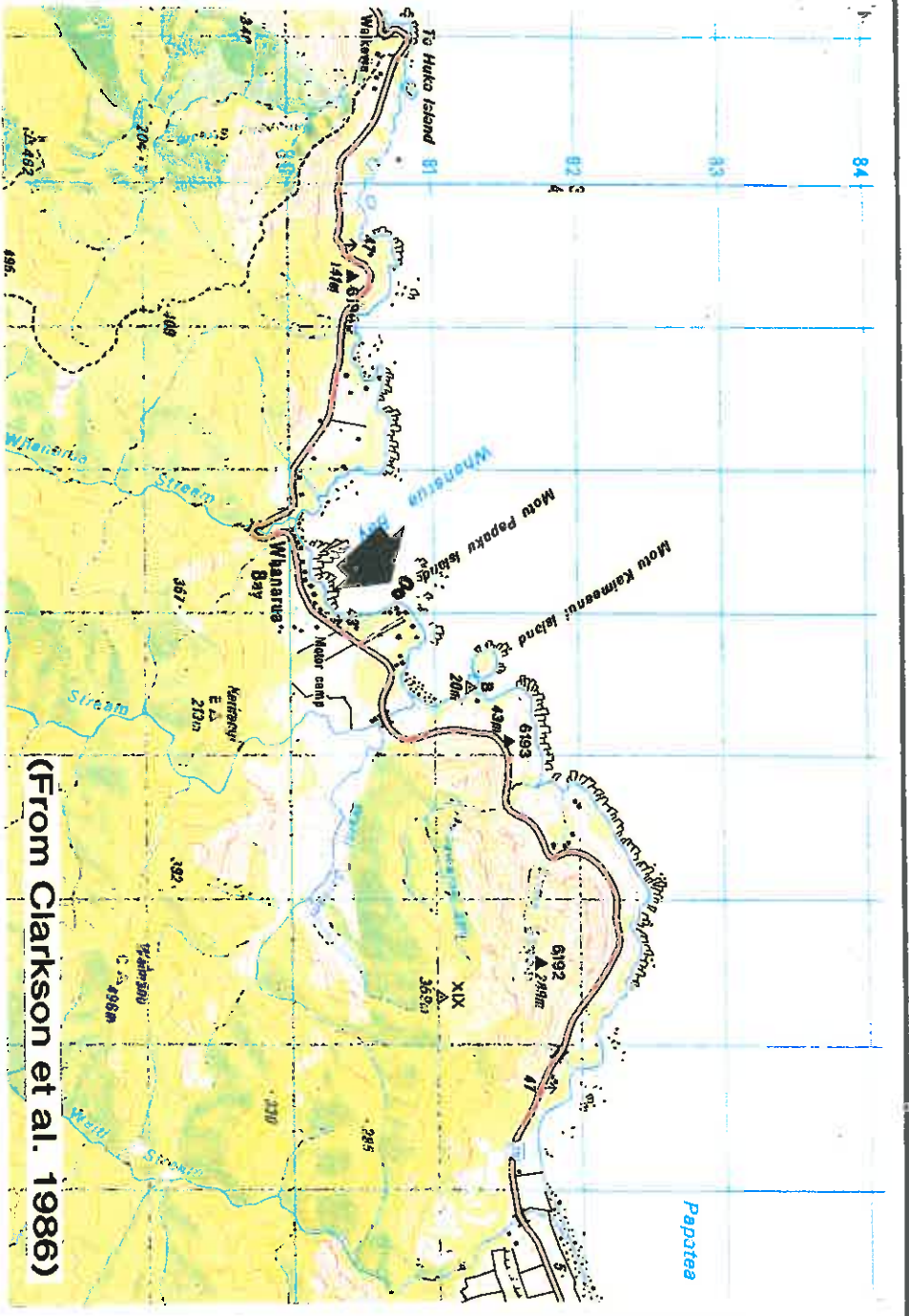


SS MOTU PAPAOKU ISLANDS



(From Clarkson et al. 1986)



9 EAST CAPE ECOLOGICAL REGION

The East Cape Ecological Region is comprised of Pukeamaru, Waiapu and Turanga Ecological Districts. It is a diverse region including the Pukeamaru range, the coastal lowlands and hills to the east and south of the Raukumara Range, and the Gisborne Plains. A feature of the region is the mudstones, sandstones and siltstones which occur throughout the region. Only the western portion of the Pukeamaru Ecological District is within the Bay of Plenty Region.

9.1 PUKEAMARU ECOLOGICAL DISTRICT

The Pukeamaru Ecological District is based on the Pukeamaru Range (991m a.s.l.). There are steeply dissected low hills (approx. 100-480m) of siltstone in the east and west of the district. Low and rolling hill country includes the foothills of the Raukumara and Pukeamaru Ranges. There are several wide, flat-bottomed river valleys and a series of narrow coastal terraces in the west, north-east, east and throughout the Wharekahika Graben. The rugged, cliffed coastal zone is drained to the west by the Whangaparaoa River, to the north by the Wharekahika and Awatere Rivers and to the east by the Waiapu River.

Tall forest would have covered much of the district prior to Maori occupation. Non-forest vegetation would have been restricted to sand dunes, coastal scrub, small wetlands and open riverbeds.

Pohutukawa and houpara are common on the coastal cliffs. Puriri, tawa and kohekohe, with or without pohutukawa, are found on coastal hillslopes. Coastal slopes on the Matakaoa Range also have podocarps (kahikatea, matai and rimu) associated with tawa, puriri and pohutukawa on less well drained sites, colluvial hillslopes and marine terraces. Mangeao, common in tawa and puriri forests, is largely confined to the Matakaoa Range. On unstable sea cliffs and hillslopes, particularly along the coast near Te Araroa, scrub and shrubland species include kanuka, manuka, taupata, *Coprosma robusta*, tutu (*Coriaria arborea*), five finger (*Pseudopanax arboreus*), *Pitiosporum ralphii*, kohuhu (*Pitiosporum tenuifolium* subsp. *tenuifolium*), tauhinu (*Cassinia leptophylla*) and wharariki. Kowhai ngutukaka (*Clanthus puniceus*) and *Brachyglottis perdicoides* were probably once more common in this vegetation class but now have a very local distribution.

Freshwater wetlands have been greatly reduced in extent. Species common in the remaining areas include *Carex virgata*, spike sedge (*Eleocharis acuta*), giant spike sedge, *Baumea rubiginosa*, *B. articulata*, flax, *Coprosma tenuicaulis* and manuka. Saline wetlands at the Whangaparaoa and Karakatuwhero River mouths are probably close to their original extent and composition and are dominated by *Schoenoplectus pungens*, *Isolepis cernua*, arrow grass (*Triglochin striata*), searush, oioi, *Isolepis nodosa* and marsh ribbonwood.

Spinifex, pingao, *Austrofestuca littoralis* and *Carex pumila* would once have been common on dunes. However indigenous sand dune communities have been much reduced in extent and while spinifex is often present, adventive species are now common.

Small populations of several threatened and local plants occur in the district. Three species occur in the Bay of Plenty Region; *Carrichiella williamsii* (classed as rare, Cameron *et al.* 1993), *Pimelea tomentosa* (vulnerable), pingao (local).

(Source: Regnier *et al.* 1988)

9.1.1

SPECIAL VEGETATION TYPES AND THREATENED AND LOCAL PLANTS	
PUKEAMARU ECOLOGICAL DISTRICT	
Vulnerable taxa:	
<i>Pimelea tomentosa</i>	Known from several sites in the district; coastal hillslopes in the Tupuaeharuru priority area (Regnier <i>et al.</i> 1988); Waihau Bay (W. B. Moore 1944 CHR 46454); Whangaparaoa Bay (CHR 417736); Raukokere River (CHR 417603) - in the Papatea Priority One Area.
Rare taxa:	
<i>Carmichaelia williamsii</i>	Near the Raukokere River mouth (Regnier <i>et al.</i> 1988).
Local taxa:	
<i>Desmoschoenus spiralis</i> (pingao)	Two plants were noted on the sand gravel plain in the Whangaparaoa priority area (Regnier <i>et al.</i> 1988).

9.1.2 SIGNIFICANT SITES: NATIONAL

(PART) TUPUAEHARURU

Area	Approx 243 ha
Altitude	0-200m
Grid reference	NZMS 260 Y14 480869
Bioclimatic zone	Coastal
Ranking	National

Vegetation type	Physical character
Hard beech forest	Exposed rocky coast and hinterland
Kahikatea forest	Exposed rocky coast and hinterland
Kanuka forest and scrub	Exposed rocky coast and hinterland
Pohutukawa forest	Exposed rocky coast and hinterland
Pohutukawa-(hard beech) forest	Exposed rocky coast and hinterland
Pohutukawa-haupara-(puriri) forest	Exposed rocky coast and hinterland
Pohutukawa-puriri forest	Exposed rocky coast and hinterland
Tawa forest	Exposed rocky coast and hinterland
Tawa-puriri forest	Exposed rocky coast and hinterland
Tawa-puriri-(pohutukawa) forest	Exposed rocky coast and hinterland
Manuka scrub and shrubland	Exposed rocky coast and hinterland
Spinifex grassland	Exposed rocky coast and hinterland
Sandfield	Dune and beach sands

(Regnier *et al.* 1988)

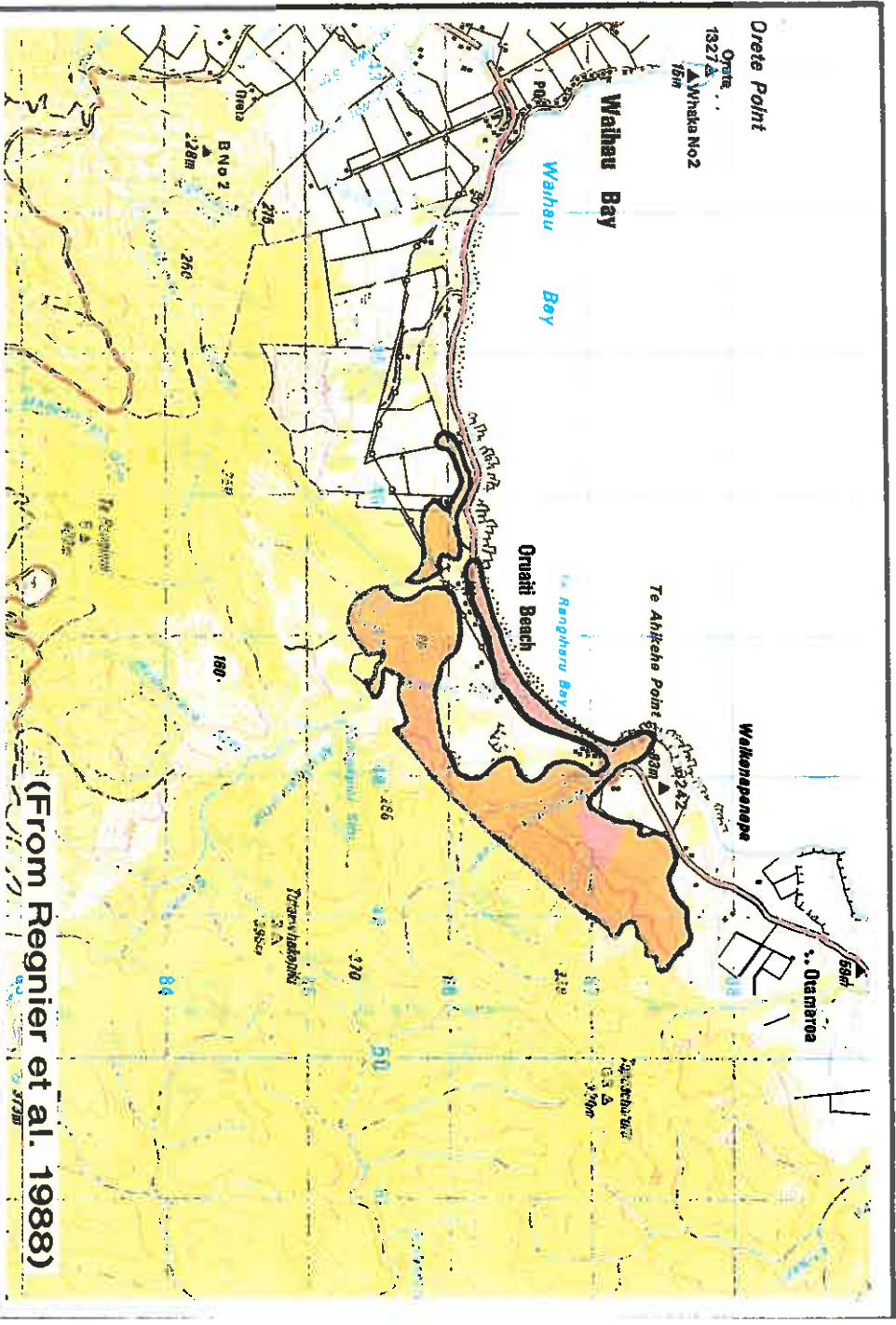
Vegetation map: Regnier *et al.* 1988

Justification

This site is part of a large (3640 ha) representative tract of vegetation forming a continuous altitudinal sequence from coastal to lowland forest. It was identified as a Category One Area in Regnier *et al.* (1988); defined in Appendix 5.4. It includes the best examples of spinifex grassland and pohutukawa-dominant forests in the district.

The manuka shrubland on coastal-facing hillslopes has a high number of species, including three notable ones. *Pimelea tomentosa* is classed as vulnerable (Cameron *et al.* 1993). The other two, *Pimelea longifolia* and *Lindsaea linearis*, whilst not nationally threatened or local, are uncommon in the Bay of Plenty-East Cape locality (Regnier *et al.* 1988).

SS (PART) TUPUAEHARURU



(From Regnier et al. 1988)



9.1.3 SIGNIFICANT SITES: DISTRICT

PART TIKIRAU

Area	259 ha
Altitude	0-378m
Grid reference	NZMS 260 Y14 511935
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Broad-leaved species forest	Volcanic hard coast
Pohutukawa-puriri-karaka forest	Volcanic hard coast
Tawa-puriri forest	Volcanic hard coast
Tawa-(puriri) forest	Volcanic hard coast
Manuka scrub	Volcanic hard coast
Tauhinu-introduced grasses shrub-grassland	Volcanic hard coast
<i>Cyperus ustulatus</i> -New Zealand iceplant rockland	Volcanic hard coast

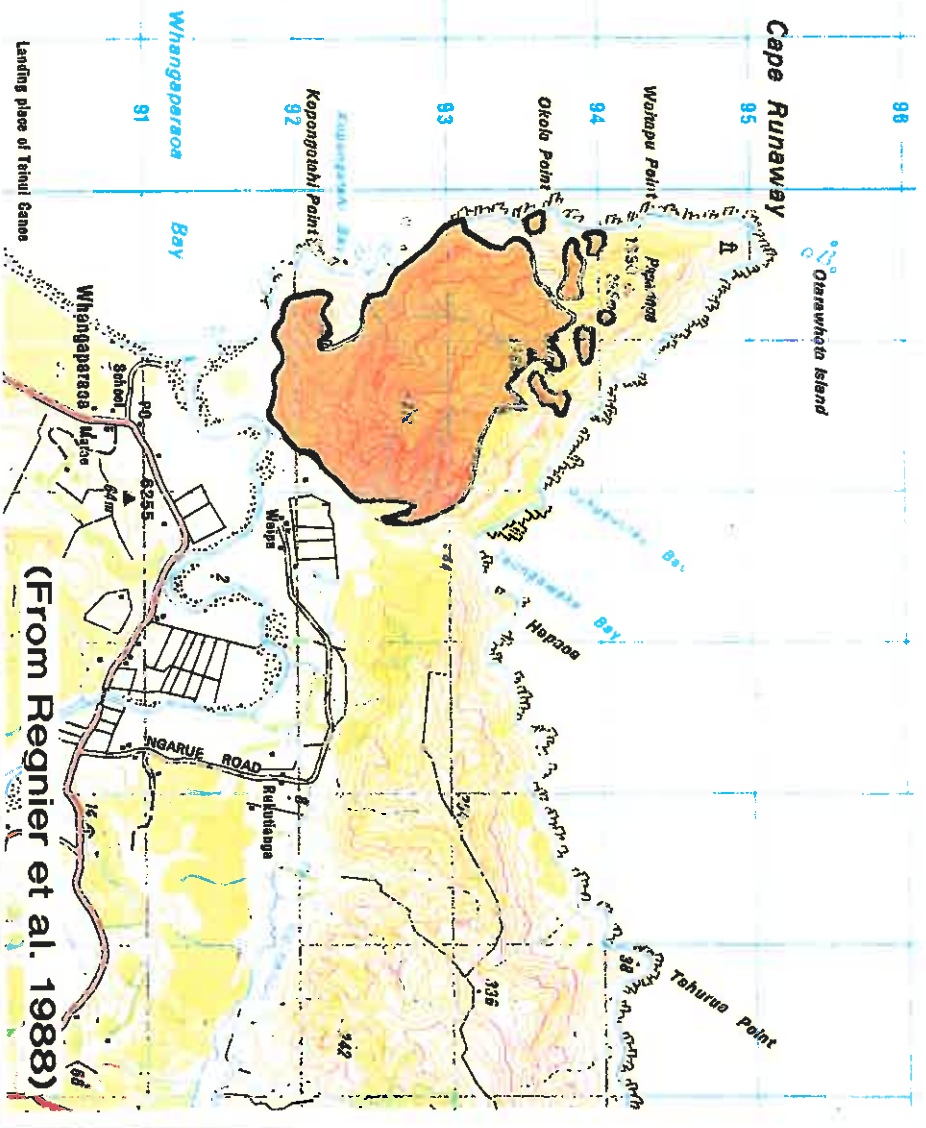
(Regnier *et al.* 1988)Vegetation map: Regnier *et al.* 1988

Justification

This site "is a well-defined and distinctive natural area (comprising 500 ha), approximately one third being covered in coastal forests of pohutukawa-karaka-puriri, tawa-puriri and tawa-(puriri). It has the largest tawa-(puriri) forest remnant in the western half of the district. *Olearia albidia*, a typically coastal species, is common in this forest type but infrequent elsewhere in the district. *Lastreopsis velutina* occurs here; it has a limited distribution elsewhere in the district, confined mainly to the Matakaoa Range. The forests have a healthy canopy and good potential for good regeneration." (Regnier *et al.* 1988)

This site is within a larger area identified as a Category Two Priority Area in Regnier *et al.* (1988); defined in Appendix 5.4.

SS TIKIRAU



WHANGAPARAQA 1.

Area	Approx 48 ha
Altitude	0-10m
Grid reference	NZMS 260 Y14 511903
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Pohutukawa forest	Exposed rocky coast and hinterland
Lupin scrub and Yorkshire fog- <i>Poa pratense</i> grassland	Alluvium beaches
Marsh ribbonwood-oioi sedge-shrubland	Saline wetland
<i>Schoenoplectus pungens-Isoplepis coerrua</i> -arrow grass herb-sedgeland	Saline wetland
Searush-oioi rushland	Saline wetland
<i>Eleocharis sphacelata-raupo-Baumea articulata</i> reedland	Freshwater wetland
Raupo- <i>Baumea articulata</i> reedland	Freshwater wetland
Raupo-harakeke reedland	Freshwater wetland
Spinifex grassland	Alluvium beaches
(<i>Isoplepis nodosa</i>) gravelfield	Alluvium beaches

(Regnier *et al.* 1988)

Vegetation map: Regnier *et al.* 1988

Justification

"A high diversity of representative vegetation types in relatively good condition occur on the large dune system, in lakelets in dune hollows and at the Whangaparaoa River mouth. Distinctive vegetation patterns resulting from tidal influences, salinity and drainage gradients are clearly visible here. The most extensive areas in the district of *Schoenoplectus pungens-Isoplepis coerrua*-arrow grass herb-sedgeland below high tide level, and searush-oioi rushland at or above high tide level are found here. The marsh ribbonwood-oioi rush-shrubland above high tide level is the best example in the district.

