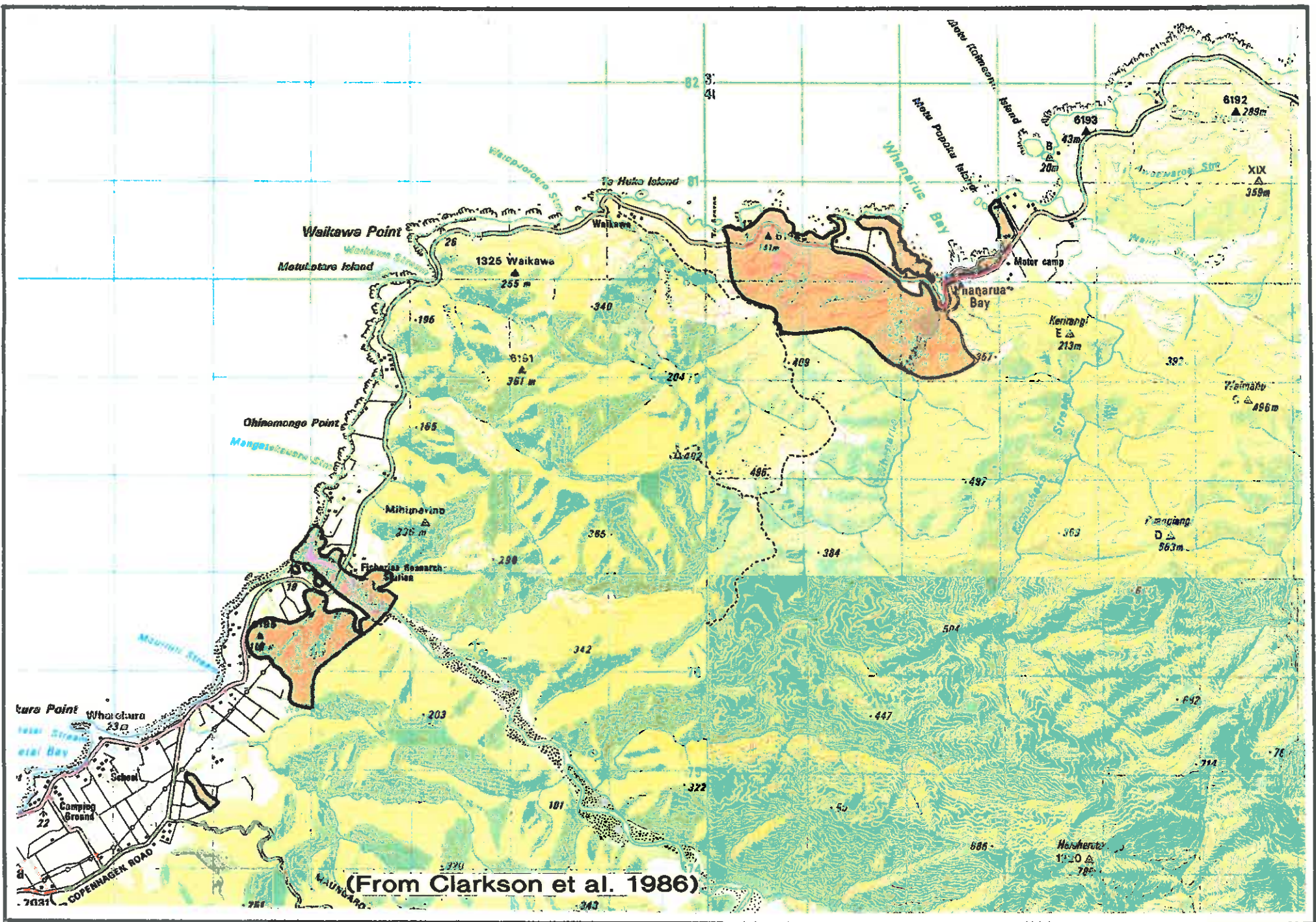
This site is part of "a complete altitudinal sequence from coastal pohutukawa forest to montane hard beech, tawarai, kamahi, tawheowheo forest" comprising 9552 hectares (Clarkson *et al.* 1986).