The freshwater lakelets in the dune hollows are in good condition. The vegetation cover on the margins of Raupo-*Baumea articulata* reedland and *Eleocharis sphacelata-raupo-Baumea articulata* reedland is in excellent condition. The narrow band of spinifex grassland on the freely draining foredunes is being overgrown by lupin which covers much of the remaining dunes. Two plants of pingao (classed as local, Cameron *et al.* 1993) were noted on the sand gravel plain." (Regnier *et al.* 1988)

This site is within a larger area identified as a Category One Priority Area in Regnier *et al.* (1988); defined in Appendix 5.4.

PAPATEA

Area	Approx 53 ha
Altitude	0-60m
Grid reference	NZMS 260 Y14 390825
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Tawa-taraire-puiriri-pohutukawa forest	Exposed rocky coast and hinterland
Pohutukawa-taraire forest	Exposed rocky coast and hinterland
Taraire forest	Exposed rocky coast and hinterland
Pohutukawa/manuka-broadleaved species shrub	Exposed rocky coast and hinterland
Cabbage tree/blackberry treeland	Freshwater wetland
Pohutukawa treeland	Exposed rocky coast and hinterland
Lupin- <i>Muehlenbeckia complexa</i> -tauhinu shrubland	Alluvium beaches
Marsh ribbonwood/ <i>Cyperus ustulatus</i> shrubland	Freshwater wetland
Oioi- <i>Cyperus ustulatus</i> sedgeland	Freshwater wetland
Raupo reedland	Freshwater wetland
Juncus rushland	Freshwater wetland
Ruppia polycarpa-(<i>Potamogeton pectinatus</i>) herbfield	Freshwater wetland
Bare riverbed	Alluvium beaches

(Regnier *et al.* 1988)

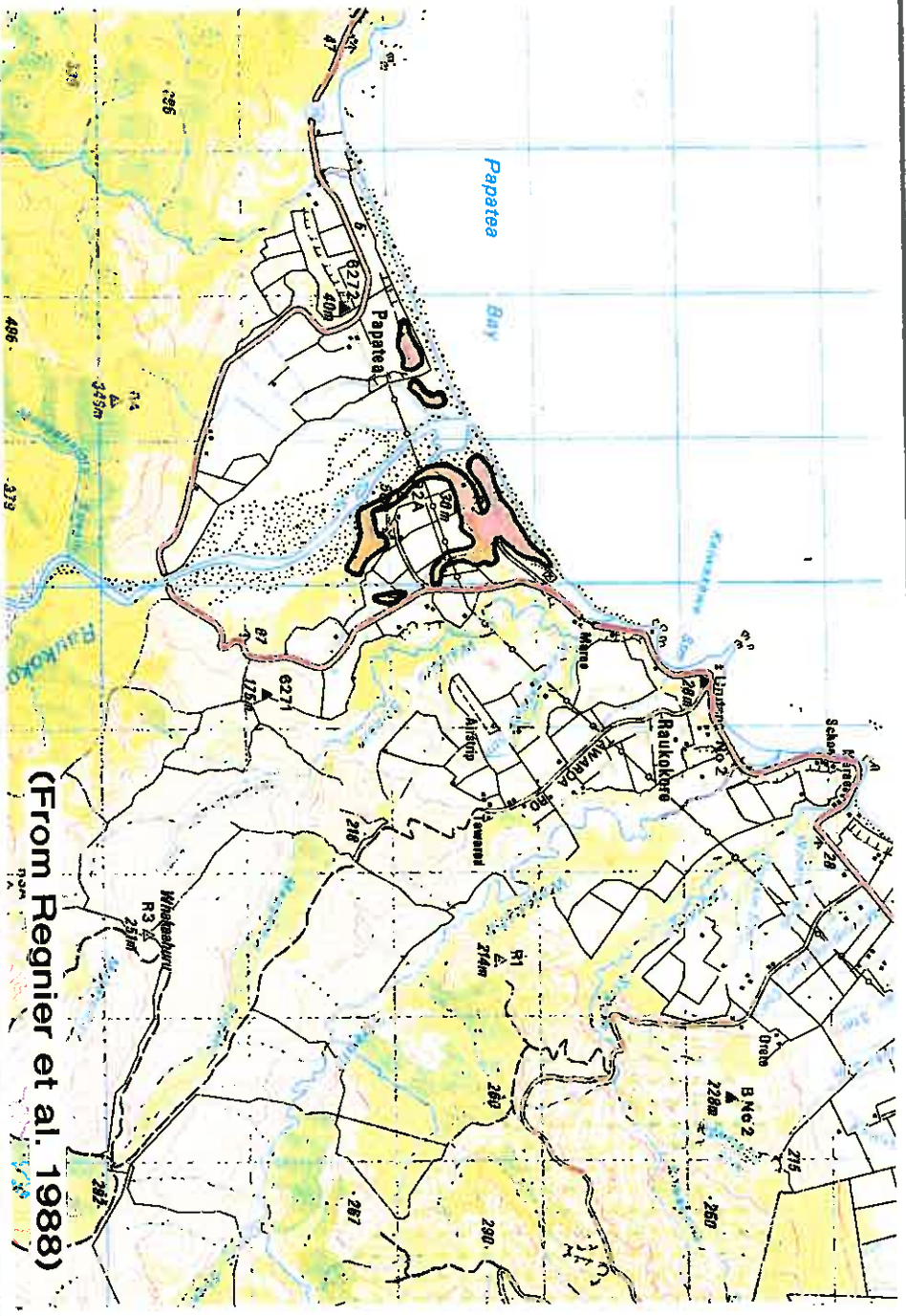
Vegetation map: Regnier *et al.* 1988

Justification

"Centred around the Raukokere River mouth, this natural area is part of both the Raukumara and East Cape Ecological Regions. Taraire is not found elsewhere Pukeamaru Ecological District and the forest remnant in which it occurs is in excellent condition. It is one of the few localities on the mainland where *Carniachaelia williamsii* (classed as rare, Cameron *et al.* 1993) occurs. The lagoon has a plant assemblage comprising *Ruppia polycarpa* and *Potamogeton pectinatus*, both uncommon elsewhere in the district" (Regnier *et al.* 1988)

This site is within a larger area identified as a Category One Priority Area in Regnier *et al.* (1988); defined in Appendix 5.4.

SS PAPATEA



(From Regnier et al. 1988)



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APPENDICES

1 CHECKLIST OF ECOLOGICAL UNITS (by ecological district)

These tables list all known ecological units (refer to section 3.4) in each ecological district. It lists the sites where each ecological unit occurs, the source of the vegetation information and the significant sites where each vegetation type occurs. Numbers listed in the column "known locations" refer to the Bay of Plenty Ecological Significance Database maps.

1.1 Coromandel Ecological Region (Part)

WAIHI ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Volcanic hard coast	Pohutukawa forest	* Orokawa Scenic Reserve	Miller 1984	Orokawa
Volcanic hard coast	Pohutukawa-tawa-rewarewa-puriri-pigeonwood-mangeao-karaka-kohekohe forest	* Orokawa Scenic Reserve	Miller 1984	Orokawa
Volcanic hard coast	Five finger-rangiora-karamu/manuka-kanuka scrub	* Orokawa Scenic Reserve	Miller 1984	Orokawa
Volcanic hard coast	Pohutukawa treeland	* Orokawa Scenic Reserve	Miller 1984	Orokawa
Volcanic hard coast	Pohutukawa-karo-houpara treeland	* Orokawa Scenic Reserve	Miller 1984	Orokawa
Volcanic hard coast	Houpara- <i>Helichrysum glomeratum</i> -karo-kohuhu-taupata shrubland	* Orokawa Scenic Reserve	Miller 1984	Orokawa
Volcanic hard coast	Manuka shrubland	* Orokawa Scenic Reserve	Miller 1984	Orokawa

Volcanic hard coast	Exotic grasses and herbs - <i>Morelotia affinis</i> -bracken - <i>Muehlenbeckia complexa</i> - wharariki grassland	* Orokawa Scenic Reserve	Miller 1984	Orokawa
* These type names have been identified from a descriptive text (Miller 1984)				

MAYOR ISLAND ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITE
Volcanic hard coast	Kanuka forest	*Tuhua (Mayor Island)	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Pohutukawa forest	Tuhua (Mayor Island)	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Pohutukawa/kanuka forest	Tuhua (Mayor Island)	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Rewarewa forest	Tuhua (Mayor Island)	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Rewarewa/kanuka forest	Tuhua (Mayor Island)	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Manuka scrub	Tuhua (Mayor Island)	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Pohutukawa treeland	Motuoneone Island	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Crater cliff communities (including <i>Psilotum nudum</i> and <i>Senecio banksii</i>)	Tuhua (Mayor Island)	Atkinson & Percy 1956	Tuhua
Volcanic hard coast	Rock fall communities (including pohutukawa-puriri-kohekohe forest, puriri forest and mahoe-mangeao-pigeonwood-rewarewa-kamahi-tawapou-supplejack forest)	Tuhua (Mayor Island)	Wildlife Service 1972	Tuhua
Volcanic hard coast	Sea cliff communities (grasses, New Zealand iceplant, wharariki, pohutukawa are common on these sites)	Tuhua (Mayor Island)		Tuhua

* Not all vegetation types on Tuhua have been documented.

Volcanic hard coast	Undocumented	Tokopapa Island, Unnamed island and rocks near Tokopapa Island, Whakataratara, Motuoneone Island		Tuhua
Dune and beach sands	Undocumented <i>Euphorbia glauca</i> occurs at one site.	Tuhua (Mayor Island)	Bayley <i>et al.</i> 1956	Tuhua
Freshwater wetlands	*Manuka/sphagnum shrubland (and other types?)	Tuhua (Mayor Island)	Bayley <i>et al.</i> 1956	Tuhua
Freshwater wetlands	* <i>Baumea</i> sedgeland	Tuhua (Mayor Island)	Bayley <i>et al.</i> 1956	Tuhua
Freshwater wetlands	* <i>Carex secta</i> sedgeland	Tuhua (Mayor Island)	Bayley <i>et al.</i> 1956	Tuhua
Freshwater wetlands	* <i>Eleocharis sphacelata</i> reedland	Tuhua (Mayor Island)	Bayley <i>et al.</i> 1956	Tuhua
Freshwater wetlands	* <i>Baumea articulata</i> reedland	Tuhua (Mayor Island)	Bayley <i>et al.</i> 1956	Tuhua
Freshwater wetlands	*Raupo reedland	Tuhua (Mayor Island)	Bayley <i>et al.</i> 1956	Tuhua

* These types have been obtained from a descriptive text. Not all wetland vegetation types on Tuhua have been documented

1.2 Northern Volcanic Plateau Ecological Region

WHITE ISLAND ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Volcanic hard coast	Mahoe forest	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	Pohutukawa forest	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	Pohutukawa forest and scrub (vastly different from the pohutukawa forest on Moutuhora Island - there are only seven vascular taxa present on Whakaari Island).	Whakaari (White Island)	Clarkson <i>et al.</i> 1989	Whakaari
Volcanic hard coast	Dead and damaged pohutukawa forest and scrub	Whakaari (White) Island	Clarkson <i>et al.</i> 1989	Whakaari
Volcanic hard coast	Pohutukawa-(cabbage tree) forest and scrub ↔ bracken fernland ↔ <i>Isolepis nodosa</i> sedgeland ↔ hairy lotus-grasses herbfield	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	Kanuka scrub	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	Pohutukawa/taupata scrub	Volkner Rocks	Shaw 1993	Volkner Rocks
Volcanic hard coast	Pohutukawa shrubland	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	Taupata shrubland	Volkner Rocks	Shaw 1993	Volkner Rocks
Volcanic hard coast	Bracken fernland	Moutuhora (Whale) Island	Regnier 1985	Moutuhora

Volcanic hard coast	<i>Isolepis nodosa</i> / grasses-hairy lotus- <i>Anagallis</i> grassland and herbfield ↔ <i>Cyperus ustulatus</i> -ongaonga tussockland ↔ bracken fernland ↔ ring fern - <i>Pteris</i> <i>tremula</i> fernland ↔ rautahi sedgeland	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	<i>Isolepis nodosa</i> -kanuka-(pohutukawa)- (pampas) shrub-sedgeland	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	<i>Isolepis nodosa</i> sedgeland	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	New Zealand iceplant herbfield	Club Rock	Shaw 1993	
Volcanic hard coast	New Zealand iceplant rockland	Volkner Rocks	Shaw 1993	Volkner Rocks
		Club Rock	W B Shaw pers. comm. 1993	
Volcanic hard coast	<i>Sarcocornia quinqueflora</i> rockland	Volkner Rocks	Shaw 1993	Volkner Rocks
Volcanic hard coast	Rockland and boulderfield	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Volcanic hard coast	(Kanuka) sinter deposits	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Dune and beach sands	Kanuka scrub (part of)	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Dune and beach sands	(<i>Carex pumila</i>) sandfield	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Dune and beach sands	<i>Spinifex</i> - <i>Isolepis nodosa</i> - <i>Bromus diandrus</i> grassland	Rurima Island	W B Shaw pers. comm. 1992	Moutoki and Rurima
Dune and beach sands	<i>Spinifex</i> -(tauhinu) sandfield	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Dune and beach sands	(Pohutukawa) / <i>Isolepis nodosa</i> -(lupin) sandfield	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Exposed rocky coast	Pohutukawa forest	Rurima Island	W B Shaw pers. comm. 1992	Moutoki and Rurima
Exposed rocky coast	Pohutukawa forest	Moutoki Island	W B Shaw & S M Beadel pers. obs. 1990	Moutoki and Rurima

Exposed rocky coast	Pohutukawa/ <i>Melicytus novae-zelandiae</i> scrub	Moutoki Island	W B Shaw and S M Beadel pers. obs. 1990	Moutoki and Rurima
Exposed rocky coast	Pohutukawa/taupata- <i>Melicytus novae-zelandiae</i>	Rurima Island	W B Shaw pers. obs. 1992	Moutoki and Rurima
Exposed rocky coast	Taupata- <i>Melicytus novae-zelandiae</i> scrub	Moutoki Island	W B Shaw and S M Beadel pers. obs. 1990	Moutoki and Rurima
Exposed rocky coast	New Zealand iceplant rockfield	Rurima Island	W B Shaw pers. comm. 1992	Moutoki and Rurima
Exposed rocky coast	<i>Sarcocornia quinqueflora</i> rockfield	Moutoki Island	W B Shaw and S M Beadel pers. obs. 1990	Moutoki and Rurima
Freshwater wetland	<i>Cyperus ustulatus</i> - <i>Juncus tussockland</i> → <i>Isolepis nodosa</i> sedgeland	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
	<i>Cyperus ustulatus</i> tussockland	Moutuhora (Whale) Island	Regnier 1985	Moutuhora
Saline wetland	Searush tussockland	Moutuhora (Whale) Island	Regnier	Moutuhora

MOTITI ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Volcanic hard coast	Karaka-parapara forest (with scattered tawapou and houpara; very small area (approx 5 x 5 m)).	Karewa Island	A Jones pers. comm. 1992	Karewa Island
Volcanic hard coast	Karo forest	Motunau (southern island)	W B Shaw pers comm. 1992	Motunau
		Motunau (northern island)	W B Shaw pers. comm. 1992	
Volcanic hard coast	Pohutukawa forest	Motunau (southern island)	W B Shaw pers. comm 1992	Motunau
		Motiti Island	Spring-Rice 1991	Motiti
Volcanic hard coast	Taupata forest	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	Taupata- <i>Melicytus novae-zelandiae</i> forest	Karewa Island	A Jones pers. comm. 1992	Karewa Island
		Motuputa Island	A Jones pers. comm. 1992	Motuputa Island
Volcanic hard coast	Pohutukawa-karo treeland (minor areas)	Motupatiki Island	W B Shaw pers. comm. 1992	Motiti Islets
Volcanic hard coast	Karo-taupata scrub	Motunau (northern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	Pohutukawa/taupata-karo scrub	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	Taupata-(karo) scrub	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	Taupata scrub (<i>Muehlenbeckia complexa</i> locally abundant).	Motunau (northern island)	W B Shaw pers. comm. 1992	Motunau
		Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	Karo-taupata shrubland	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau

Volcanic hard coast	<i>Muehlebeckia complexa</i> -akeake shrub-vineland	Karewa Island	A Jones pers. comm. 1992	Karewa Island
Volcanic hard coast	<i>Muehlenbeckia complexa</i> -taupata- <i>Isolepis nodosa</i> -meadow ricegrass vineland	Motiti Island	Spring-Rice 1991	Motiti
Volcanic hard coast	<i>Poa anceps</i> subsp. <i>anceps</i> -New Zealand iceplant- <i>Isolepis nodosa</i> sedge-herb-grassland	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	New Zealand iceplant herbfield	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	New Zealand iceplant- <i>Sarcocornia quinqueflora</i> herbfield	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	New Zealand iceplant- <i>Sarcocornia quinqueflora</i> -taupata- <i>Poa anceps</i> subsp. <i>anceps</i> herbfield	Motunau (northern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	(Taupata)-(karo)/New Zealand iceplant- <i>Sarcocornia quinqueflora</i> herbfield	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
Volcanic hard coast	(Pohutukawa)-(taupata) rockland	Turitea Island	W B Shaw pers. comm. 1992	Motiti Islets
Volcanic hard coast	<i>Sarcocornia quinqueflora</i> -New Zealand iceplant rockland. (Minor area).	Motupatiki Island	W B Shaw pers. comm. 1992	Motiti Islets
Volcanic hard coast	Taupata/ <i>Poa anceps</i> subsp. <i>anceps</i> - <i>Arthropodium cirrhatum</i> herbfield	Motukahakaha Island	W B Shaw pers. comm. 1992	Motiti Islets
Volcanic hard coast	New Zealand iceplant- <i>Sarcocornia quinqueflora</i> herbfield	Motunau (southern island)	W B Shaw pers. comm. 1992	Motunau
		Motunau (northern island)	W B Shaw pers. comm. 1992	Karewa Island
	(<i>Muehlenbeckia complexa</i> present)	Karewa Island	A Jones pers. comm. 1992	

	<i>(Lepidium oleraceum</i> and <i>Muehlenbeckia complexa</i> present)	Motuputa Island	A Jones pers. comm. 1992	Motuputa Island
Volcanic hard coast	(Taupata) rockland (only one tree present).	Schooner Rocks	A S Garrick pers. comm. 1992	
Volcanic hard coast	Pohutukawa forest	Motiti Island	Spring-Rice 1991	Motiti
Volcanic hard coast	Secondary scrub	Motiti Island	S M Beadel pers. obs. 1993; aerial inspection	Motiti
Dune and beach sands	(<i>Spinifex</i>)-(<i>Isolepis nodosa</i>) sandfield	Taumaihi Island	Shaw and Clarkson 1991	Taumaihi Island
Dune and beach sands	Undocumented	Motiti Island		Motiti
Sedimentary coastal hinterland	Pohutukawa forest	Taumaihi Island	Shaw & Clarkson 1991	Taumaihi Island
		Motiti Island	(Aerial inspection)	Motiti
Sedimentary coastal hinterland	Bracken fernland	Taumaihi Island	A Jones pers. comm. 1992	Taumaihi Island
Sedimentary coastal hinterland	Pohutukawa/wharariki flaxland	Taumaihi Island	Shaw and Clarkson	Taumaihi Island
Sedimentary coastal hinterland	<i>Apium prostratum</i> var. <i>filiforme</i> - <i>Sarcocornia quinqueflora</i> -New Zealand iceplant herbfield	Taumaihi Island	Shaw and Clarkson 1991	Taumaihi Island
Sedimentary coastal hinterland	<i>Calystegia soldanella</i> boulderfield	Taumaihi Island	Shaw and Clarkson 1991	Taumaihi Island
Sedimentary coastal hinterland	Undocumented	Motiti Island		
Freshwater wetlands	Harakeke-raupo flaxland	Inland from Te Huruhi Point, Motiti Island	A Jones pers. comm 1992	

Freshwater wetlands	Raupo, harakeke, swamp millet and <i>Schoenoplectus validus</i> ; (Adventive taxa common, very small areas).	Southern end of Motiti Island	Spring-Rice 1991	
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TAURANGA ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Volcanic Hard Coast	Five finger-houpara-mapou-brush wattle forest	Bowentown Heads (291)	S M Beadel pers. obs. 1992	Bowentown
	Mamaku forest	Mount Maunganui (259)	S M Beadel pers. obs 1992	Mount Maunganui 2
	Pohutukawa forest	Bowentown Heads (291)	S M Beadel pers. obs 1992	Bowentown
		Motuotau Island	Clarkson & Spring-Rice 1992	Motuotau Island
		Mount Maunganui	S M Beadel pers. obs 1991	Mount Maunganui 1
	Rewarewa/five finger-kanuka-kawakawa forest	Bowentown Heads (291)	S M Beadel pers. obs. 1992	Bowentown
	Pohutukawa treeland	Mount Maunganui (259)	S M Beadel pers. obs. 1992	Mount Maunganui 2
		(258) Ground cover comprises introduced grasses and herbs	S M Beadel pers. obs. 1992	
	Pohutukawa-karo-taupata- <i>Melicytus novae-zelandiae</i> treeland and shrubland (highly modified).	Moturiki Island (257)	S M Beadel pers. obs. 1992	
	<i>Coprosma robusta</i> -mingimangi-mahoe-mamaku scrub	Mount Maunganui	D Slaven pers. comm	Mount Maunganui 2
	Bracken-blackberry shrub-fermland	Motuotau Island	Clarkson & Spring-Rice 1992	Motuotau Island

	Arthropodium cirratum-Sarcocornia quinqueflora-Poa anceps subsp. anceps-Senecio lautus var. lautus-New Zealand ice plant grass herbfield	Motuotau Island	Clarkson & Spring-Rice 1992	Motuotau Island
	Taupata-Isolepis nodosa rockland	Moturiki Island (257) (highly modified).	S M Beadel pers. obs. 1992	
N.B. Not all the vegetation types present on Mount Maunganui have been documented. The botanical conservation values of Moturiki Island and Mt Maunganui will increase over time if the sites containing secondary scrub and shrubland are left unmodified.				
Volcanic soft coast	Pohutukawa treeland	East of Pukehina (500)	S M Beadel pers. obs. 1992	Pukehina 2
	Isolepis nodosa/Muehlenbeckia complexa vineland	East of Pukehina (500, 503)	S M Beadel pers. obs. 1992	Pukehina 2
	Muehlenbeckia complexa vineland	East of Pukehina (500)	S M Beadel pers. obs. 1992	Pukehina 2
	Taupata/Muehlenbeckia complexa-Isolepis nodosa shrubland	East of Pukehina (500, 503)	S M Beadel pers. obs. 1992	Pukehina 1 Pukehina 2
Dune and beach sands	Radiata pine/Baumea juncea forest	Matakana Island (501)	Beadel 1989a	Matakana Island 1
	Radiata pine/Zoysia pauciflora forest	Matakana Island (501)	Beadel 1989a	Matakana Island 1
	Isolepis nodosa/Muehlenbeckia complexa vineland	Matakana Island (501, 304)	Beadel 1989a	Matakana Island 1
		Pukehina (296); Exotic iceplant common	S M Beadel pers. obs. 1992	
		Maketu Spit (250)	S M Beadel pers. obs. 1992	Maketu Spit
		Papamoa (254)	S M Beadel pers. obs. 1992	Papamoa sand dunes

		Mt Maunganui (503, 256)	S M Beadel pers. obs. 1992	
		Waihi Beach (294)	S M Beadel pers. obs. 1992	
		Bowentown Spit (299)	S M Beadel pers. obs. 1992	Bowentown sand dunes
	<i>Muehlenbeckia complexa</i> vineland	Matakana Island (304) <i>Pimelea arenaria</i> occurs in this type.	Beadel 1989a	Matakana Island 1
		Kaituna sand dunes	S M Beadel pers. obs. 1992	Kaituna sand dunes
		Pukehina (295, 504)	S M Beadel pers. obs. 1992	
		Waihi Beach (302) (adventives common)	S M Beadel pers. obs. 1992	
		Bowentown Spit (299)	S M Beadel pers. obs. 1992	Bowntown sand dunes
	Manuka scrub	Rangiwaea Island	S M Beadel pers. obs. 1992	Rangiwaea Island
		Motungaio Island	Beadel 1992a	Motungaio Island
		Blue Gum Bay, Matakana Island	Beadel 1992a	Blue Gum Bay 1
	(Radiata pine)-(coast tea tree)/ <i>Isolepis nodosa-Calystegia soldanella-Deyeuxia billardierii-spinifex-pingao</i> shrubland	Matakana Island (501, 304) (<i>Pimelea arenaria</i> occurs in this type).	Beadel 1989a	Matakana Island 1
	Spinifex grassland	Maketu Spit (250)	S M Beadel pers. obs. 1992	Matakana Island 1

		Mt Maunganui (256, 503)	S M Beadel pers. obs. 1992	
		Matakana Island (304) Several other species common e.g. <i>Calystegia soldanella</i> , <i>Isolepis nodosa</i> , <i>Deyeuxia billardierei</i> . Diverse vegetation type.	Beadel 1989a	
	Spinifex- <i>Calystegia soldanella</i> -pingao grassland. <i>Pimelea arenaria</i> occurs in this type.	Matakana Island (304)	Beadel 1989a	Matakana Island
	Spinifex- <i>Carex pumila</i> grassland	Matakana Island	Beadel 1992a	Bowentown sand dunes
	Spinifex- <i>Isolepis nodosa</i> / <i>Muehlenbeckia complexa</i> - <i>Calystegia soldanella</i> - <i>Deyeuxia billardierei</i> sedge-vine-grassland	Bowentown Spit (299)	S M Beadel pers. obs. 1992	Bowentown sand dunes
	(Houpara)/ <i>Isolepis nodosa</i> / <i>Muehlenbeckia complexa</i> vine-sedgeland	Bowentown Spit (299)	S M Beadel pers. obs. 1992	Bowentown sand dunes
	<i>Isolepis nodosa</i> / <i>Carex testacea</i> - <i>Senecio elegans</i> - <i>Muehlenbeckia complexa</i> sedgeland	Papamoa (254)	S M Beadel pers. obs. 1992	Papamoa sand dunes
		Mt Maunganui (503, 256); Adventives common	S M Beadel pers. obs. 1992	
	<i>Isolepis nodosa</i> / <i>Muehlenbeckia complexa</i> sedgeland	Bowentown Spit (299)	S M Beadel pers. obs. 1992	Bowentown sand dunes
	<i>Carex pumila</i> sandfield	Kaituna sand dunes (502)	S M Beadel pers. obs. 1992	Kaituna sand dunes
		Pukehina (504)	S M Beadel pers. obs. 1992	
	Spinifex sandfield	Matakana Island (304)	Beadel 1989a	Matakana Island 1

		South east of Pukehina (500)	S M Beadel pers. obs. 1992	Kaituna sand dunes
		Pukehina Spit (296)	S M Beadel pers. obs. 1992	Bowentown sand dunes
		Pukehina (504)	S M Beadel pers. obs. 1992	
		Newdicks Beach (505)	S M Beadel pers. obs. 1992	
		Maketu Spit (250)	S M Beadel pers. obs. 1992	
		Kaituna sand dunes (502)	S M Beadel pers. obs. 1992	
		Waihi Beach (302)	S M Beadel pers. obs. 1992	
		Waihi Beach (294)	S M Beadel pers. obs. 1992	
		Bowentown Spit (299)	S M Beadel pers. obs. 1992	
	Spinifex-(<i>Austrofestuca littoralis</i>)-(pingao) sandfield	Kaituna sand dunes (502)	S M Beadel pers. obs. 1992	Kaituna sand dunes
	Spinifex-(pingao) sandfield	Matakana Island (501, 304)	Beadel 1989a	Matakana Island 1
		Kaituna sand dunes (502)	S M Beadel pers. obs. 1992	Kaituna sand dunes
		Pukehina (295, 240) (Marram very local)	S M Beadel pers. obs. 1992	Bowentown sand dunes
		Bowentown Spit (299)	S M Beadel pers. obs. 1992	

	Spinifex-pingao sandfield	Matakana Island (501, 304)	Beadel 1989a	Matakana Island 1.
		Papamoa (254)	S M Beadel pers. obs. 1992	Papamoa sand dunes
		Mt Maunganui (256, 503)	S M Beadel pers. obs. 1992	Bowentown sand dunes
		Bowentown Spit (299)	S M Beadel pers. obs. 1992	
	Sandspit vegetation within Tauranga Harbour	Tauranga Harbour	Beadel 1992a	Te Hopai Island Tahunamanu Island Opureora
NOTE: The main vegetation types present on the foredune of Matakana Island are listed, however variations on these types are common and there are minor areas of other types (Refer to Beadel 1989a)				
Sedimentary Coastal Hinterland	Kanuka forest	Small remnant clumps scattered behind Tauranga Harbour	S M Beadel pers. obs. 1992	
	Karaka forest (with brush wattle, cabbage tree and woolly nightshade)	Motuhua Island	Beadel 1989b	
	Pohutukawa forest and treeland	Okurei Point (505)	S M Beadel pers. obs. 1992	Tanners Point
		Tanners Point	S M Beadel pers. obs. 1992	Kauri Point
		Motuhua Island	Beadel 1989a	
		Kauri Point	Beadel 1989a	
		Ongare Point	S M Beadel pers. obs. 1992	
		Athenree	S M Beadel pers. obs. 1992	

		Tutaetaka Island	Beadel 1989b	
		Scattered clumps around the margins of Tauranga Harbour (refer to vegetation map, Beadel 1992)	S M Beadel pers. obs. 1992	
	(Pohutukawa)/brush wattle/manuka/mahoe-(whau) forest	Rangataua Bay	Beadel 1989b	
	Rewarewa/mamaku forest	Katikati Estuary (508)	S M Beadel pers. obs. 1992	
	Secondary forest and scrub (adventive species locally common)	Adajcent to Waihi Estuary (507)	S M Beadel pers. obs. 1992	
		Rangataua Bay	S M Beadel pers. obs. 1992	
		Scattered around Tauranga Harbour	S M Beadel pers. obs. 1992	
Freshwater wetlands	(Cabbage tree)/grey willow- <i>Coprosma propinqua</i> subsp. <i>propinqua</i> /Lemna minor-sedges- <i>Blechnum minus</i> forest; (Sedges present include <i>Baumea teretifolia</i> , <i>Carex virgata</i> , <i>C. fascicularis</i> , <i>C. subdola</i> , <i>Baumea</i> sp. (<i>B. rubignosa</i> ?) and <i>Cyperus ustulatus</i>)	Waewaetutuki	Beadel 1989b	Waewaetutuki
	Cabbage tree/grey willow-manuka forest. Although one of the canopy dominants in these types is an adventive species (i.e. grey willow, the understorey tiers generally comprise an often dense, diverse array of almost entirely indigenous species.	Tauranga Harbour	Beadel 1992a	Blue Gum Bay 1 Matakana Island 2 Blue Gum Bay 2 Athenree 2

		Matakana Island; <i>Cyclosorus interruptus</i> and <i>Thelypteris confluens</i> present	Beadel 1990b	
	Cabbage tree/ <i>Baumea juncea</i> - <i>Coprosma tenuicaulis</i> - <i>Baumea articulata</i> treeland	Blue Gum Bay	Beadel 1992a	Blue Gum Bay 1
		Athenree	Beadel 1992a	Athenree 2
	Grey willow-(cabbage tree)/raupo treeland and reedland	Bowentown; poor condition	S M Beadel pers. obs. 1992	Poor condition
	Manuka-harakeke shrubland	Arawa wetland; <i>Cyclosorus interruptus</i> and <i>Thelypteris confluens</i> present.	Beadel 1989c	Arawa
	Manuka scrub	Kaituna River wetlands	S M Beadel pers. obs. 1992	Kaituna River
	(Cabbage tree)/ <i>Muehlenbeckia complexa</i> /harakeke- <i>Coprosma propinqua</i> subsp. <i>propinqua</i> - <i>Baumea articulata</i> - <i>B. sp. (B. rubignosa?)</i> -raupo shrubland. (<i>Baumea juncea</i> and oioi become common where this type occurs nearer the estuary).	Waewaetutuki wetlands	Beadel 1989b	Waewaetutuki
	<i>Baumea juncea</i> -harakeke- <i>Coprosma propinqua</i> subsp. <i>propinqua</i> sedgeland	Arawa wetland; <i>Cyclosorus interruptus</i> and <i>Thelypteris confluens</i> present.	Beadel 1989c	Arawa
	<i>Coprosma propinqua</i> subsp. <i>propinqua</i> -pampas/harakeke shrubland	Kaituna River wetlands	S M Beadel pers. obs. 1992	Kaituna River
	<i>Baumea teretifolia</i> - <i>B.sp.(B.huttonii?)</i> / <i>Gleichenia dicarpa</i> fernland	Hunters Creek	Beadel 1992a	Hunters Creek
	<i>Cyclosorus interruptus</i> - <i>Thelypteris confluens</i> - <i>Baumea juncea</i> - <i>Carex secta</i> sedge-fernland	Matakana Island	Beadel 1990b	Matakana Island 1

	<i>Baumea</i> sedgeland	Kaituna River wetlands	S M Beadel pers. obs. 1992	Kaituna River
	<i>Baumea articulata</i> /oioi sedgeland	Matakana Island	Beadel 1990b	Matakana Island 1
	<i>Bolboschoenus fluviatilis</i> sedgeland	Tauranga Harbour	Beadel 1992a	Athenree 1
	<i>Bolboschoenus fluviatilis</i> -raupo sedgeland	Kaituna	S M Beadel pers. obs. 1992	Kaituna River
	<i>Carex secta</i> / <i>Eleocharis acuta</i> sedgeland	Matakana Island	Beadel 1990b	Matakana Island 1
	Harakeke/ <i>Baumea juncea</i> sedgeland	Matakana Island	Beadel 1990b	Matakana Island 1
	Marsh ribbonwood/searush-oioi- <i>Baumea juncea</i> sedgeland	Matakana Island	Beadel 1990b	Matakana Island 1
	Oioi/ <i>Muehlenbeckia complexa</i> sedgeland	Matakana Island	Beadel 1990b	Matakana Island 1
	<i>Baumea articulata</i> reedland	Matakana Island	Beadel 1992a	Matakana Island 1
	<i>Baumea articulata</i> - <i>Baumea juncea</i> reedland	Matakana Island	Beadel 1990b	Matakana Island 1
	<i>Baumea articulata</i> -raupo reedland	Arawa wetland	Beadel 1989c	Arawa
	<i>Baumea articulata</i> -raupo- <i>Schoenoplectus validus</i> grey willow reedland	Matakana Island	Beadel 1990b	Matakana Island 1
	(Cabbage tree)-(manuka)/raupo reedland	Tauranga Harbour	Beadel 1992a	Waikareao
	Harakeke/raupo reedland	Kaituna	S M Beadel pers. obs. 1992	Kaituna
	Raupo reedland	Matakana Island	Beadel 1990b, 1992a	Matakana Island 1
		Tauranga Harbour	Beadel 1992a	Waimapu Estuary 1

		Waihi Estuary	Beadel 1991a	Katikati 1 Wairoa Estuary 1 Waipapa Estuary 1 Wainui Estuary 1 Waikareao Estuary Apata Waipapa Estuary 2 Tuapiro Estuary Matua Estuary Waihi Estuary Arawa
	Raupo- <i>Schoenoplectus validus</i> - <i>Baumea articulata</i> -(<i>Carex secta</i>)-(grey willow/ <i>Eleocharis acuta</i> - <i>Polygonum salicifolia</i> reedland	Matakana Island	Beadel 1990b	Matakana Island 1
	<i>Schoenoplectus validus</i> reedland	Matakana Island	Beadel 1990b	Matakana Island 1
	Herbfield	Kaituna	S M Beadel pers. obs. 1992	Kaituna River
	Channel margins	Tauranga Harbour	Beadel 1992a	Wairoa Estuary 3
		Kaituna River	S M Beadel pers. obs. 1992	Athenree 1
		Waihi Estuary	S M Beadel pers. obs. 1992	Waihi Estuary
	Mosaic. Open area and open water. This area contains a mosaic of vegetation associations with areas of open water. Species present include <i>Carex subdola</i> , <i>Lemna minor</i> , exotic grasses and herbs, <i>Juncus effusus</i> , <i>Callitriche stagnalis</i> and <i>Carex virgata</i> .	Waewaetutuki	Beadel 1989b	Waewaetutuki

Saline and Freshwater wetlands; Scrub, shrublands (excluding mangroves) and flaxlands which occur on estuary margins	Manuka forest	Tauranga Harbour	Beadel 1992a	Blue Gum Bay 1 Te Puna Estuary
	Manuka scrub	Tauranga Harbour	Beadel 1992a	Hunters Creek Blue Gum Bay 1 Te Hopai Island Waimapu Estuary 1 Waipapa Estuary 1 Opureora Matakana Island 2 Tuapiro Estuary Motungaio Island Waimapu Estuary 2 Waipapa Estuary 2 Rangiwaia Island Athenree 2 Wairoa Estuary 2
	Manuka- <i>Olearia solandri</i> scrub	Te Hopai Island	Beadel 1992a	Te Hopai Island
	<i>Coprosma propinqua</i> subsp. <i>propinqua</i> shrubland	Waimapu Estuary	Beadel 1992a	Waimapu Estuary 1
	<i>Coprosma propinqua</i> subsp. <i>propinqua</i> /oioi shrubland	Wairoa Estuary	Beadel 1992a	Wairoa Estuary 1
	Manuka-mingimingi- <i>Olearia solandri</i> shrubland	Blue Gum Bay	Beadel 1992a	Blue Gum Bay 1
	Harakeke/ <i>Olearia solandri</i> -marsh ribbonwood-oioi shrubland	Te Hopai Island	Beadel 1992a	Te Hopai Island

	Manuka shrubland	Tauranga Harbour	Beadel 1992a	Hunters Creek Matakana Island 1 Blue Gum Bay 1 Wainui Estuary 1 Wainui Estuary 2 Opureora Waikareao Estuary Matua Estuary Athenree 2 Waipapa Estuary 2
	Ngaio/ <i>Coprosma propinqua</i> subsp. <i>propinqua</i> - <i>Olearia solandri</i> -marsh ribbonwood shrubland	Te Hopai Island	Beadel 1992a	Te Hopai Island
	<i>Olearia solandri</i> -toetoe-harakeke-manuka shrubland	Matakana Island	Beadel 1992a	
	Flaxland	Tauranga Harbour	Beadel 1992a	Blue Gum Bay 1
	Estuary margins: Generally narrow areas along estuary margins supporting a mosaic of vegetation types	Tauranga Harbour	Beadel 1992a	
Note. The vegetation of the Kaituna wetland and the Waewaetutuki wetland is not fully documented.				