It is a good quality, representative example of the coastal vegetation of the ecological district and contains one the three best examples of pohutukawa-puriri-tawa forest and tawa-pohutukawa-puriri forest therein. These vegetation types were once common in the coastal zone of the Motu Ecological District but have been greatly reduced from their former extent.

Carmichaelia williamsii (classed as rare, Cameron *et al.* 1993) reaches its present southern limit at Whanarua Bay.

This site was identified as a Category One Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

SS (PART) WHANARUA - KEREU CORRIDOR



TE URITUKITUKI

Area	Approx 13 ha
Altitude	0-120m
Grid reference	NZMS 260 X15 109586
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type

Physical character

Pohutukawa-puriri-tawa forest

Exposed rocky coast and hinterland

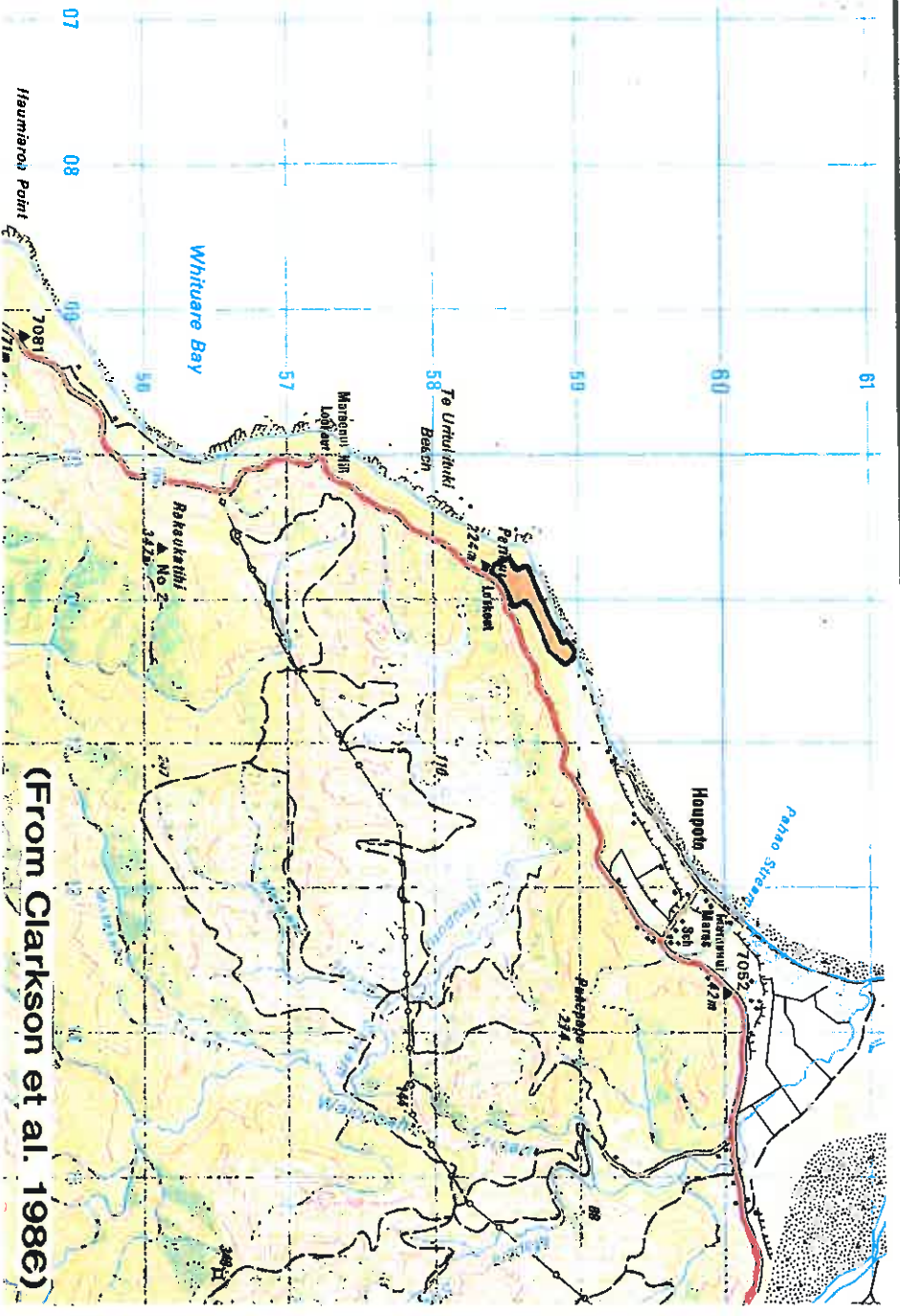
(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