Saline Wetlands	Mangrove scrub and shrublands. Mangrove scrub and shrublands vary in density height and age, see Beadel 1992 for descriptions of the main types mangrove dominant types	Tauranga Harbour	Beadel 1992a	Tirohanga Aongatete Estuary Te Hopai Island Athenree Estuary 1 Blue Gum Bay 1 Katikati 1 Waipapa Estuary 1 Matakana Island 2 Waikareao Estuary Tuapiro Estuary Wainui Estuary 2 Wairoa Estuary 2 Matua Estuary Katikati 2 Apata Estuary Waipapa Estuary 2 Waimapu Estuary 2
		Waihi Estuary (small example only)	Beadel 1989a & 1991a	
	Mangrove-(<i>Sarcocornia quinqueflora</i>) shrubland	Te Hopai Island	Beadel 1992b	Te Hopai Island
	<i>Olearia solandri-Coprosma propinqua</i> subsp. <i>propinqua</i> -toetoe/oioi-marsh ribbonwood shrubland	Te Hopai Island	Beadel 1992a	Te Hopai Island

	Searush tussockland	Tauranga Harbour	Beadel 1992a	Hunters Creek Katikati 1 Blue Gum Bay 1 Athenree 1 Tuapiro Estuary Waimapu Estuary 1 Aongatete Estuary 1 Waimapu Estuary 2 Wainui Estuary 1 Matakana Island 2 Waikareao Estuary Motungaio Island Matua Estuary Katikati 2 Apata Estuary Wainui Estuary 2 Rangiwaia Island Blue Gum Bay 2 Opureora Waihi Estuary
		Maketu Estuary	S M Beadel pers. obs. 1992	
		Waihi Estuary	Beadel 1989b, 1991a, S M Beadel pers. obs. 1992	
	<i>Stipa-oioi-Baumea juncea</i> -searush tussockland	Matakana Island, near Opureora jetty	Beadel 1992a	Opureora
	Bachelor's button herbfield ↔ <i>oioi-Baumea juncea</i> -marsh ribbonwood-searush- pampas tussock-sedgeland	Arawa Wetland	Beadel 1989c	Arawa

	Oioi-marsh ribbonwood shrub-sedgeland	Tauranga Harbour	Beadel 1992a	Aongatete Estuary Te Hopai Island Blue Gum Bay 1 Hunters Creek Waimapu Estuary 1 Katikati 1 Opureora Wainui Estuary 1 Katikati 2 Wainui Estuary 2 Waikareao Estuary Tuapiro Estuary Wairoa Estuary 2 Waipapa Estuary 2
	Oioi-marsh ribbonwood shrub-sedgeland ↔ <i>Sarcocornia quinqueflora</i> herbfield ↔ mudflats	Tauranga Harbour	Beadel 1992a	Te Hopai Island
	<i>Baumea juncea</i> -marsh ribbonwood-oioi sedgeland	Tauranga Harbour	Beadel 1992a	Blue Gum Bay 1 Matakana Island 2 Motungaio Island
		Waihi Estuary	Beadel 1991a	
	<i>Coprosma propinqua</i> subsp. <i>propinqua</i> - toetoe-marsh-ribbonwood- <i>Olearia</i> <i>solandri</i> -manuka/oioi sedgeland	Te Hopai Island	Beadel 1992a	Te Hopai Island

	Oioi sedgeland	Tauranga Harbour	Beadel 1992a	Blue Gum Bay 1 Katikati 1 Hunters Creek Athenree Estuary 1 Aongatete Estuary Waipapa Estuary 1 Wainui Estuary 1 Waimapu Estuary 1 Matakana Island 2 Waikareao Estuary Tuapiro Estuary Wainui Estuary 2 Wairoa Estuary 2 Matua Estuary Katikati 2 Apata Estuary Waipapa Estuary 2 Blue Gum Bay 2 Rangiwaea Island Waihi Estuary
	Oioi- <i>Baumea articulata</i> sedgeland	Tauranga Harbour	Beadel 1992a	Waimapu Estuary 1 Hunters Creek Wainui Estuary 1 Waimapu Estuary 1 Wairoa Estuary 1
	Oioi- <i>Baumea juncea</i> sedgeland	Tauranga Harbour	Beadel 1992a	Wairoa Estuary 2
	<i>Olearia solandri</i> /oioi sedgeland	Tauranga Harbour	Beadel 1992a	Te Hopai Island Waipapa Estuary 1
		Waihi Estuary	S M Beadel pers. obs. 1992	Motungaio Island
	<i>Schoenoplectus pungens</i> sedgeland	Waihi Estuary	Beadel 1991a	Hunters Creek Blue Gum Bay 1
		Tauranga Harbour	Beadel 1992a	Waihi Estuary

	Searush-oioi sedgeland	Tauranga Harbour	Beadel 1992a	Waihi Estuary
		Waihi Estuary	Beadel 1991a	
	Bachelor's button herbfield	Maketu Estuary	S M Beadel pers. obs. 1989	
	Bachelor's button-arrow grass- <i>Mimulus repens</i> - <i>Spergularia media</i> - <i>Isolepis cernua</i> - <i>Plantago coronopus</i> herbfield	Arawa wetland	Beadel 1989c	Arawa
		Waihi Estuary	Beadel 1991a	Waihi Estuary
	<i>Samolus repens</i> herbfield	Tauranga Harbour	Beadel 1992a	Motungaio Island
	<i>Sarcocornia quinqueflora</i> herbfield	Tauranga Harbour	Beadel 1992a	Tahunamanu Island Te Hopai Island
	Searush/bachelor's button- <i>Mimulus repens</i> herbfield	Waihi Estuary	Beadel 1991a	Waihi Estuary
NB. Not all the vegetation types present in Maketu and Waihi Estuaries have been documented.				

OTANEWAINUKU ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Volcanic soft coast	Hard beech forest (pohutukawa common)	Matata SR	Beadel 1991 b	Matata 1
Volcanic soft coast	Kanuka forest	Matata SR Private land west of Matata	Beadel 1991 b S M Beadel pers obs 1992	Matata 1 Herepuru 2
Volcanic soft coast	Pohutukawa forest	West of Mimiha Road (PL) East of Mimiha Road Burt Covenant (235) Matata SR	S M Beadel pers obs 1992 S M Beadel pers obs 1992 Shaw 1991 S M Beadel pers obs 1991	Matata 1 Herepuru 2
Volcanic soft coast	Pohutukawa-kanuka forest	Matata SR East of Mimiha Road	Beadel 1991 b S M Beadel pers obs 1992	Matata 1
Volcanic soft coast	Pukatea/tawa forest	Burt Covenant	Shaw 1991	Herepuru 2
Volcanic soft coast	Rewarewa forest	Burt property	S M Beadel pers obs 1992	Herepuru 2
Volcanic soft coast	Rewarewa/kanuka forest	Ohinekoao SR Burt Covenant Private land between Ohinekoao SR and Matata SR	S M Beadel pers obs 1992 Shaw 1991 S M Beadel pers obs 1992	Herepuru 2
Volcanic soft coast	Tawa forest	Burt property (235)	S M Beadel pers obs 1992	Herepuru 2
Volcanic soft coast	Pohutukawa treeland	West of Mimiha Road (237 PL)	S M Beadel pers obs 1992	
Volcanic soft coast	Mamaku treefernland	Burt property (236)	S M Beadel pers obs 1992	Herepuru 2
Volcanic soft coast	Manuka scrub and shrubland	Ohinekoao SR (231)	S M Beadel pers obs 1992	Herepuru 2

Dune and beach sands	<i>Isolepis nodosa/Muehlenbeckia complexa</i> vineland	Otamarakau (239)	S M Beadel pers obs 1992	Otamarakau
Dune and beach sands	<i>Muehlenbeckia complexa</i> vineland	Herepuru Stream (232) (RR) Hauone - Pikowai (232)(RR) Otamarakau - Hauone near Mimiha Road (232) (RR) East of Pikowai Stream (bracken common) (232)(RR) Near Matata (African boxthorn is locally common)(232)(RR)	S M Beadel pers obs 1992 S M Beadel pers obs 1992 S M Beadel pers obs 1992 S M Beadel pers obs 1992 S M Beadel pers obs 1992	Herepuru 1 Hauone Matata 4
Dune and beach sands	<i>Muehlenbeckia complexa-M. australis</i> vineland	Near Murphys Motor Camp (232)(RR) (only small area adjacent to Eucalypt forest, highly modified).	S M Beadel pers obs 1992	
Dune and beach sands	<i>Carex pumila</i> sandfield	Herepuru Stream (232)(RR) This type occurs locally along the coast (232;RR)(239)	S M Beadel pers obs 1992	Herepuru 1
Dune and beach sands	Spinifex sandfield; Five plants of <i>Austrofestuca littoralis</i> present in this type west of Otamarakau	Foredune along much of the coast	S M Beadel pers obs 1992	Herepuru 1 Otamarakau Hauone
Sedimentary coastal hinterland	Hard beech forest (pohutukawa common)	Matata SR	S M Beadel pers obs 1992	Matata 1
Sedimentary coastal hinterland	Kanuka forest	Private land west of Matata SR (234)	S M Beadel pers obs 1992	Herepuru 2
Sedimentary coastal hinterland	Pohutukawa forest	Ohinekoao SR & RR Private land between Matata SR and Ohinekoao SR (234) Matata SR (230)	S M Beadel pers obs 1992 S M Beadel pers obs 1992 Beadel 1991b	Matata 1 Herepuru 2
Sedimentary coastal hinterland	Pohutukawa-kanuka forest	Matata SR (230)	Beadel 1991 b	Matata 1

Sedimentary coastal hinterland	Mamaku treefernland	Ohinekoao SR & RR (231 & 233)	S M Beadel pers obs 1992	Herepuru 2
Sedimentary coastal hinterland	Manuka-mingimingi-prickly mingimingi scrub and shrublands	Matata SR (230)	Beadel 1991 b	Matata 1
Freshwater wetlands	<i>Baumea juncea</i> sedgeland	Herepuru Stream (RR 232)	S M Beadel pers obs 1992	Herepuru 1
Freshwater wetlands	<i>Bolboschoenus fluviatilis</i> sedgeland	Herepuru Stream (RR (232)	S M Beadel pers obs 1992	Herepuru 1
Freshwater wetlands	<i>Baumea articulata</i> - <i>Bolboschoenus fluviatilis-raupo</i> reedland	Herepuru Stream (RR) (232)	S M Beadel pers obs 1992	Herepuru 1
Freshwater wetlands	Pampas-harakeke/raupo- <i>Baumea articulata</i> - <i>Schoenoplectus validus</i> - <i>Polygonum salicifolia</i> reedland	Adjacent to coast; between Hauone Road and Otaramarakau (RR)(232) (occurs in SS)	S M Beadel pers obs 1992	
Freshwater wetlands	Raupo reedland	Adjacent to coast: Near Matata (RR)(232) East of Mimiha Road (RR)(232) Herepuru Stream (RR)(232) between Hauone Road and Otaramarakau (RR)(232) South side of SH 2: Burt Property (PL)(236)	S M Beadel pers obs 1992 S M Beadel pers obs 1992	Herepuru 1 Herepuru 2 Matata 4
Freshwater wetlands	Bachelor's button herbfield	Herepuru Stream (RR)(232)	S M Beadel pers obs 1992	Herepuru 1

1.3 Whakatane Ecological Region

TE TEKO ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Dune and beach sands	Kanuka forest and scrub	Wahieroa Dunes (3 and 13) (PL and Coastal RR)	Beadel 1985 and 1987, S M Beadel pers. obs. 1992	Wahieroa Dunes 1 Wahieroa Dunes 2
Dune and beach sands	(African boxthorn)/ <i>Muehlenbeckia complexa</i> vineland	Thornton WMR to Coastlands (3)	S M Beadel pers. obs. 1992	Wahieroa Dunes 2 Thornton 2
		Rangitaiki River Mouth west side (3)	S M Beadel pers. obs. 1992	
		Matata WR (2)	S M Beadel pers. obs. 1992	
		Thornton Lagoon WMR (6)	Irving and Beadel 1992	
		Tarawera River to Rangitaiki River (RR and PL) (13 and 3)	S M Beadel pers. obs. 1992	
Dune and beach sands	(African boxthorn)/ <i>Muehlenbeckia complexa</i> -sea couch-harestail-catsear grass-vineland	Coastlands to Whakatane River (7, 8 and 9) (RR, PL and ML)	S M Beadel pers. obs. 1992	
Dune and beach sands	Kanuka shrubland	Wahieroa Dunes (13) (PL)	S M Beadel pers. obs. 1992	Wahieroa Dunes 2
Dune and beach sands	Spinifex-pingao tussockland	Thornton Lagoon WMR (6)	Irving and Beadel 1992	Thornton 1
Dune and beach sands	Spinifex-(pingao) tussockland	Matata WR (2)	S M Beadel pers. obs. 1992	Wahieroa Dunes 1

		Matata RR (1)	S M Beadel pers. obs. 1992	
		Thornton Lagoon WMR to Coastlands	S M Beadel pers. obs. 1992	Wahieroa Dunes 2 Matata 3
		Tarawera River Mouth to Rangitaiki River Mouth (3) (including Waihieroa Dunes)	S M Beadel pers. obs. 1992	
Dune and beach sands	Spinifex sandfield and tussockland	Coastlands to Whakatane River (7,8 and 9) (RR, PL, ML)	S M Beadel pers. obs. 1992	Matata 3 Thornton 2
		Rangitaiki River Mouth west side (3) (coastal RR)	S M Beadel pers. obs. 1992	
		Matata WR	S M Beadel pers. obs. 1992	
Dune and beach sands	<i>Carex pumila</i> sedgeland	Thornton Lagoon WMR (6)	Irving and Beadel 1992	Thornton 2
Dune and beach sands	(Lupin)/ <i>Carex pumila</i> -haretail- <i>Muehlenbeckia complexa</i> -catsear grass-sedgeland	Tarawera River Mouth - Rangitaiki River Mouth (including Waihieroa Dunes)(3)	S M Beadel pers.obs. 1992	Wahieroa dunes 1 Wahieroa dunes 2
		Thornton Lagoon WMR (6)	Irving and Beadel 1992	
Dune and beach sands	Pingao- <i>Carex pumila</i> -spinifex sandfield	Tarawera River mouth (east) - (coastal RR) (3)	S M Beadel pers. obs. 1992	Tarawera River
Freshwater wetlands	Grey willow treeland (with local raupo, cabbage tree)	Wahieroa wetland (3)	S M Beadel pers. obs. 1992	
Freshwater wetlands	Grey willow/ <i>Baumea juncea</i> treeland	Matata WR (2)	Irving and Beadel 1992	
Freshwater wetlands	Ti kouka/raupo-harakeke- <i>Coprosma propinqua</i> shrub-flax-reedland	Kohika	Beadel 1993b	Kohika

Freshwater wetlands	Raupo- <i>Bolboschoenus fluviatilis</i> -swamp millet sedge-reedland	Kohika	Beadel 1993b	Kohika
Freshwater wetlands	Raupo- <i>Baumea articulata</i> -swamp millet reedland	Kohika	Beadel 1993b	Kohika
Freshwater wetlands	Raupo reedland	Matata WR (2)	Irving and Beadel 1992	Matata 2
		Thornton Lagoon WMR (6)	Irving and Beadel 1992	Thornton 2
		Whakatane Estuary (9)	Bioresearchers Ltd 1975 and S M Beadel pers. obs. 1992	
		Old Orini River Channel	S M Beadel pers. obs. 1992	
		Old Rangitaiki River Channel (4)	S M Beadel pers. obs. 1992	
Saline wetlands	Marsh ribbonwood shrubland	Matata WR	Irving and Beadel 1992	Matata 2
Saline wetlands	Marsh ribbonwood/searush shrubland	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary
Saline wetlands	Marsh ribbonwood/searush-oioi shrubland	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary
Saline wetlands	Searush tussockland	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary
		Tarawera River mouth east side (3); Minor area.	S M Beadel pers. obs. 1992	
Saline wetlands	Searush-oioi tussockland	Matata WR (2)	Irving and Beadel 1992	Matata 2
		Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary

Saline wetlands	Harakeke/searush-oioi- <i>Baumea</i> tussock-sedgeland	Matata WR (2)	Irving and Beadel 1992	Matata 2
	<i>Bolboschoenus caldwellii</i> sedgeland	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary
Saline wetlands	<i>Bolboschoenus fluviatilis</i> - <i>B. medianus</i> sedgeland	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary
Saline wetlands	<i>Schoenoplectus pungens</i> sedgeland	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary
Saline wetlands	Bachelor's button herbfield	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary
Saline wetlands	Bachelor's button- <i>Selliera radicans</i> - <i>Elatine gratioloides</i> - <i>Apium prostratum</i> - <i>Isolepis cernua</i> -arrow grass herbfield	Matata WR (2)	Irving and Beadel 1992	Matata 2
Saline wetlands	<i>Sarcocornia quinqueflora</i> herbfield	Whakatane Estuary (9)	S M Beadel pers. obs. 1992	Whakatane Estuary

TANEATUA ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Dune and beach sands	Lupin/ <i>Muehlenbeckia complexa</i> - <i>M. australis</i> vineland	Port Ohope (146)	Beadel 1988a	Ohope Spit
Dune and beach sands	Pohutukawa/manuka- <i>Olearia solandri</i> -scrub	Motuotu Island NR	Clarkson and Regnier 1989	Motuotu Island
Dune and beach sands	Pampas-lupin-gorse/ <i>spinifex</i> -sea couch shrubland	Ohiwa Spit	Beadel 1993a	
Dune and beach sands	Bracken fernland	Port Ohope RR (146)	Beadel 1988a	Ohope Spit
		Otao Domain (171 a & b)	Beadel 1988a	
		Harbour Road RR (196)	Beadel 1988a	
		Harbour Road RR (194)	Beadel 1988a	
Dune and beach sands	Bracken fernland → Bracken- <i>Muehlenbeckia complexa</i> -sea couch-blackberry fernland → sea couch- <i>Muehlenbeckia complexa</i> grassland	Port Ohope RR and Ocean Beach Park (147a)	Beadel 1993	Ohope Spit
Dune and beach sands	(Kanuka)/sea couch-lupin-blackberry-bracken- <i>Muehlenbeckia complexa</i> -Yorkshire fog grassland	Tern Island WMR (Modified; minor area)	S M Beadel pers. obs. 1990	Tern Island
Dune and beach sands	Sea couch-lupin-blackberry-bracken- <i>Muehlenbeckia complexa</i> -Yorkshire fog grassland	Tern Island	Beadel 1993a	Tern Island

Dune and beach sands	Sea couch- <i>Muehlenbeckia complexa</i> grassland	Port Ohope RR	Beadel 1993a	Ohope Spit
Dune and beach sands	Spinifex sandfield	Ohiwa Spit (175 & 157)	Beadel 1988a and S M Beadel pers. obs.	Ohope Spit
		Port Ohope RR (146 & 192)	Beadel 1988a	
		Ocean Beach Park RR (147a)	Beadel 1988a	
		Esplanade Reserve (160)	Walls 1991	
Dune and beach sands	<i>Carex pumila</i> sandfield	Ohiwa Spit (175, 157)	S M Beadel pers. obs. 1990	
		Ohope Beach	Beadel 1988a	
		Port Ohope RR (146 & 192)	Beadel 1988a	
		Kohi Point SR (141)	Beadel & Shaw 1988	
Dune and beach sands	Sand dune vegetation (undocumented)	Ohope RR, Proposed RR, LP Reserve (186)		
		Private Land (197)		
		Conservation Reserve (172)		
		Ocean Beach RR (146)		
		Ohope RR ER & Prop RR (184)		
		Pohutukawa Ave/Beach Road RR (185)		
Exposed rocky coast and hinterland	Pohutukawa/houpara forest	Kohi Point SR (141) 191 (addition to Kohi Point SR)	Beadel & Shaw 1988 S M Beadel pers. obs. 1992	Kohi Point
Exposed rocky coast and hinterland	Pohutukawa-five finger forest	188 (SR adjacent to Kohi Point SR)	S M Beadel pers. obs. 1992	Kohi Point

Exposed rocky coast and hinterland	Rewarewa/mahoe-five finger-kanuka forest → pohutukawa-mangeao forest	Kohi Point SR (141)	Beadel & Shaw 1988	Kohi Point
Exposed rocky coast and hinterland	(Pohutukawa)/five finger-brush wattle-kawakawa-akeake forest and scrub	189 (proposed addition to Kohi Point SR)	S M Beadel pers. obs. 1992	Kohi Point
Exposed rocky coast and hinterland	Pohutukawa treeland (with scattered ngaio, <i>Coprosma lucida</i> , privet, kawakawa, cotoneaster, kanuka, mingimingi)	190 (Historic Reserve)	S M Beadel pers. obs. 1992	Kohi Point
Exposed rocky coast and hinterland	Pohutukawa/houpara treeland	191 (addition to Kohi Point SR)	S M Beadel pers. obs. 1992	Kohi Point
Exposed rocky coast and hinterland	Mahoe scrub	Whakatane-Wairere Falls SR; (Only 0.07 ha; modified vegetation)	Beadel & Shaw 1988	
Exposed rocky coast and hinterland	Kanuka-wharariki-mingimingi flaxland-scrub	Kohi Point SR (141)	Beadel and Shaw 1988	Kohi Point
Exposed rocky coast and hinterland	Pohutukawa rockland	188 (Scenic Reserve adjacent to Kohi Point SR)	S M Beadel pers. obs. 1992	Kohi Point
Exposed rocky coast and hinterland	(Pohutukawa) rockland	Kohi Point SR (141)	Beadel & Shaw 1988	Kohi Point
Sedimentary coastal hinterland	Black beech forest	Oscar Reeve SR	Clarkson & Regnier 1989	Oscar Reeve
Sedimentary coastal hinterland	Black beech-pole kahikatea forest	430	S M Beadel pers. obs. 1992	Ruatuna
Sedimentary coastal hinterland	Black beech-puriri-tawa-pohutukawa forest	431	S M Beadel pers. obs. 1992	

Sedimentary coastal hinterland	Broad-leaved species-treefern forest	Ohiwa Harbour	Beadel 1993a	Hiwirau
		Hiwirau Block	Beadel 1993a	
Sedimentary coastal hinterland	Hard beech forest	Oscar Reeve SR	Clarkson & Regnier 1989	Oscar Reeve
Sedimentary coastal hinterland	Kanuka forest	Uretara Island SR 420 (PL) 430 Ohiwa Harbour	Beadel & Shaw 1988 S M Beadel pers. obs. 1988 S M Beadel pers. obs. 1988 Beadel 1993a	Uretara Whitiwhiti Point
Sedimentary coastal hinterland	Kanuka-rewarewa forest	Pataua Island ScR Ohiwa Harbour	Clarkson & Regnier 1989 S M Beadel pers. obs. 1993	Pataua Island
Sedimentary coastal hinterland	Kohuhu-mamaku-(cabbage tree)-(kanuka) forest	428 (PL); Minor area	S M Beadel pers. obs. 1992	Hiwirau
Sedimentary coastal hinterland	Mahoe-mamaku-pohutukawa forest	Harbour Road and Goodwin Parade ER (193) and adjoining land (198) Modified vegetation; minor areas	Beadel 1992c	
Sedimentary coastal hinterland	Mangeao forest	430 Minor area	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Mangaao-pohutukawa-mamaku forest	416	S M Beadel pers. obs 1992	
Sedimentary coastal hinterland	Mangaao-tawa-rewarewa-puriri forest	419 (PL) Minor area	S M Beadel pers. obs. 1992	

Sediment coastal hinterland	Pohutukawa forest	Proposed Harbour Road ER (183) Uretara Island SR Ohiwa SR Ohope SR Whakatane-Wairere Falls SR Paparoa Pa HR Tauwhare Pa SR Hokianga Island Ohiwa Harbour (161) 430 416 Recreation Reserve (152) Islets near Ohakana Island Ohiwa Harbour (161)	Beadel 1990a Beadel & Shaw 1988 Clarkson & Regnier 1989 Beadel & Shaw 1988 Beadel & Shaw 1988 S M Beadel pers. obs. 1988 Beadel 1988b S M Beadel pers. obs. 1990 Beadel 1990a & 1993 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 Beadel 1990a Beadel 1990a Beadel 1990a	Ohope Uretara Island Pataua Island Hiwirau Hiwirau Pohutukawa Islets near Ohakana Island Nukuhou Tauwhare Pa Ohiwa
Sedimentary coastal hinterland	Pohutukawa-puriri forest	430, 431 (minor areas)	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Pohutukawa-puriri-rewarewa-tawa/kohekohe forest	Oscar Reeve SR	Clarkson & Regnier 1989	Oscar Reeve
Sedimentary coastal hinterland	Pohutukawa-rewarewa-puriri-black wattle forest	431	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Pole kahikatea forest	430 428	S M Beadel pers. obs. 1992	Whitiwhiti Ruatuna
Sedimentary coastal hinterland	Pukatea-pole kahikatea forest	430	S M Beadel pers. obs. 1992	Ruatuna
Sedimentary coastal hinterland	Pukatea-tawa-hard beech-puriri forest	430	S M Beadel pers. obs. 1992	Ruatuna
Sedimentary coastal hinterland	Puriri forest	430 (small stand)	S M Beadel pers. obs. 1992	

Sedimentary coastal hinterland	Puriri-pukatea-tawa forest	430 (small stand)	S M Beadel pers. obs. 1992	Ruatuna
Sedimentary coastal hinterland	Rewarewa forest	428 (PL) (minor area) 426 (PL) (minor area)	S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992	Hiwirau
Sedimentary coastal hinterland	Rewarewa-black wattle-kamahi forest	Ohiwa SR	Clarkson & Regnier 1989	Whitiwhiti
Sedimentary coastal hinterland	Rewarewa/kamahi forest	Hiwirau	Beadel 1993a	Hiwirau
		Ohiwa Harbour	Beadel 1993a	
Sedimentary coastal hinterland	Rewarewa-kamahi-kanuka-mamaku forest	420 (PL) 422 (PL)	S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Rewarewa/kanuka forest	425 (PL) 423 (PL) 428 (PL) Uretara Island SR	S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 Beadel & Shaw 1988	Uretara Island
Sedimentary coastal hinterland	Rewarewa/kanuka-mamaku forest	424 (PL) 430 (PL)	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Rewarewa/kanuka-pohutukawa forest	Ohope SR	Beadel & Shaw 1988	Ohope
Sedimentary coastal hinterland	Rewarewa-mahoe-five-finger-kanuka forest ↔ pohutukawa-mangeao forest	Kohi Point SR (141)	Beadel & Shaw 1988	Kohi Point
Sedimentary coastal hinterland	Rewarewa/mamaku forest	426 (PL) 428 (PL)	S M Beadel pers. obs. 1992	Hiwirau
Sedimentary coastal hinterland	Rewarewa/mamaku-mahoe forest	425 (PL) (minor area)	S M Beadel pers. obs. 1992	

	Tawa-puriri-mangeao-kohekohe forest	Hiwirau	Beadel 1993a	Hiwirau
Sedimentary coastal hinterland	Tawa-puriri-mangeao-pohutukawa forest	428 (PL)	S M Beadel pers. obs. 1992	Hiwirau
Sedimentary coastal hinterland	Tawa-rewarewa forest	426 (PL)	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Brush wattle/mingimangi-hangehange-manuka-mamaku forest and scrub	Harbour Road and Goodwin Parade ER (193) and adjoining land (198). Modified vegetation; minor areas.	Beadel 1992c	
Sedimentary coastal hinterland	Indigenous forest, scrub and shrubland	Ohiwa Harbour	Beadel 1993a	
Sedimentary coastal hinterland	Kahikatea treeland	Ohiwa Harbour	Beadel 1993a	
Sedimentary coastal hinterland	Pohutukawa treeland	415 (Ohope Beach, West End)	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Rewarewa treeland	425 (PL)	S M Beadel pers. obs. 1992	Minor area
Sedimentary coastal hinterland	Mamaku treefernland	Pataua Island ScR 417 (PL) 425 (PL) 423 (PL) 426 (PL) 431 430	Clarkson & Regnier 1989 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992	Pataua Island Hiwirau
Sedimentary coastal hinterland	Mamaku/silver fern treefernland	Ohiwa SR	Clarkson & Regnier 1989	Ohiwa
Sedimentary coastal hinterland	Mamaku-manuka-kanuka scrub	Ohakana Island	S M Beadel pers. obs. 1990	

Sedimentary coastal hinterland	Manuka scrub	417 (PL); Minor area; emergent pines common. 426 (PL) 425 (PL) 428 (PL)	S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992 S M Beadel pers. obs. 1992	Whitiwhiti
Sedimentary coastal hinterland	Manuka-gorse scrub	431	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	(Pohutukawa)/manuka scrub	430	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	(Rewarewa-(cabbage tree)-(kanuka) forest	428 (PL)	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Manuka-brush wattle scrub and shrubland	Tauwhare Pa SR Ohiwa Harbour (161) 417	Beadel 1988 b Beadel 1990 a S M Beadel pers. obs. 1992	Tauwhare Pa
Sedimentary coastal hinterland	(Pole kahikatea)/manuka-mamaku shrubland	430 (adventive species common e.g. barberry, gorse)	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Indigenous shrublands	416, 417, 425, 426 and other sites	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Bracken fernland	Kohi Point SR (141)	Beadel & Shaw 1988	Kohi Point
Sedimentary coastal hinterland	Undocumented	430 418		
Freshwater wetlands	Grey willow forest	Ohiwa Harbour (161)	Beadel 1993a	Whitiwhiti
Freshwater wetlands	Grey willow-manuka scrub	Ohiwa Harbour (161) (near Pukeruru Point)	Beadel 1993a	Pukeruru
Freshwater wetlands	Manuka scrub	Uretara Island SR	Beadel & Shaw 1988	Hiwirau
		Ohiwa Harbour (161) (including 146, 150, 171, 200, 149)	Beadel 1990a & 1993a	Uretara Island

		Port Ohope RR (146)	Beadel 1988a	Motuotu Island
		Otao Domain (171a)	Beadel 1988a	Ohope Spit
		Harbour Road ER (177)	Beadel 1988a & 1990a	Whitiwhiti
		Harbour Road Reserve (181)	Beadel 1988a	Stipa
		Uretara (west) RR (182)	Beadel 1988a	Port Ohope
		Esplanade Reserve (176)	Beadel 1990a	Pukeruru
		428 (minor areas)	S M Beadel pers. obs. 1990 & 1992	
Freshwater wetlands	Pohutukawa/manuka- <i>Olearia solandri</i> scrub	Motuotu Island NR	Clarkson & Regnier 1989; Beadel 1993a	Motuotu
		Unnamed Island near Tern Island	Beadel 1993a	Island near Tern Island
Freshwater wetlands	Grey willow/manuka shrubland	Nukuhou	Beadel 1993a	
	Manuka shrubland	Ohiwa Harbour	Beadel 1993a	Port Ohope Whitiwhiti
	Manuka-(<i>Coprosma tenuicaulis</i> - <i>Coprosma propinqua</i> subsp. <i>propinqua</i>)/ <i>Baumea rubiginosa</i> - <i>B. tenax</i> - <i>B. juncea</i> -kiokio-raupo shrubland	Hiwirau	Beadel 1993a	Hiwirau
	<i>Olearia solandri</i> - <i>Coprosma propinqua</i> subsp. <i>propinqua</i> - <i>Hebe</i> sp. (<i>H. parviflora</i> agg.) shrubland	Pataua Island	Beadel 1993a	Pataua Island
	Manuka/ <i>Gleichenia dicarpa</i> - <i>Baumea rubiginosa</i> - <i>B. teretifolia</i> shrubland	Hiwirau	Beadel 1993a	Hiwirau

	Manuka- <i>Olearia solandri</i> shrubland	Ohiwa Harbour	Beadel 1993a	Uretara Island
	Manuka/swamp millet- <i>Baumea rubiginosa</i> grass-shrubland	Hiwirau Block	Beadel 1993a	Hiwirau
Freshwater wetlands	Flaxland	Port Ohope RR (146)	Beadel 1988a	Ohope Spit
Freshwater wetlands	<i>Baumea articulata</i> / <i>B. juncea</i> -sea couch grass-sedgeland → raupo reedland	Port Ohope RR (146) Conservation Purpose Reserve (172) 197	Beadel 1988a S M Beadel pers. obs. 1990 S M Beadel pers. obs. 1990; Beadel 1992c	Ohope Spit
Freshwater wetlands	Carex-raupo-blackberry reed-sedgeland	Oscar Reeve SR	Clarkson & Regnier 1989	Oscar Reeve
Freshwater wetlands	Manuka-toetoe shrubland	421	S M Beadel pers. obs. 1992	
Freshwater wetlands	Raupo reedland	Uretara Island SR	Beadel & Shaw 1988	Uretara Island
		Ohiwa Harbour (161)	Beadel 1990a & 1993a	Pataua Island
		416	S M Beadel pers. obs. 1992	Hiwirau
		417	S M Beadel pers. obs. 1992	
		418	S M Beadel pers. obs. 1992	
		429 (Kutarere)	S M Beadel pers. obs. 1992	
		430 (Ruatuna Road)	S M Beadel pers. obs. 1992	
		431	S M Beadel pers. obs. 1992	
		Nukuhou Conservation Area (minor area)	Beadel 1993a	
Freshwater wetlands	Estuary margins	Ohiwa Harbour (161) (including 200, 149, 150, 420)	Beadel 1990a & 1993a	Uretara Island Whitiwhiti

Saline wetlands	Mangrove scrub	Ohiwa Harbour	Beadel 1993a	Pataua Island Uretara Island Hiwirau Motuotu Island Hokianga Island Nukuhou Kutarere
Saline wetlands	Mangrove shrubland	Motuotu Island NR	Clarkson & Regnier 1989	Tern Island
		Pataua Island ScR	Clarkson & Regnier 1989	Pataua Island
		Uretara Island SR	Beadel & Shaw 1988	Uretara Island
		Ohiwa Harbour (161)	Beadel 1990a & 1993a	Hiwirau
		Recreation Reserve (192)	Beadel 1990a	Motuotu Island
		Nukuhou CA (149)	S M Beadel pers. obs. 1992	Nukuhou Arawaputuna
Saline wetlands	Marsh ribbonwood shrubland	Ohiwa Harbour	Beadel 1993a	Hiwirau
Saline wetlands	Marsh ribbonwood/ <i>oioi-Baumea juncea</i> shrubland	421	S M Beadel pers. obs. 1992	
Saline wetlands	<i>Olearia solandri</i> shrubland	Ohiwa Harbour	Beadel 1993a	
Saline wetlands	Mangrove/searush tussock-shrubland	Ohiwa Harbour	Beadel 1993a	Ohiwa

Saline wetlands	Searush tussockland	Uretara Island SR	Beadel & Shaw 1988	Uretara Island
Saline wetlands		206 (PL)	Clarkson & Regnier 1989	Hiwirau Tern Island
Saline wetlands		Tauwhare Pa SR	Beadel 1988b	Motuotu Island Whitiwhiti
Saline wetlands		Harbour Road and Goodwin Parade ER (193)	Beadel 1992c	Stipa Pataua Island
Saline wetlands		Ohiwa Harbour (161)	Beadel 1993a	Tauwhare Pa Ohiwa Arawaputuna Kutarere Pukeruru
Saline wetlands		421,420	S M Beadel pers. obs. 1992	
Saline wetlands	<i>Stipa stipoides/Selliera radicans</i> -sea couch tussockland	Ohiwa Loop Road (Ohiwa Harbour)	Beadel 1993a	Stipa
Saline wetlands	Searush-oioi/ <i>Selliera radicans-Samolus repens</i> tussockland	Tern Island WMR	Beadel 1993a	Tern Island
Saline wetlands	<i>Schoenoplectus pungens</i> -mangrove shrub-sedgeland	Ohiwa Harbour (near Burma Road)	S M Beadel pers. obs. 1993	
Saline wetlands	Marsh ribbonwood/oioi shrub sedgeland	Uretara Island SR	Beadel 1993a	Uretara Island
Saline wetlands	Oioi-searush tussock-sedgeland	Nukuhou Conservation Area	Beadel 1993a	Hiwirau
Saline wetlands	<i>Baumea juncea</i> sedgeland	Ohiwa Harbour (161)	Beadel 1993a	Tern Island
Saline wetlands	<i>Bolboschoenus fluviatilis</i> sedgeland	Nukohou CA (149)	Beadel 1993a	Hiwirau

Saline wetlands	Oioi sedgeland	Ohiwa Harbour (161)	Beadel 1993a	Hiwirau Whitiwhiti Pataua Island Nukuhou Ohiwa Pukeruru
Saline wetlands	<i>Schoenoplectus pungens</i> sedgeland	Ohiwa Harbour (161)	Beadel 1993a	Whitiwhiti Pataua Island
Saline wetlands	<i>Schoenoplectus pungens/Selliera radicans</i> herb-sedgeland	Ohiwa Harbour	Beadel 1993a	
Saline wetlands	Oioi- <i>Baumea juncea</i> -searush-sea couch grass-rush-sedgeland → searush-oioi sedge-rushland	Harbour Road ER (177) Harbour Road Reserve (181) Uretara (west) RR (182) Harbour Road RR (196)	S M Beadel pers. obs. 1990 & 1993a	
Saline wetlands	Searush-oioi-sea couch- <i>Schoenoplectus pungens</i> rushland	Pataua Island ScR	Clarkson & Regnier 1989	Pataua Island
Saline wetlands	Bachelor's button herbfield	Ohiwa Harbour	Beadel 1993a	
Saline wetlands	<i>Samolus repens</i> herbfield	Ohiwa Harbour	Beadel 1993a	Tern Island Stipa
Saline wetlands	<i>Sarcocornia quinqueflora</i> herbfield	Ohiwa Harbour	Beadel 1993a	Stipa
Saline wetlands	(Searush)/ <i>Selliera radicans-Carex pumila-Isolepis cernua</i> - arrow grass herbfield	Ohiwa Harbour	Beadel 1993a	
Saline wetlands	Estuary margins	Ohiwa Harbour	Beadel 1993a	Uretara Island Whitiwhiti Stipa Pataua Island Hokianga Island Nukuhou

Saline wetlands	Mangrove mudflat	Ohiwa Harbour	Beadel 1993a	Uretara Island Island near Tern Island Motuotu Island Pataua Island Nukuhou
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OPOTIKI ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Dune and beach sands	Pohutukawa treeland	Waiotahi Beach Pohutukawa Avenue West (213)	Walls 1991	Waiotahi Beach
		Waiotahi Beach Pohutukawa Avenue East (213)	Walls 1991	Bryan 2
		411 (PL)	S M Beadel pers. obs. 1992	
Dune and beach sands	Mahoe-mamaku treefernland	Waiotahi Spit SR (97)	Clarkson & Regnier 1989	Waiotahi Spit and Estuary
Dune and beach sands	<i>Muehlenbeckia complexa</i> vineland	Part Opotiki RR (78); Similar vegetation types in better condition are represented in Waiotahi Spit SR and HR	Walls 1991	
Dune and beach sands	<i>Muehlenbeckia complexa</i> -bracken fern-vineland	Tirohanga sand dunes (76, 212 and 78); Similar vegetation types in better condition are represented in Waiotahi Spit SR and HR	Walls 1991	
		Part Opotiki RR (78)	Walls 1991	
Dune and beach sands	African boxthorn/ <i>Muehlenbeckia complexa</i> -bracken shrubland ¹	76	S M Beadel pers. obs. 1992	

¹ Along much of the Opotiki coastline African boxthorn, *Muehlenbeckia complexa*, bracken, lupin, exotic grasses and herbs form shrublands, vinelands and grasslands inland from the foredunes and adventive species are dominant.