This site contains one of the three best examples of pohutukawa-puriri-tawa forest in the Motu Ecological District. This vegetation type was once common in the coastal zone of this district but has been greatly reduced from its former extent (Clarkson *et al.* 1986). The site was identified as a Category One Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

SS TE URITUKITUKI



8.1.3 SIGNIFICANT SITES: REGIONAL

(PART) HOUPOTO SWAMP

Area	Approx 26 ha
Altitude	30 m
Grid reference	NZMS 260 X15 113582
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type	Physical character
Manuka scrub	Freshwater wetland
Raupo reedland	Freshwater wetland
"Swamp vegetation"	Freshwater wetland

(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

Houpoto Swamp is part of a large wetland (approximately 177 ha) of which approximately 26 ha is in the coastal zone. This swamp is "the largest intact fertile palustrine wetland in the ecological district and occurs in a valley floor of the Houpoto stream. Vegetation types represented include raupo reedland, swamp millet swamp and *Carex geminata* swamp. A belt of manuka grows on some peaty marginal sites. Several wetland species found here are unknown elsewhere in the Motu Ecological District, including the nationally uncommon monocotyledonous herb *Sparganium subglobosum*." (Clarkson *et al.* 1986).

Houpoto swamp contains relatively good quality, representative examples of freshwater wetland vegetation of the Motu Ecological District. The site is within a larger area that was identified as being a Category One Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

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PART WHITIANGA

Area	Approx 85 ha
Altitude	0-20m
Grid reference	NZMS 260 X15 157640
Bioclimatic zone	Coastal
Ranking	Regional