Dune and beach sands	Bracken fernland	Waiotahi Spit SR (97)	Clarkson & Regnier 1989	Waiotahi Spit and Estuary
Dune and beach sands	<i>Muehlenbeckia complexa</i> / spinifex-haretail grassland	Waiotahi Spit SR and HR (94 & 97)	Clarkson & Regnier 1989	Waiotahi Spit and Estuary
		East Waiotahi Beach (92 & 213) (includes some stewardship land)	Walls 1991	
Dune and beach sands	Spinifex sandfield; In addition to the specified sites, spinifex sandfield occurs locally on the foredune elsewhere along the coast.	Part Opotiki RR (78)	Walls 1991	Waiotahi Spit and Estuary
		Bryans Beach (226)	Walls 1991	
		Waiaua Estuary - western spit (stewardship land) (76)	Walls 1991	
		Omarumutu-Opape dune ridge (74 & 222)	Walls 1991	
		Tirohanga sand dunes (76, 212 & 78)	Walls 1991	
		East Waiotahi Beach (92 & 213) (includes some stewardship land 92)	S M Beadel pers. obs. 1992	
		Waiaua Estuary - eastern spit (225)	Walls 1991	
		Esplanade Reserve (99)	S M Beadel pers. obs. 1992	
		Waiotahi Spit SR (97)	Clarkson & Regnier 1989	
		Waiotahi Spit SR & HR (94 & 97)	Clarkson & Regnier 1989	

Dune and beach sands	Pohutukawa/bracken fernland	Tuamotu Urupa (98); contiguous with Waiotahi Spit HR.	Clarkson & Regnier 1989	
Sedimentary coastal hinterland	Black beech-tawa-kohekohe forest	412 (PL); grazed, unfenced	S M Beadel pers. obs. 1992	Bryan 3
Sedimentary coastal hinterland	Mamaku-kanuka-mahoe-putaputaweta forest	409 (PL); minor areas	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Pohutukawa forest	Waiotahi Spit HR (94)	Clarkson and Regnier 1989	Waiotahi Spit and Estuary
		West of Bryans Beach (216)	S M Beadel pers. obs. 1992	Bryan 2
		Waiotahi Beach Pohutukawa Avenue and West (213)	Walls 1991	Waiotahi Beach
		Waiotahi Beach Pohutukawa Avenue East (213, 93)(PL; part of the area is of this site is Plantation Reserve)	Walls 1991	
Sedimentary coastal hinterland	Pohutukawa-puriri-karaka forest	410 (PL)	S M Beadel pers. obs. 1992	Te Matau
Sedimentary coastal hinterland	Pohutukawa-puriri-mamaku-(radiata pine) forest	408 (PL); minor areas	S M Beadel pers. obs. 1992	
	Pohutukawa-tawa forest	411 (PL); grazed	S M Beadel pers. obs. 1992	Bryan 1
Sedimentary coastal hinterland	Pohutukawa-tawa-puriri forest	412 (PL); minor areas	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Pohutukawa/mamaku-kohuhu-brush wattle-kanuka-manuka-mingimingi-kawakawa-mahoe forest and scrub	412 (PL); minor areas	S M Beadel pers. obs. 1992	

Sedimentary coastal hinterland	Puriri forest	409; minor area, grazed.	S M Beadel pers. obs. 1992	
		412	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Puriri-pohutukawa forest	409 (PL); minor areas	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Puriri-tawa forest	412 (PL); minor areas	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Rewarewa/kamahi-kanuka forest (with pohutukawa and puriri)	409 (PL); minor areas	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Rewarewa/mamaku-pohutukawa forest	401	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Tawa-puriri-pohutukawa forest	412 (PL)	S M Beadel pers. obs. 1992	Bryan 3
Sedimentary coastal hinterland	Pohutukawa treeland	Tirohanga Pa Site (76 and 219) (part of this site is stewardship land)	Walls 1991	
		West of Bryans Beach (216)	Walls 1991	
Sedimentary coastal hinterland	Pohutukawa/gorse-pampaspines-pohutukawa treeland	Sea cliffs east of Waiotahi River mouth (213)	Walls 1991	
Sedimentary coastal hinterland	Pohutukawa-mahoe-karaka-ngaio treeland	Tirohanga Pa site (76 and 219) (part of this site is stewardship land)	Walls 1991	
Sedimentary coastal hinterland	Mamaku treefernland	412 (PL); minor areas	S M Beadel pers. obs. 1992	
		404	S M Beadel pers. obs. 1992	

Sedimentary coastal hinterland	Brush wattle-kohuhu- <i>Coprosma robusta</i> -mamaku scrub	401	S M Beadel pers. obs 1992	Opape
Sedimentary coastal hinterland	Mamaku-mingimingi- manuka-gorse scrub	404	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Manuka scrub	401	S M Beadel pers. obs. 1992	Opape
		402	S M Beadel pers. obs. 1992	
		404	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	<i>Coprosma robusta</i> -hangehange- kawakawa-bracken/raupo shrubland	411 (PL); minor area	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Secondary shrubland	408 (PL). Very small areas also occur at other undocumented sites in the ecological district.	S M Beadel pers. obs. 1992	
Sedimentary coastal hinterland	Wharariki - New Zealand iceplant - pohuehue flaxland	Tirohanga Pa site (219)	Walls 1991	Tirohanga Pa
Freshwater wetlands	Manuka scrub	401	S M Beadel pers. obs. 1992	Opape
Freshwater wetlands	Cabbage tree/manuka-raupo shrubland	401	S M Beadel pers. obs. 1991	Opape
Freshwater wetlands	Harakeke-raupo-manuka- <i>Baumea</i> -swamp millet shrubland	401	S M Beadel pers. obs. 1992	Opape
Freshwater wetlands	Manuka-raupo shrubland	403; grazed, minor area.	S M Beadel pers. obs. 1992	
		Huntress Creek Estuary (217)	S M Beadel pers. obs. 1992	
		Tirohanga Wetland (218)	S M Beadel pers. obs. 1992	

Freshwater wetlands	Marsh ribbonwood-harakeke shrubland	Huntress Creek saltmarsh (215)	Walls 1991	Huntress Creek
Freshwater wetlands	<i>Bolboschoenus fluviatilis</i> sedgeland	Waioueka/Otara Estuary (216) (with local oioi, searush and marsh ribbonwood).	Walls 1991	
		Waiaua Estuary (224)	S M Beadel pers. obs. 1992	Waiaua Estuary
		223	S M Beadel pers. obs. 1992	
Freshwater wetlands	<i>Cyperus ustulatus</i> sedgeland	Opape wetland (221) (heavily browsed and trampled by stock).	Walls 1991; S M Beadel pers. obs. 1992	
Freshwater wetlands	<i>Baumea articulata</i> - <i>Bolboschoenus fluviatilis</i> -searush-oioi- <i>Cyperus ustulatus</i> sedge-rushland	Huntress Creek saltmarsh (215)	Walls 1991	Huntress Creek
Freshwater wetlands	<i>Juncus</i> sp. (<i>J. gregiflorus</i> ?) rushland	Opape wetland (221) (heavily browsed and trampled by stock).	Walls 1991; S M Beadel pers. obs. 1992	
Freshwater wetlands	Raupo- <i>Baumea articulata</i> sedge-reedland	Waiotahi Spit SR (97)	Clarkson and Regnier 1989	Waiotahi Spit and Estuary
Freshwater wetlands	Raupo reedland. Many of the sites where raupo reedland occurs are heavily modified/grazed/very small. The best examples are probably those which occur in association with representative examples of other vegetation types, i.e. Tirohanga wetland (218) and Huntress Creek (215).	Opape (401; PL)	S M Beadel pers. obs. 1992	Tirohanga Huntress Creek

		Opape wetland (221); Heavily browsed and trampled by stock.	Walls 1991 & S M Beadel pers. obs. 1992	
		Tirohanga wetland (218 & 76) (part of area is stewardship land).	Walls 1991	
		Hikuwai Beach wetland (214) (with local <i>Cyperus ustulatus</i> , <i>Baumea articulata</i> , willow and <i>Carex secta</i>)	Walls 1991	
		406 (PL)	S M Beadel pers. obs. 1992	
		Waihua Estuary south-western freshwater wetland (220)(PL); grazed	S M Beadel pers. obs. 1992	
		Tirohanga (south side of SH 35) (407); minor areas	S M Beadel pers. obs. 1992	
		Huntress Creek (215); narrow fringe	Walls 1991	
		412 (PL); minor area	S M Beadel pers. obs. 1992	
		216 (Otago River margins)	S M Beadel pers. obs. 1992	
Freshwater wetlands	Raupo, manuka, <i>Baumea articulata</i> , <i>Muehlenbeckia complexa</i> x <i>M. australis</i> , <i>Baumea juncea</i> , swamp millet.	405 (PL); fernbird present.	S M Beadel pers. obs. 1992	
Freshwater wetlands	Raupo, <i>Schoenoplectus pungens</i> and <i>Bolboschoenus fluviatilis</i>	Waioeka River mouth (86, 87, 89 & 216)	Walls 1991	
		Otago River mouth (81, 82 & 216)	Walls 1991	
Freshwater wetlands	Undocumented	404 (PL)		

Saline wetlands	Mangrove shrubland	Waiaua Estuary (224)	Walls 1991 and S M Beadel pers. obs. 1992	Waiaua Estuary
Saline wetlands	Marsh ribbonwood- <i>Olearia solandri</i> /sea couch-oioi-searush shrubland	Waiotahi Estuary (209)	S M Beadel pers. obs. 1992	Waiotahi Spit and Estuary
Saline wetlands	Marsh ribbonwood/searush shrubland	Tirohanga; south side of SH 35 (407); minor area	S M Beadel pers. obs. 1992	
Saline wetlands	Searush tussockland	Waiotahi Spit SR (97)	Clarkson and Regnier 1989	Waiotahi Spit and Estuary
		223; <i>Baumea juncea</i> locally common with local searush, oioi, <i>Cyperus ustulatus</i> , raupo, <i>Bolboschoenus fluvitilis</i> and marsh ribbonwood (Walls 1991)	S M Beadel pers. obs. 1992	
		Waiotahi Estuary (208)	S M Beadel pers. obs. 1992	Waiaua Estuary
		Waiotahi Spit SR (97)	Clarkson & Regnier 1989	Waiotahi Spit and Estuary
		Waiaua Estuary (224)	S M Beadel pers. obs. 1992	
Saline wetlands	Oioi sedgeland	Waiaua Estuary (224) (minor area)	S M Beadel pers. obs. 1992	Waiaua Estuary Waiotahi Spit and Estuary
		Waiotahi Spit SR (97); local searush, <i>Baumea juncea</i> , <i>Schoenoplectus pungens</i> , <i>Olearia solandri</i>	Clarkson & Regnier 1989	
		Waiotahi Estuary (208)	Walls 1991	
		Waiaua Estuary (220)	Walls 1991	

Saline wetlands	Oioi- <i>Baumea articulata</i> - <i>B. juncea</i> sedgeland (with local <i>Bolboschoenus fluviatilis</i> and searush)	Tirohanga wetland (76 and 218 part stewardship land)	Walls 1991	Tirohanga
Saline wetlands	Oioi-searush sedgeland	Waiotahi Estuary (209)	S M Beadel pers. obs. 1992	Waiotahi Spit and Estuary
Saline wetlands	Oioi-searush- <i>Bolboschoenus fluviatilis</i> - <i>Baumea articulata</i> rush-sedgeland (with local <i>Baumea juncea</i> and <i>Schoenoplectus pungens</i>). Similar type present in Waiotahi Estuary.	Huntress Creek mouth (217)	Walls 1991	
Saline wetlands	<i>Schoenoplectus pungens</i> sedgeland	Waiaua Estuary (224)	S M Beadel pers. obs. 1992	Waiaua Estuary
	<i>Schoenoplectus validus</i> sedgeland	216 (Waioeka River margins); minor area	S M Beadel pers. obs. 1992	
Saline wetlands	Searush- <i>Bolboschoenus fluviatilis</i> - <i>Schoenoplectus pungens</i> - <i>Isolepis cernua</i> - <i>Carex pumila</i> -bachelor's button rush-sedgeland	Waiaua Estuary (76) (stewardship land); minor areas	Walls 1991	Waiaua Estuary
Saline wetlands	<i>Sarcocornia quinqueflora</i> herbfield	Waiotahi Estuary (209)	S M Beadel pers. obs. 1992	Waiotahi Spit and Estuary
Saline wetlands	<i>Selliera radicans</i> - <i>Samolus repens</i> herbfield	Waiaua Estuary (224)	Walls 1991	Waiaua Estuary

1.4 Part Raukumara Ecological Region

MOTU ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Alluvium beaches	Kanuka scrub and forest	Motu	Clarkson <i>et al.</i> 1986	Motu Corridor
Alluvium beaches	Tauhinu scrub and shrubland	Motu	Clarkson <i>et al.</i> 1986	Motu Corridor
Alluvium beaches	Manuka scrub	Motu	Clarkson <i>et al.</i> 1986	Motu Corridor
Alluvium beaches	Lupin- <i>Muehlenbeckia complexa</i> -tauhinu shrubland	133 (Papatea Bay)	Regnier <i>et al.</i> 1986	Papatea
Exposed rocky coast and hinterland	Hard beech-tawa-rewarewa forest	136 137	Clarkson <i>et al.</i> 1986	Maraenui
Exposed rocky coast and hinterland	Pohutukawa-houpara forest	134 135	Clarkson <i>et al.</i> 1986	Motu Kaimeanui Island Motu Papaku Islands
Exposed rocky coast and hinterland	Pohutukawa-puriri-tawa forest	134 136 137 138 (Torere → Opape)	Clarkson <i>et al.</i> 1986	Te Uritukituki Whitianga Whanarua-Kereu Corridor
Exposed rocky coast and hinterland	Rewarewa-tanekaha forest	136	Clarkson <i>et al.</i> 1986	
Exposed rocky coast and hinterland	Tarairi-tawa forest	134 (Papatea Bay → Okahu Point)	Clarkson <i>et al.</i> 1986	Haparapara

Exposed rocky coast and hinterland	Tawa-pohutukawa-puriri forest	135 136 137 138	Clarkson <i>et al.</i> 1986	Whitianga Opape Headland 2 Motu Corridor Whanarua-Kereu Corridor
Exposed rocky coast and hinterland	Tawa-puriri forest	134 135 136 138 137	Clarkson <i>et al.</i> 1986	Haurere Headland 2 Motu Corridor
Exposed rocky coast and hinterland	Five finger-mamaku forest and scrub	134 135 138	Clarkson <i>et al.</i> 1986	Opape Headland 2 Haurere Headland 2 Motu Corridor
Exposed rocky coast and hinterland	Kanuka scrub and forest	134 137 138	Clarkson <i>et al.</i> 1986	Whanarua-Kereu Corridor Haurere Headland 2 Torere Corridor
Exposed rocky coast and hinterland	Kanuka-five finger-rewarewa scrub and forest	136 137 138	Clarkson <i>et al.</i> 1986	Haurere Headland 2 Torere Corridor
Exposed rocky coast and hinterland	Pohutukawa forest and treeland	134 (Papatea Bay → Okahu Point) 135 (Omaio → Motu) 136 (Motu → Hawaii) 137 (Hawaii → Torere)	Clarkson <i>et al.</i> 1986	Whanarua-Kereu Corridor Torere Corridor Motu Corridor
Exposed rocky coast and hinterland	Manuka scrub	135 136 137 134	Clarkson <i>et al.</i> 1986	Motu Corridor Whanarua-Kereu Corridor
Exposed rocky coast and hinterland	Manuka-coprosma-koromiko scrub	136 137 138	Clarkson <i>et al.</i> 1986	Opape Headland 2

Exposed rocky coast and hinterland	Manuka-kanuka scrub	136 137 135	Clarkson <i>et al.</i> 1986	Torere Corridor
Exposed rocky coast and hinterland	Pohutukawa-koromiko- <i>Olearia pachyphylla</i> -wharariki scrub	136 138	Clarkson <i>et al.</i> 1986	Opape Headland 1 Haurere Headland 1
Freshwater wetlands	Cabbage tree/blackberry treeland	133 (Papatea Bay)	Regnier <i>et al.</i> 1988	Papatea
Freshwater wetlands	Manuka shrubland	Houpoto Swamp	Clarkson <i>et al.</i> 1986	Houpoto Swamp
Freshwater wetlands	Marsh ribbonwood/ <i>Cyperus ustulatus</i> shrubland	133 (Papatea Bay)	Regnier <i>et al.</i> 1988	Papatea
Freshwater wetlands	Oioi- <i>Cyperus ustulatus</i> sedgeland	133 (Papatea Bay)	Regnier <i>et al.</i> 1988	Papatea
Freshwater wetlands	<i>Juncus</i> rushland	133 (Papatea Bay)	Regnier <i>et al.</i> 1988	Papatea
Freshwater wetlands	Raupo reedland	136 (Motu → Hawai) 138 (Torere → Opape) 133 (Papatea Bay) 134 (Papatea Bay → Okahu Point)	Clarkson <i>et al.</i> 1986	Houpoto Swamp Papatea Whanarua-Kereu Corridor Opape Headland 2
Freshwater wetlands	<i>Ruppia polycarpa</i> -(<i>Potamogeton pectinatus</i>) herbfield	133 (Papatea Bay)	Regnier <i>et al.</i> 1988	Papatea
Freshwater wetlands	Swamp vegetation (<i>Carex geminata</i> and <i>Isachne globosa</i> common)	136 134	Clarkson <i>et al.</i> 1986	Houpoto Swamp

1.5 (Part) East Cape Ecological Region

PUKEAMARU ECOLOGICAL DISTRICT				
PHYSICAL CHARACTER	VEGETATION TYPE	KNOWN LOCATION(S)	SOURCE (VEGETATION INFO.)	SIGNIFICANT SITES
Volcanic hard coast	Broad-leaved species forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Tikirau
Volcanic hard coast	Pohutukawa forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	
Volcanic hard coast	Pohutukawa-puriri-karaka forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Tikirau
Volcanic hard coast	Puriri-karaka-pohutukawa forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	
Volcanic hard coast	Tawa forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Mangahiha
Volcanic hard coast	Tawa-kohekohe-pohutukawa-puriri forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	
Volcanic hard coast	Tawa-(puriri) forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Tikirau
Volcanic hard coast	Tawa-puriri forest	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Tikirau
Volcanic hard coast	Manuka scrub	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Tikirau
Volcanic hard coast	Tauhinu/pasture shrubland	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Tikirau
Volcanic hard coast	Tauhinu-introduced grasses shrub-grassland	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	
Volcanic hard coast	<i>Cyperns-ustulatus</i> -New Zealand iceplant rockland	130 (Potaka-Cape Runaway)	Regnier <i>et al.</i> 1988	Tikirau
Alluvium beaches	Broad-leaved species forest and scrub	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	
Alluvium beaches	Tawa-puriri forest	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	

Alluvium beaches	Lupin scrub	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	
Alluvium beaches	Manuka scrub/scrubland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	
Alluvium beaches	Manuka-kanuka scrub/shrubland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	
Alluvium beaches	(<i>Isolepis nodosa</i>) gravelfields	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	Whangaparaoa 1
Dune and beach sands	Spinifex grassland	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Dune and beach sands	Sandfield	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Hard beech forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Kahikatea forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Kanuka-pohutukawa forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Whangaparaoa 2
Exposed rocky coast and hinterland	Kanuka forest and scrub	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Pohutukawa forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru Whangaparaoa 1
Exposed rocky coast and hinterland	Pohutukawa-(hard beech) forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Pohutukawa-houpara-(puriri) forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Pohutukawa/manuka broadleaved species scrub	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Papatea
Exposed rocky coast and hinterland	Pohutukawa-puriri forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru

Exposed rocky coast and hinterland	Tawa-taraire-puriri-pohutukawa forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Papatea
Exposed rocky coast and hinterland	Pohutukawa-puriri-tawa forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	
Exposed rocky coast and hinterland	Pohutukawa-taraire forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Papatea
Exposed rocky coast and hinterland	Pohutukawa-(tawa)/broadleaved species forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	
Exposed rocky coast and hinterland	Puriri-pohutukawa- <i>Cyperus ustulatus</i> forest	132 (Whangaparaoa to Raukokere) - adjacent to Walkers Bush; (Category 4 priority area)	Regnier <i>et al.</i> 1988	
Exposed rocky coast and hinterland	Taraire forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Papatea
Exposed rocky coast and hinterland	Tawa forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Tawa-puriri forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Tawa-puriri-(pohutukawa) forest	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	
Exposed rocky coast and hinterland	Manuka scrub/shrubland	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Tupuaeharuru
Exposed rocky coast and hinterland	Kanuka-manuka-broadleaved species scrub/shrubland	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	
Exposed rocky coast and hinterland	Pohutukawa treeland	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	Papatea
Exposed rocky coast and hinterland	Pasture- <i>Carex</i> spp.	132 (Whangaparaoa to Raukokere)	Regnier <i>et al.</i> 1988	

Freshwater wetlands	<i>Eleocharis sphacelata</i> -raupo- <i>Baumea articulata</i> reedland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	Whangaparaoa
Freshwater wetlands	Raupo- <i>Baumea articulata</i> reedland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	Whangaparaoa
Freshwater wetlands	Raupo-harakeke reedland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	Whangaparaoa
Saline wetlands	Marsh ribbonwood-oioi sedge-scrubland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	Whangaparaoa
Saline wetlands	<i>Schoenoplectus pungens</i> - <i>Isolepis cernua</i> -arrow grass herb-sedgeland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	Whangaparaoa
Saline wetlands	Searush-oioi rushland	131 (Whangaparaoa)	Regnier <i>et al.</i> 1988	Whangaparaoa

2 BASE MAPS AND DATA

The maps prepared as part of this study are listed below and copies are held by the Bay of Plenty Regional Council, Whakatane.