Vegetation type

Physical character

Pohutukawa-puriri-tawa forest
Tawa-pohutukawa-puriri forest

Exposed rocky coast and hinterland
Exposed rocky coast and hinterland

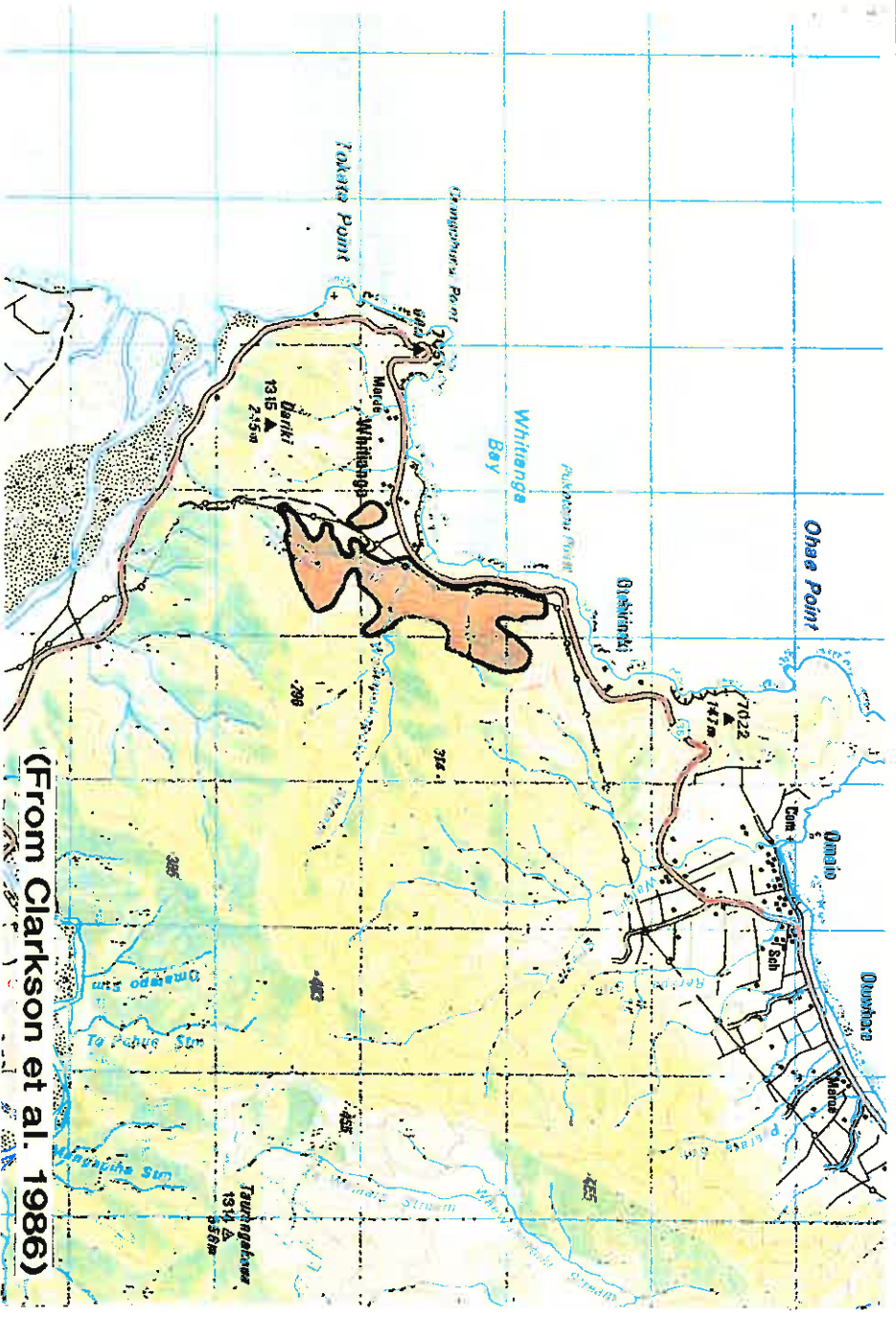
(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

This site contains one the three best examples of pohutukawa-puriri-tawa forest and tawa-pohutukawa-puriri forest in the Motu Ecological District. These vegetation types were once common in the coastal zone of the district but have been greatly reduced from their former extent. This site contains much of the Whitianga Category One Priority Area (total area 102.5ha) and is contiguous with the Motu Corridor Category Two Priority area (5463ha); defined in Appendix 5.4.

SS (PART) WHITIANGA



(From Clarkson et al. 1986)



8.1.4 SIGNIFICANT SITES: DISTRICT

OPAPE HEADLAND 2.

Area	Approx 139 ha
Altitude	159m
Grid reference	NZMS 260 X15 993493
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Broadleaved tawa-pohutukawa-puriri forest
Broadleaved tawa-puriri forest
Five finger-mamaku scrub and forest
Manuka-coprosuma-koromiko scrub
Raupo reedland

Physical character

Exposed rocky coast and hinterland
Exposed rocky coast and hinterland
Exposed rocky coast and hinterland
Exposed rocky coast and hinterland
Freshwater wetland

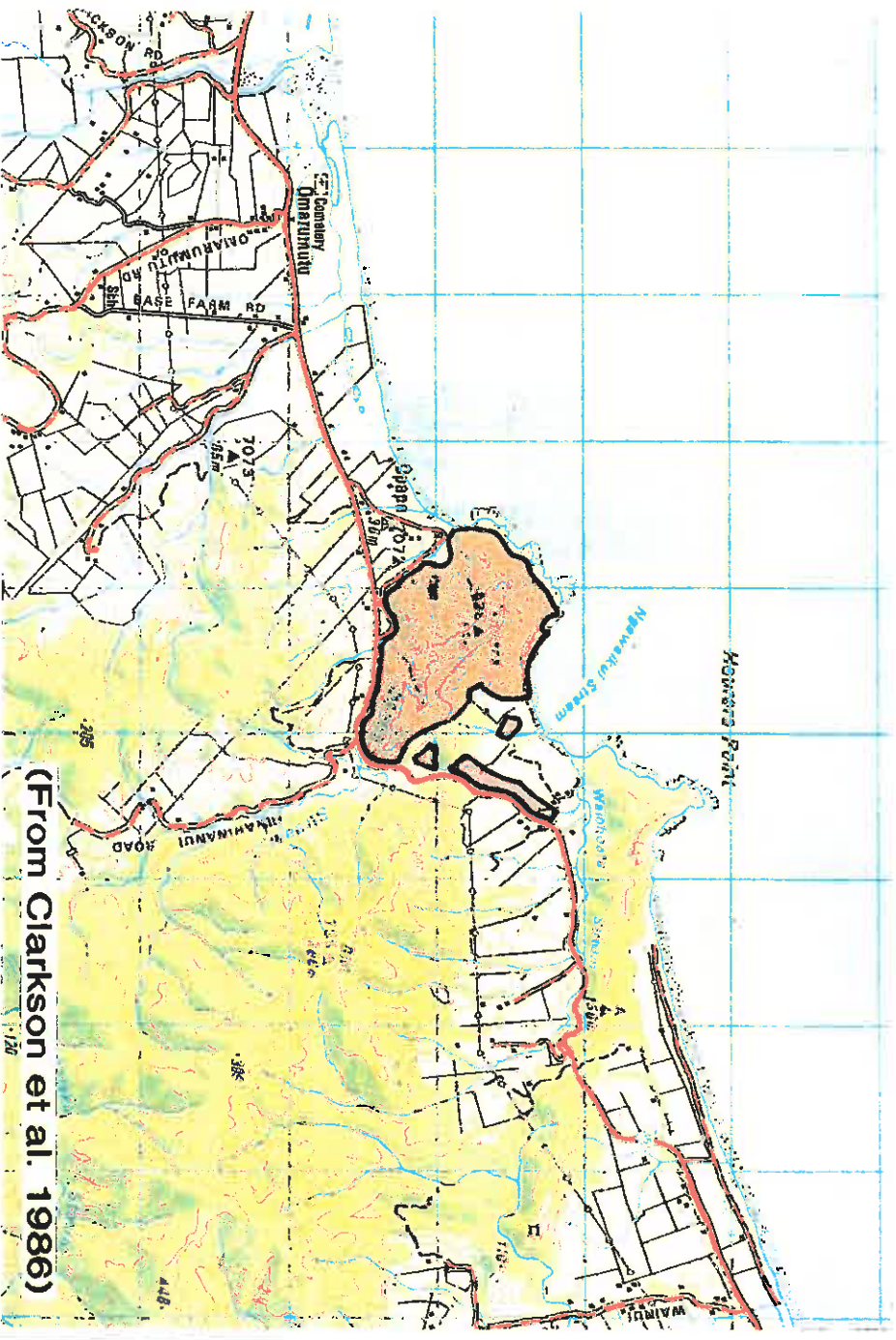
(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

This site acts as a buffer to a nationally significant site containing the threatened shrub *Olearia pachyphylla*. It also contains the best example of raupo reedland in the ecological district. It links with Oroi Scenic Reserve and the Opape Lands proposed reserve. It was identified as a Category Three Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

SS OPAPE HEADLAND 2



(From Clarkson et al. 1986)



HAURERE HEADLAND 2.