- (a) Extent of the Bay of Plenty coastal bioclimatic zone
- (b) Physical character classification of Bay of Plenty coastal zone
- (c) Distribution of vegetation types
- (d) Distribution of saline and freshwater wetlands, lakes and lagoons

NZMS 260 1:50 000 topographical maps were used as base maps for these maps.

Unpublished work completed as a part of this study was:

- (a) Addition of information to the Bay of Plenty Regional Council existing natural area data bases
- (b) Addition of references to the Bay of Plenty Regional Council provisional bibliography.

3 SITES OF LOCAL SIGNIFICANCE

3.1 NORTHERN VOLCANIC PLATEAU ECOLOGICAL REGION

3.1.1. Tauranga Ecological District

KAURI POINT

Area	Approx 19 ha
Altitude	0-20m
Grid reference	NZMS 260 U13 734053
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type

Physical character

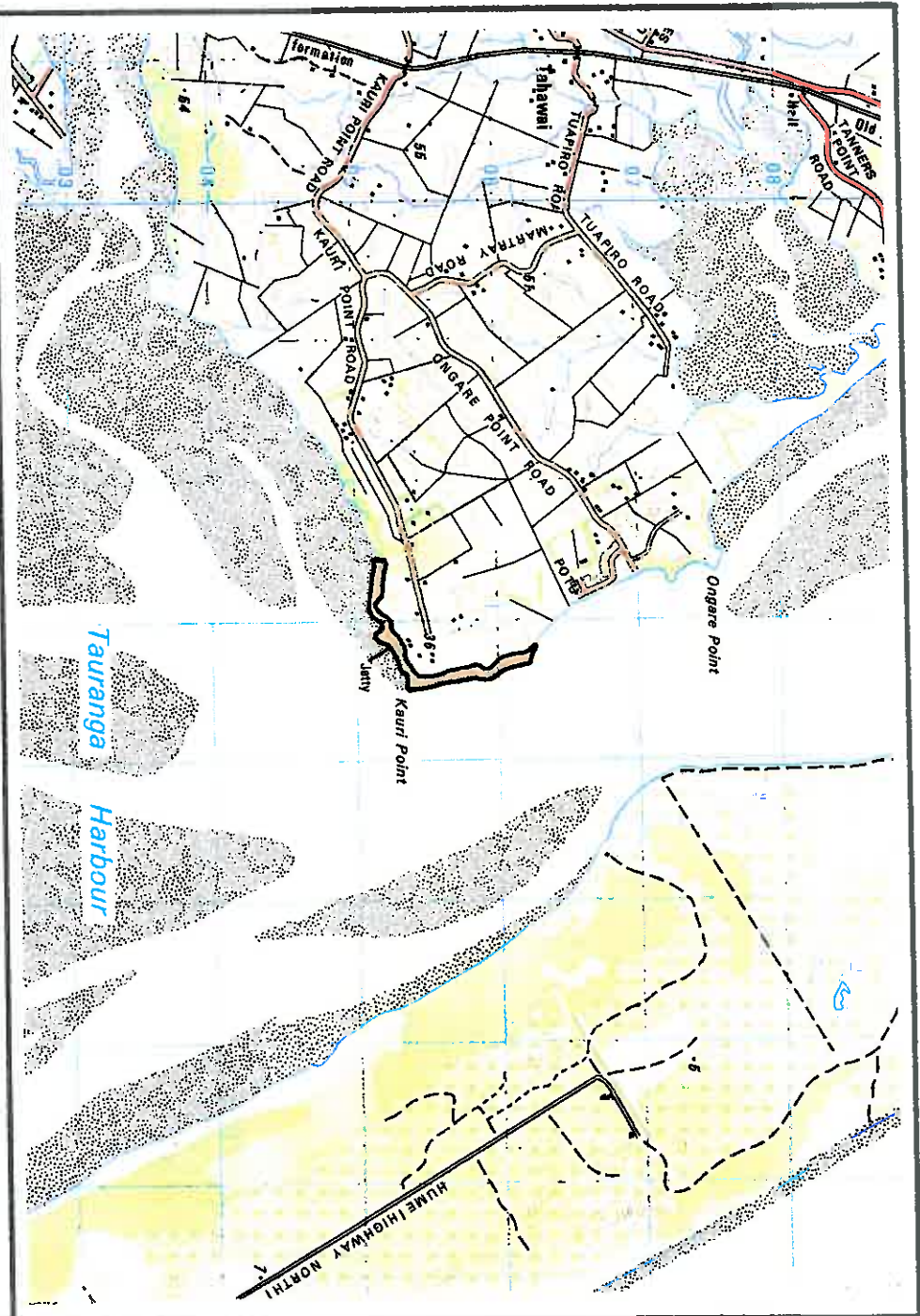
Pohutukawa forest

Sedimentary coastal hinterland

(S. M. Beadel pers. obs. 1991)

Justification

Pohutukawa forest was once common on headlands and hillslopes around Tauranga Harbour. This is a good example of the remaining areas of pohutukawa forest within the ecological district.



SS KAURI POINT

TUTAETAKA ISLAND

Area	Approx 2 ha
Altitude	0-10m
Grid reference	NZMS 260 U13 706001
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type**Physical character**

Pohutukawa forest

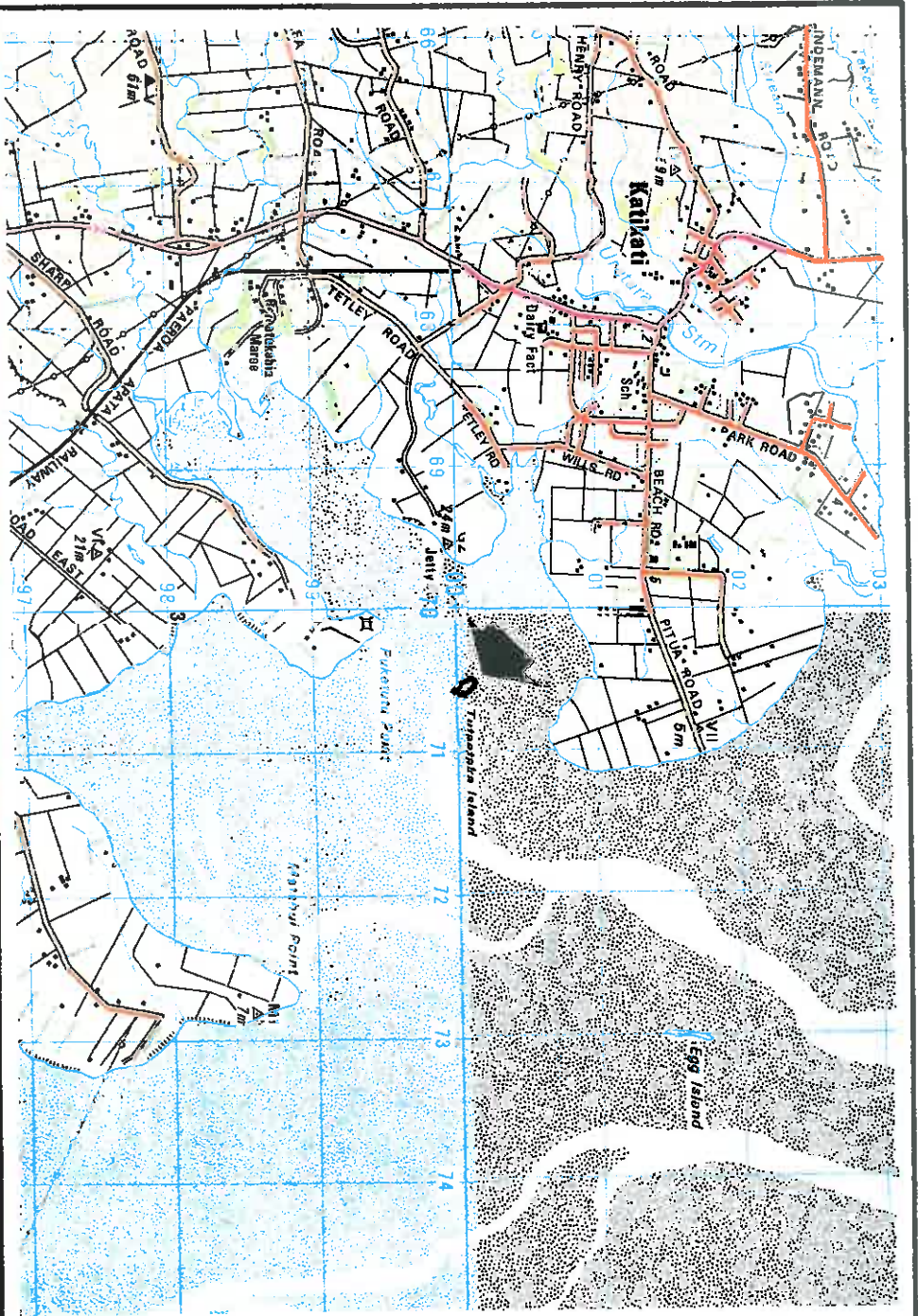
Sedimentary coastal hinterland

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

Justification

Pohutukawa forest was formerly abundant on headlands and hillslopes around Tauranga Harbour. It has been much reduced in extent and this is a good remnant example within the ecological district.

SS TUTAETAKA ISLAND



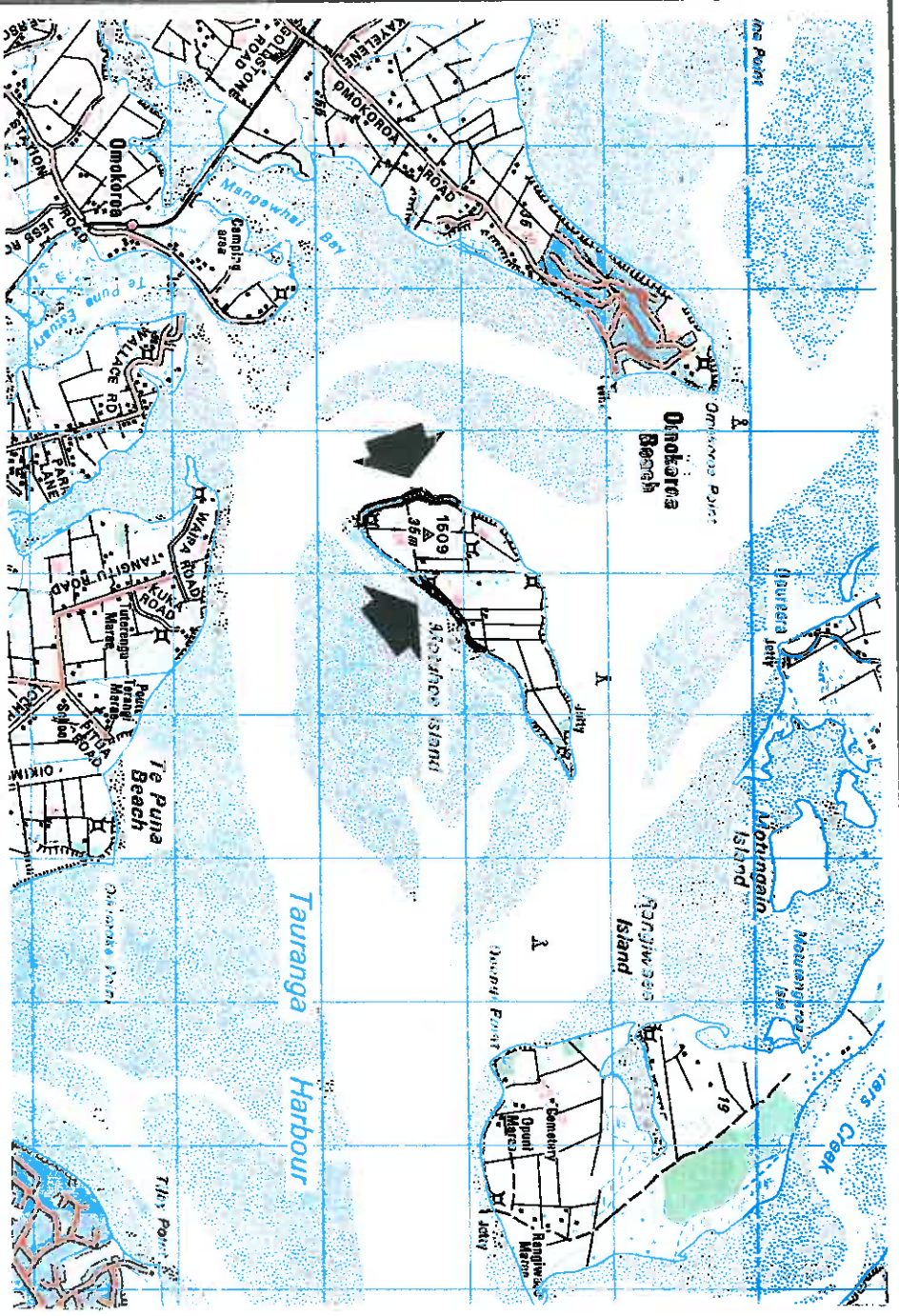
MOTUHOA ISLAND

Area	Approx 11 ha	
Altitude	0-20m	
Grid reference	NZMS 260 U14 811908	
Bioclimatic zone	Coastal	
Ranking	Local	
Vegetation type		Physical character
Pohutukawa forest		Sedimentary coastal hinterland
(Beadel 1989b)		
Vegetation map:	Beadel 1989b	

Justification

Pohutukawa forest was once abundant on hillslopes and headlands around Tauranaga Harbour. This is a good example of the remaining areas of pohutukawa forest within the ecological district.

SS MOTUHOA ISLAND



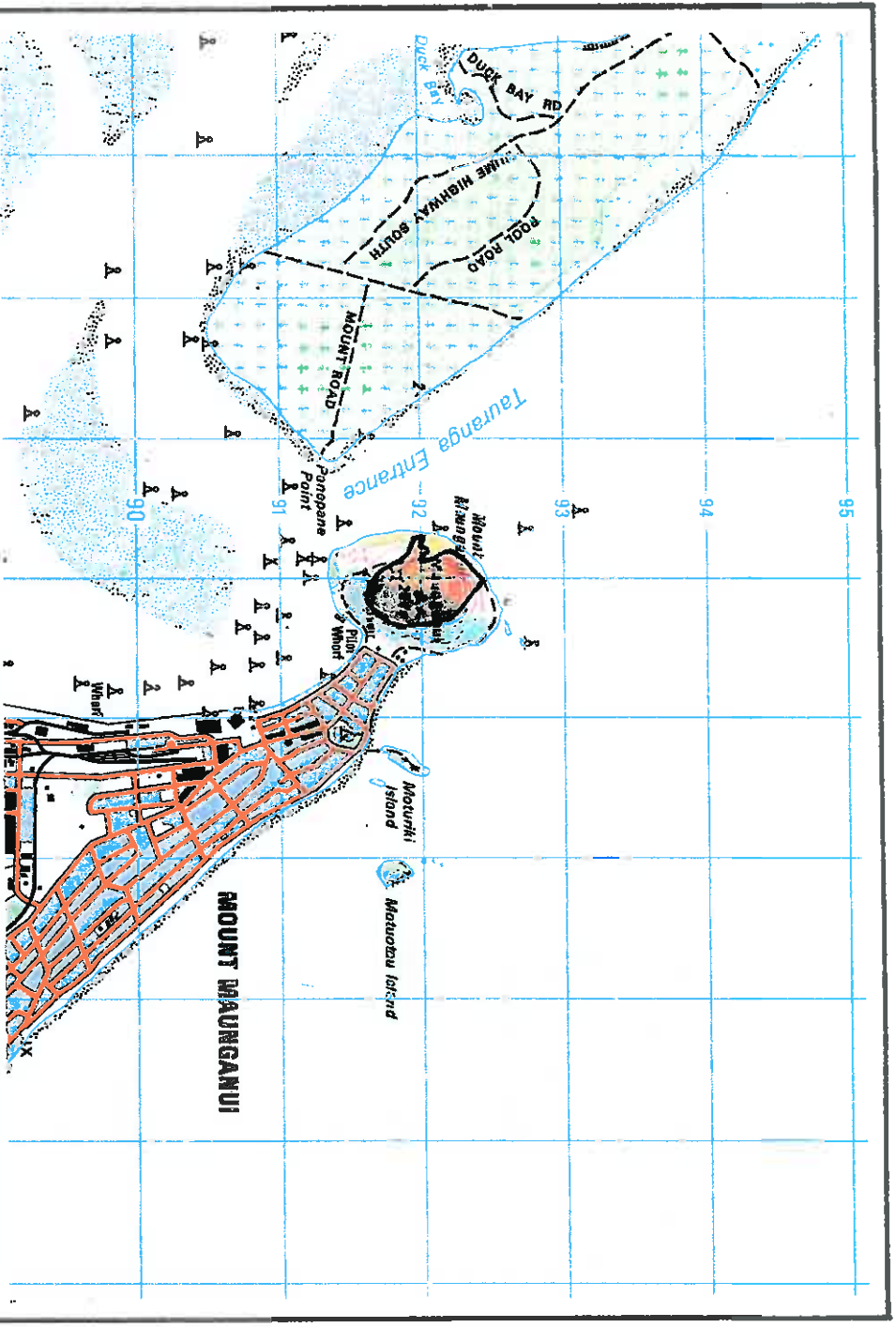
MOUNT MAUNGANUI 2.