Area	Approx 62 ha
Altitude	0-140m
Grid reference	NZMS 260 X15 000505
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Broadleaved tawa-puriri-karaka forest
 Kanuka scrub and forest
 Kanuka-five finger-rewarewa scrub
 and forest
 Manuka-coprosma-koromiko scrub
 Manuka scrub
 Pohutukawa treeland

Physical character

Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland

(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

This site acts as a buffer to a nationally significant site containing the threatened shrub *Olearia pachyphylla*. It was identified as a Category Three Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

PART TORERE CORRIDOR

Area	Approx 159 ha
Altitude	0-200m
Grid reference	NZMS 260 X15 045530
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Hard beech-tawa-rewarewa forest
 Pohutukawa forest and treeland
 Kanuka forest and scrub
 Kanuka-five finger-rewarewa scrub
 and forest
 Manuka-kanuka scrub

Physical character

Alluvium beaches
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland

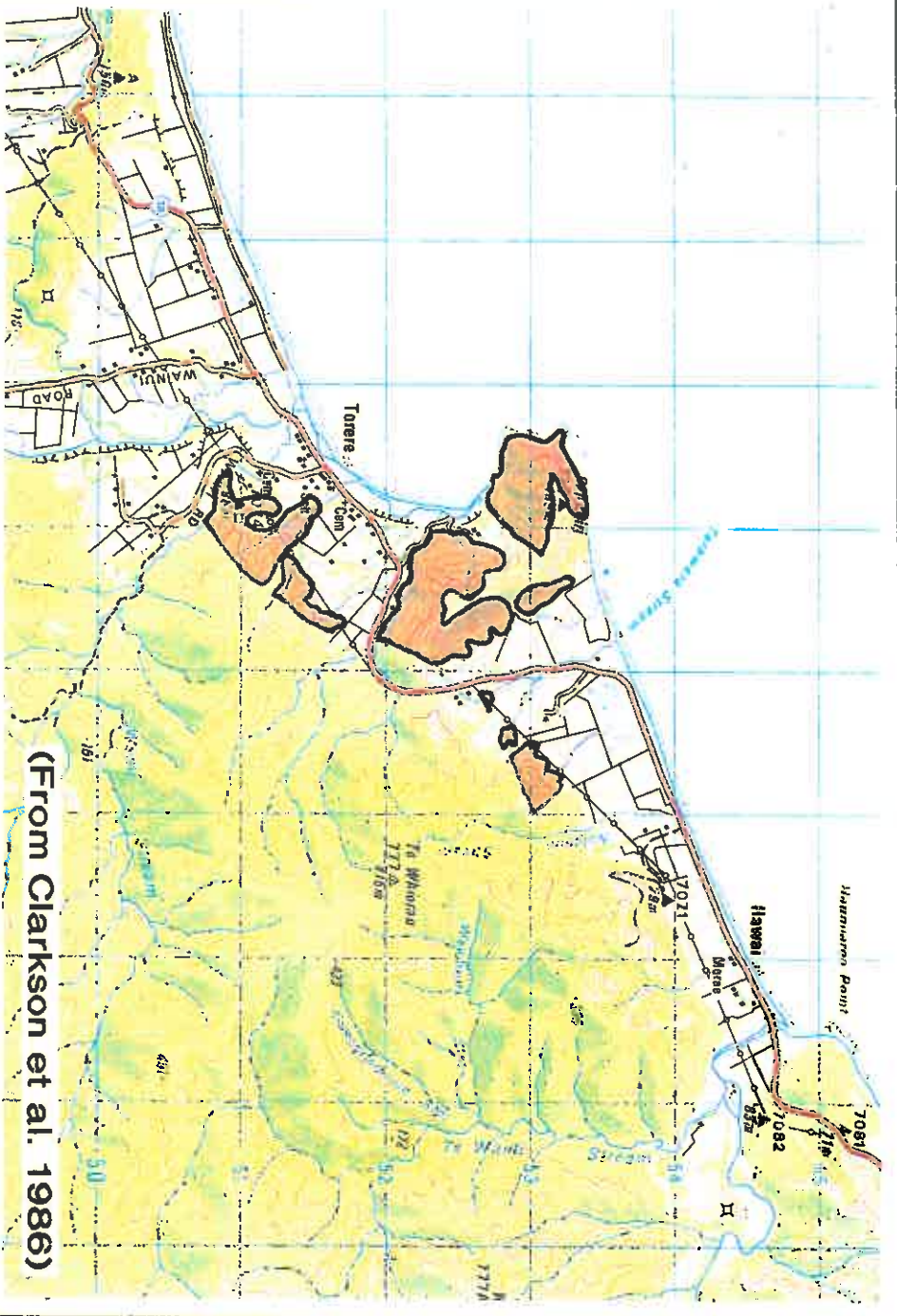
(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

The Torere Corridor is part of a large (1095 ha) vegetation sequence extending from "coastal pohutukawa forest and treeland, and induced scrub to moderately and highly modified lowland (steep) forest. It provides the shortest link to a proposed ecological area (Parauumu), and buffers the pohutukawa-puriri-broadleaved tawa forest containing the southernmost known taraire" (Clarkson *et al.* 1986). It was identified as a Category Three Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

SS (PART) TORERE CORRIDOR



(From Clarkson et al. 1986)



MARAENUI

Area	Approx 59 ha
Altitude	0-220m
Grid reference	NZMS 260 Y14 139598
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Hard beech-tawa-rewarewa forest

Physical character

Exposed rocky coast and hinterland

(Clarkson *et al.* 1986)**Justification:**

This is the largest example of hard beech-dominant forest in the coastal zone of the Motu Ecological District; only small areas of hard beech-dominant forest are included in priority areas (see Clarkson *et al.* 1986).

(From Clarkson et al. 1986)



(PART) MOTU CORRIDOR
(includes Tokata Scenic Reserve)

Area	Approx 564 ha
Altitude	0-245m
Grid reference	NZMS 260 X15 140625
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Pohutukawa forest and treeland
 Tawa-pohutukawa-puriri forest
 Tawa-puriri forest
 Five finger-mamaku forest and scrub
 Kanuka scrub and forest
 Tauhinu scrub and forest
 Manuka scrub
 Manuka scrub

Physical character

Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Exposed rocky coast and hinterland
 Alluvium beaches
 Alluvium beaches
 Alluvium beaches
 Exposed rocky coast and hinterland

(Clarkson *et al.* 1986)

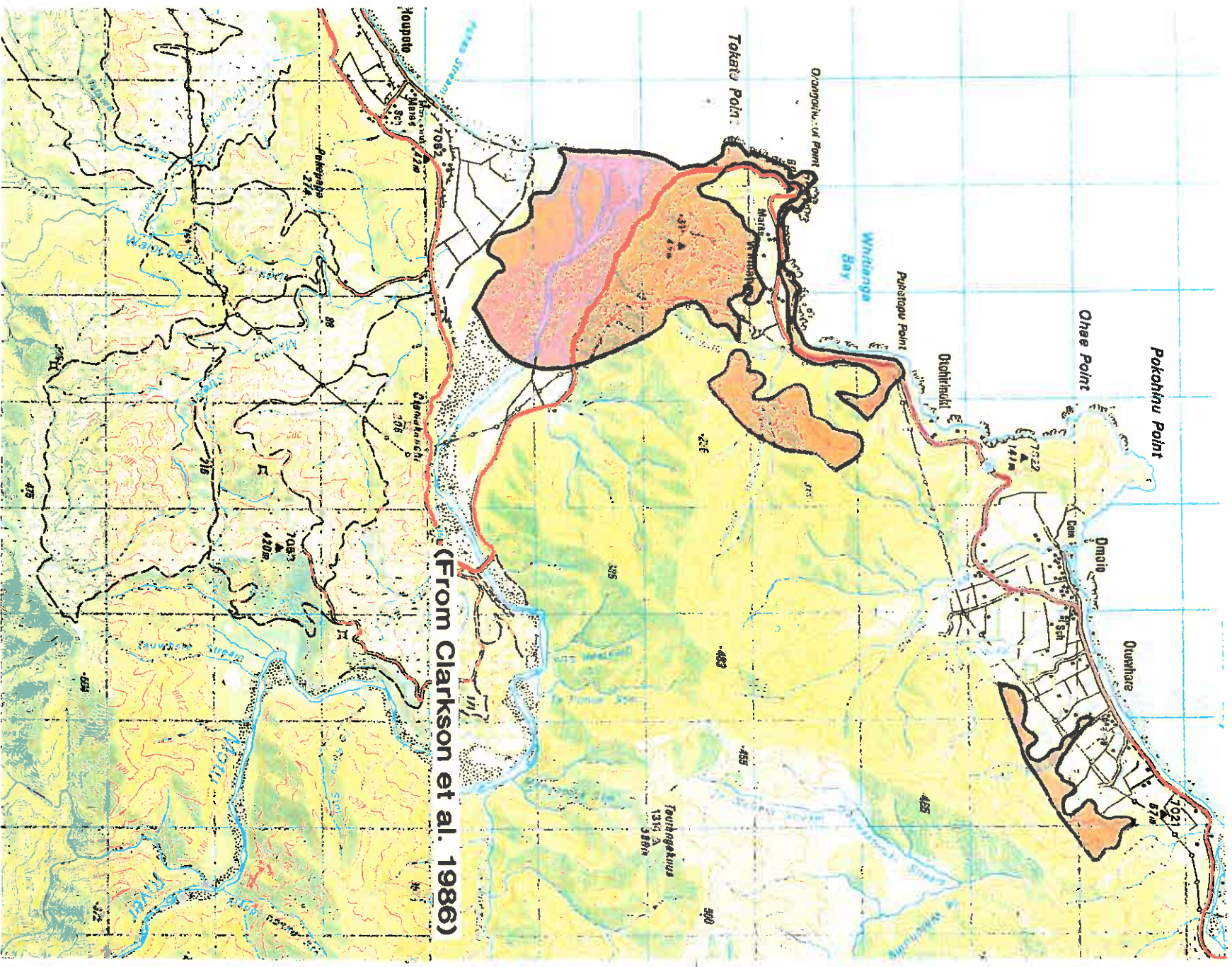
Vegetation map: Clarkson *et al.* 1986

Justification

This site contains the coastal section of "a complete altitudinal sequence from coastal pohutukawa forest and treeland, and pohutukawa, puriri, broadleaved tawa forest to montane hard beech, tawari, kamahi, quintinia forest" (5463 ha). It links with the Raukumara Wilderness Area and incorporates the lower reaches of the Motu River and Tokata Scenic Reserve (Clarkson *et al.* 1986).

This site is within a larger area identified as a Category Two Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

SS (PART) MOTU CORRIDOR



MOTU KAIMEANUI ISLAND

Area	Approx 1 ha
Altitude	0-20m
Grid reference	NZMS 260 Y14 334814
Bioclimatic zone	Coastal
Ranking	District

Vegetation type

Pohutukawa-houpara forest
Houpara-kohuhu forest

Physical character

Exposed rocky coast and hinterland
Exposed rocky coast and hinterland

(Clarkson *et al.* 1986)

Vegetation map: Clarkson *et al.* 1986

Justification

"One of the three best examples of an island in the Motu Ecological District. It exhibits the complete zonation from oioi and searush to coastal scrub and forest" (Clarkson *et al.* 1986). It was identified as a Category One Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.

MOTU PAPAKU ISLANDS

Area	Approx 2 ha
Altitude	0-10m
Grid reference	NZMS 260 Y14 328808
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Houpara-rewarewa-mangeao- puriri forest	} Exposed rocky coast and hinterland }
(Clarkson <i>et al.</i> 1986)	

Justification

"Two of the three best examples of islands in the district." (Clarkson *et al.* 1986). These islands were identified as a Category One Priority Area in Clarkson *et al.* (1986); defined in Appendix 5.4.