Area	Approx 36 ha	
Altitude	0-252m	
Grid reference	NZMS 260 U14 902918	
Bioclimatic zone	Coastal	
Ranking	Local	
Vegetation type		Physical character
Mamaku forest		Volcanic hard coast
Pohutukawa forest		Volcanic hard coast
<i>Coprosma robusta</i> -mingimingi-mahoe- mamaku scrub	} }	Volcanic hard coast
Gorse scrub		Volcanic hard coast

Justification

These sites provide a buffer to the pohutukawa forest of Mount Maunganui, however, the vegetation is highly modified and adventive species are common. The vegetation quality is likely to improve over time and this site may deserve a higher rank in the future.

SS Mt MAUNGANUI 2



PUKEHINA 2.

Area	Approx 5 ha
Altitude	0-20m
Grid reference	NZMS 260 V14 223721
Bioclimatic zone	Coastal
Ranking	Local

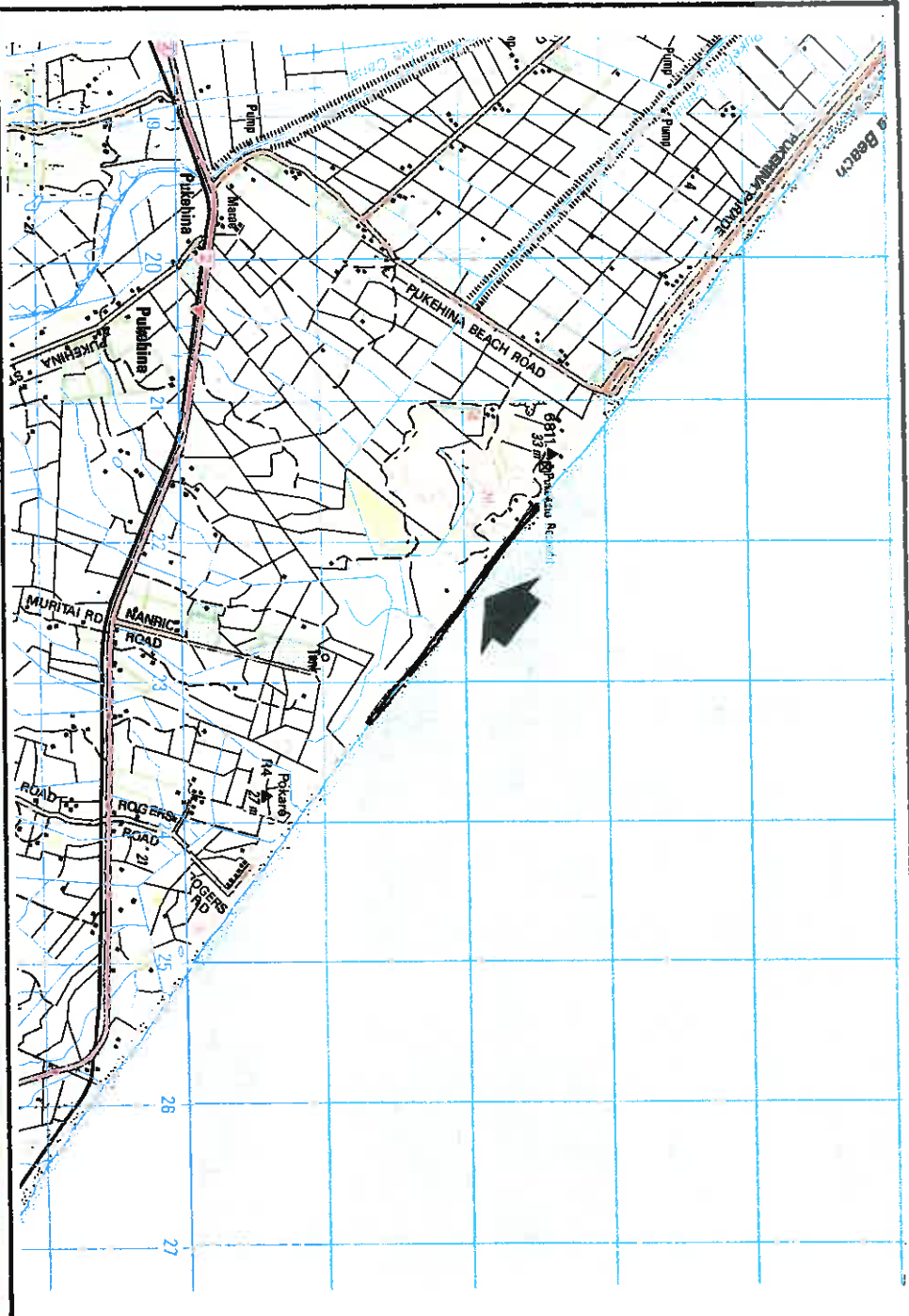
Vegetation type	Physical character
Taupata / <i>Muehlenbeckia complexa</i> - <i>Isolepis nodosa</i> shrubland	Volcanic soft coast
Pohutukawa treeland	Volcanic soft coast
<i>Isolepis nodosa</i> / <i>Muehlenbeckia complexa</i> vineland	Volcanic soft coast
<i>Muehlenbeckia complexa</i> vineland	Volcanic soft coast
Taupata / <i>Poa anceps</i> subsp. <i>anceps</i> -gorse shrubland	Volcanic soft coast

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

Justification

A relatively good example of indigenous vegetation on volcanic soft coast, contiguous with and complementary to SS Pukehina 1 (ranked as being of district significance).

SS PUKEHINA 2



3.2 WHAKATANE ECOLOGICAL REGION

3.2.1 TE TEKŌ ECOLOGICAL REGION

TARAWERA RIVER

Area	Approx 5 ha
Altitude	0m
Grid reference	NZMS 260 V15 434610
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type

Pingao-*Carex pumila*-spinfex sandfield
Calystegia soldanella-*Carex pumila* sandfield
Ruppia sp. herbfield

Physical character

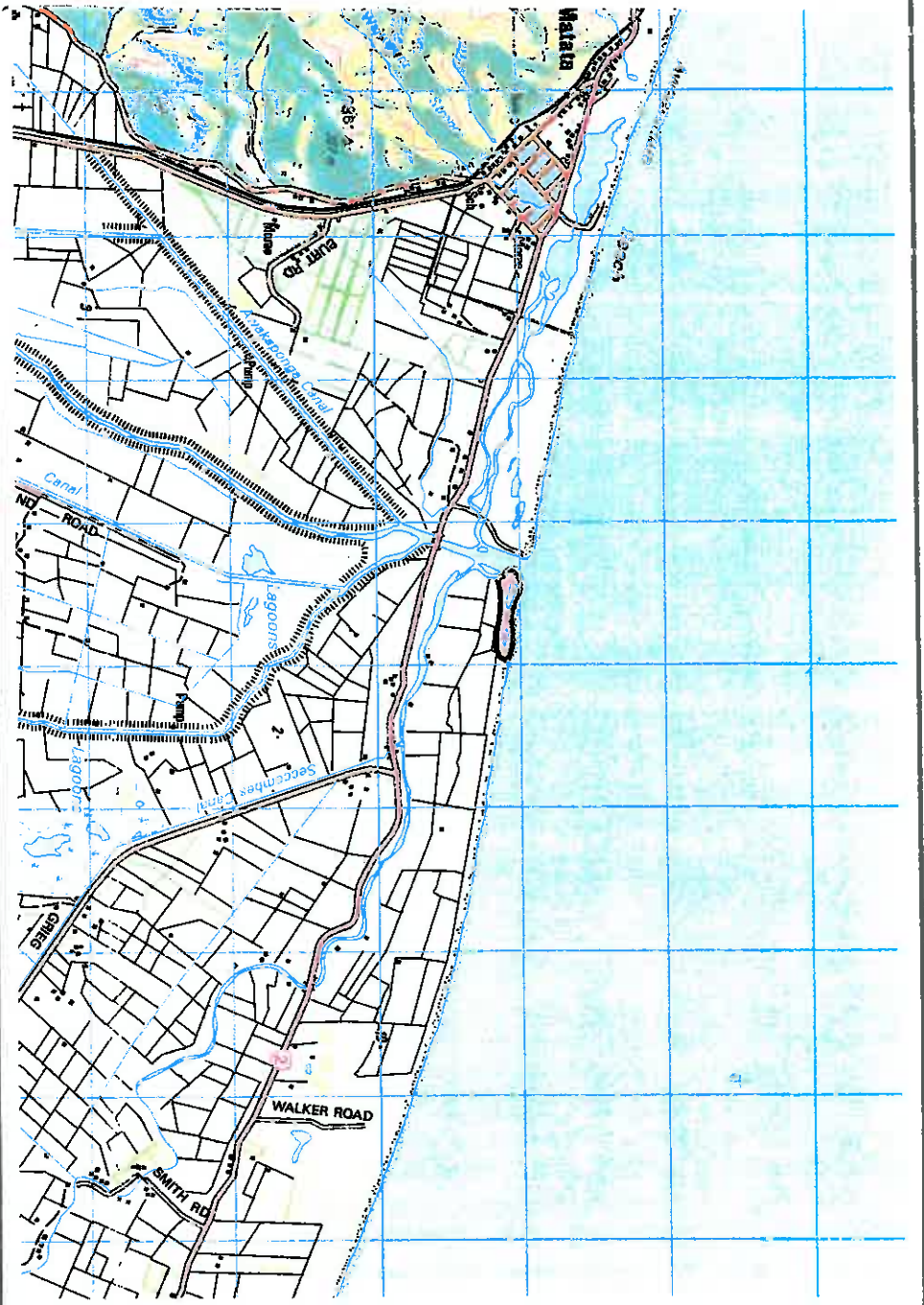
Dune and beach sands
 Dune and beach sands
 Saline wetland

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

Justification

This site contains one of the best populations of pingao (classed as local, Given 1990) in the Te Teko Ecological District.

SS TARAWERA RIVER



3.2.2 TANEATUA ECOLOGICAL DISTRICT

ARAWAPUTUNA CREEK

Area	Approx 10 ha
Altitude	0-60m
Grid reference	NZMS 260 W15 665492
Bioclimatic zone	Coastal
Ranking	Local

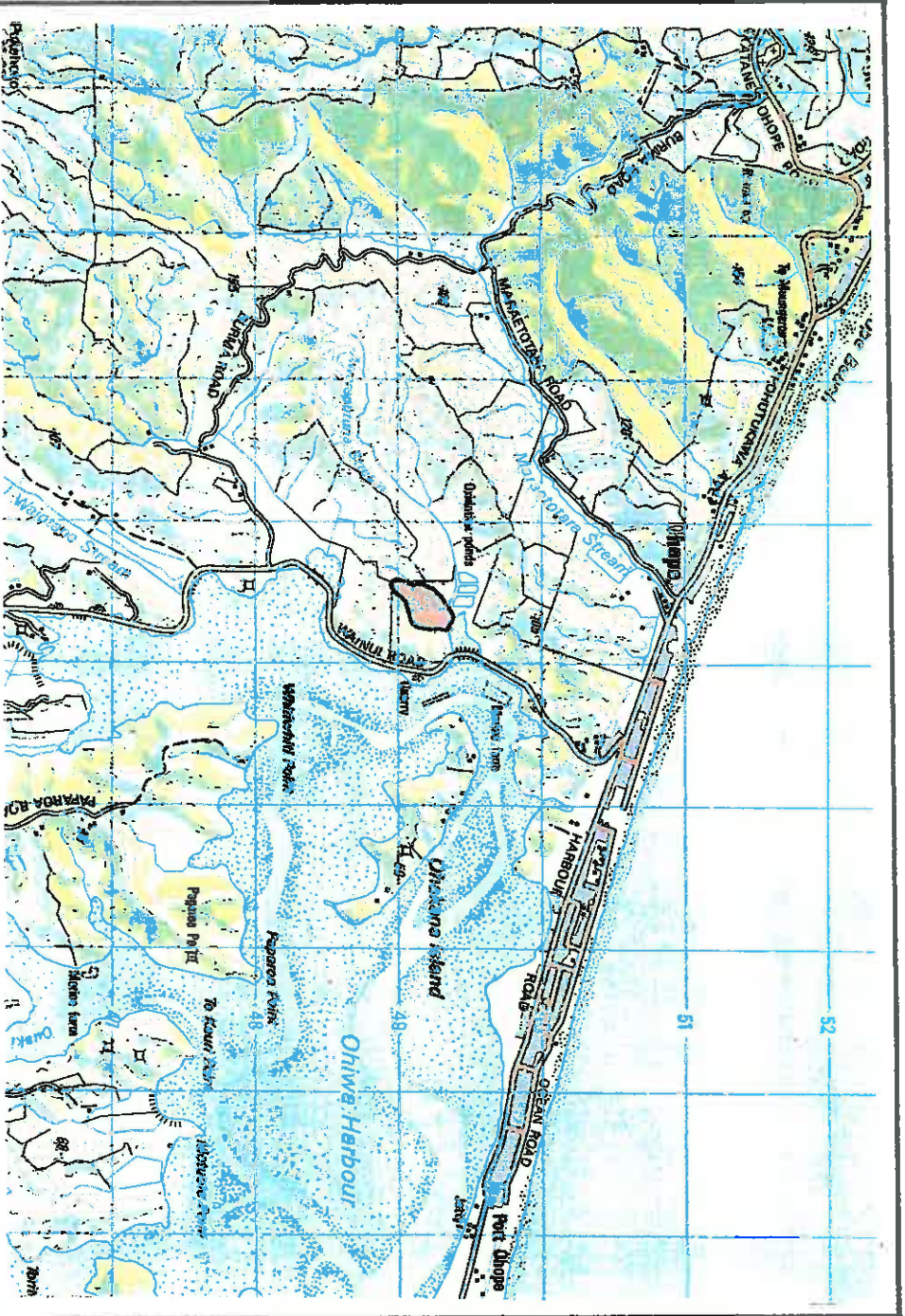
Vegetation type	Physical character
Indigenous scrub and shrublands	Sedimentary coastal hinterland
Manuka shrubland	Freshwater wetland
Searush tussockland	Saline wetland
Freshwater wetlands	Freshwater wetland
(Beadel 1993a)	

Vegetation map: Beadel 1993a

Justification

A small freshwater wetland contiguous with saline wetlands. Freshwater wetlands have been greatly reduced in extent. It was identified as a category three area by Beadel 1993a; defined in Appendix 5.4.

SS ARAWAPUTUNA CREEK



TAUWHARE PA
(includes Tauwhare Pa Scenic Reserve)

Area	Approx 21 ha
Altitude	0-40m
Grid reference	NZMS 260 W15 677499
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type	Physical character
Pohutukawa forest	Sedimentary coastal hinterland
Manuka-brush wattle scrub and shrubland	Sedimentary coastal hinterland
Blackberry/ <i>Carex</i> sp. (<i>C. geminata</i> agg.)	Freshwater wetland
shrub-sedgeland	}
Searush tussockland	}
	Saline wetland

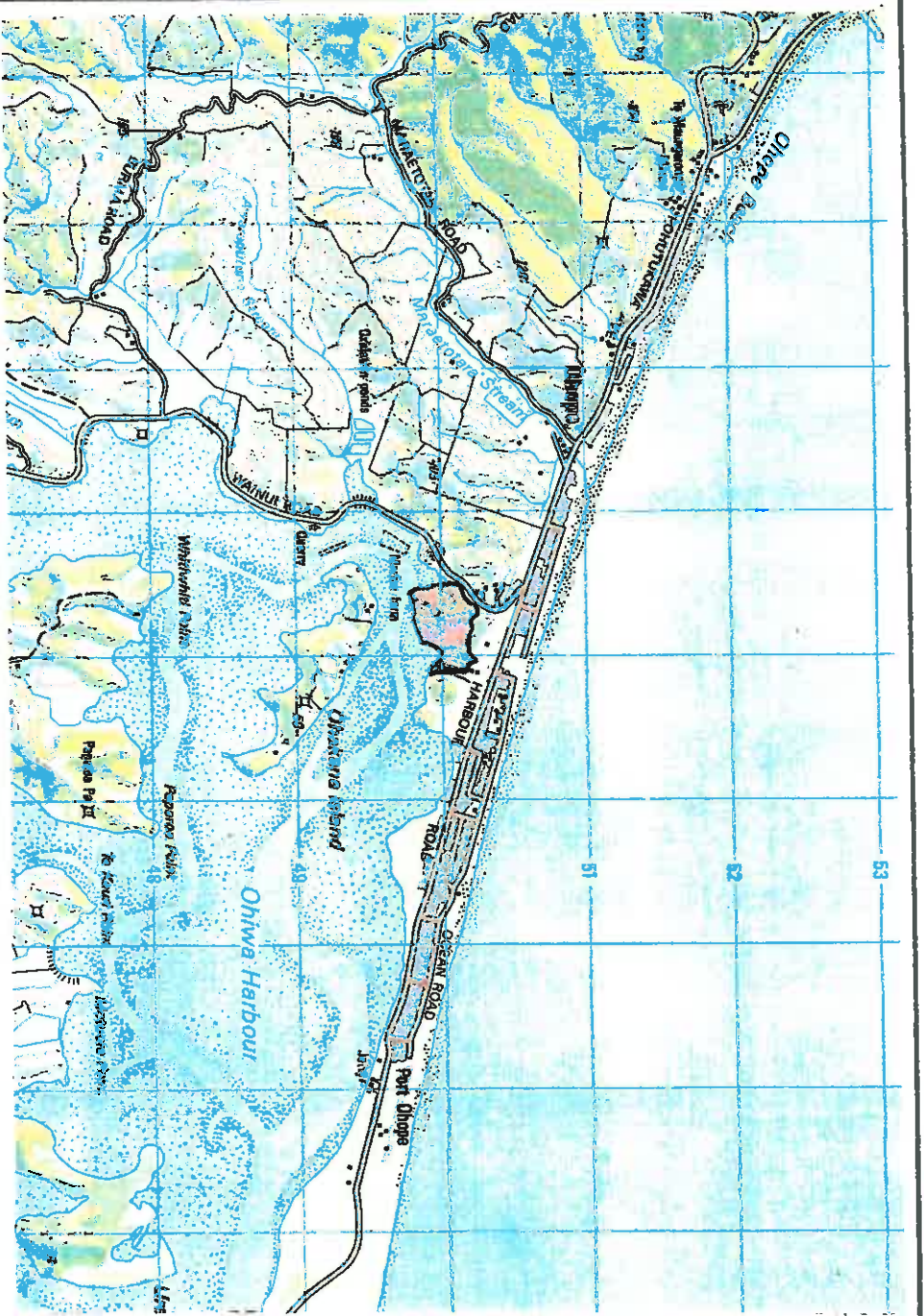
(Beadel 1988b, 1992c, 1993a)

Vegetation map: Beadel 1988b, 1992c & 1993a

Justification

A good example of pohutukawa forest adjacent to harbour margins. However there are other, better quality, representative examples of this vegetation type within the ecological district (e.g. category one areas in Beadel 1993a) and hence its ranking only as local. This site was identified as a category three area in Beadel 1993a; defined in Appendix 5.4.

SS TAUWHARE PA



HIWIRAU POHUTUKAWA

Area	Approx 3 ha
Altitude	0-15m
Grid reference	NZMS 260 W15 721450
Bioclimatic zone	Coastal
Ranking	District

Vegetation type**Physical character**

Pohutukawa forest

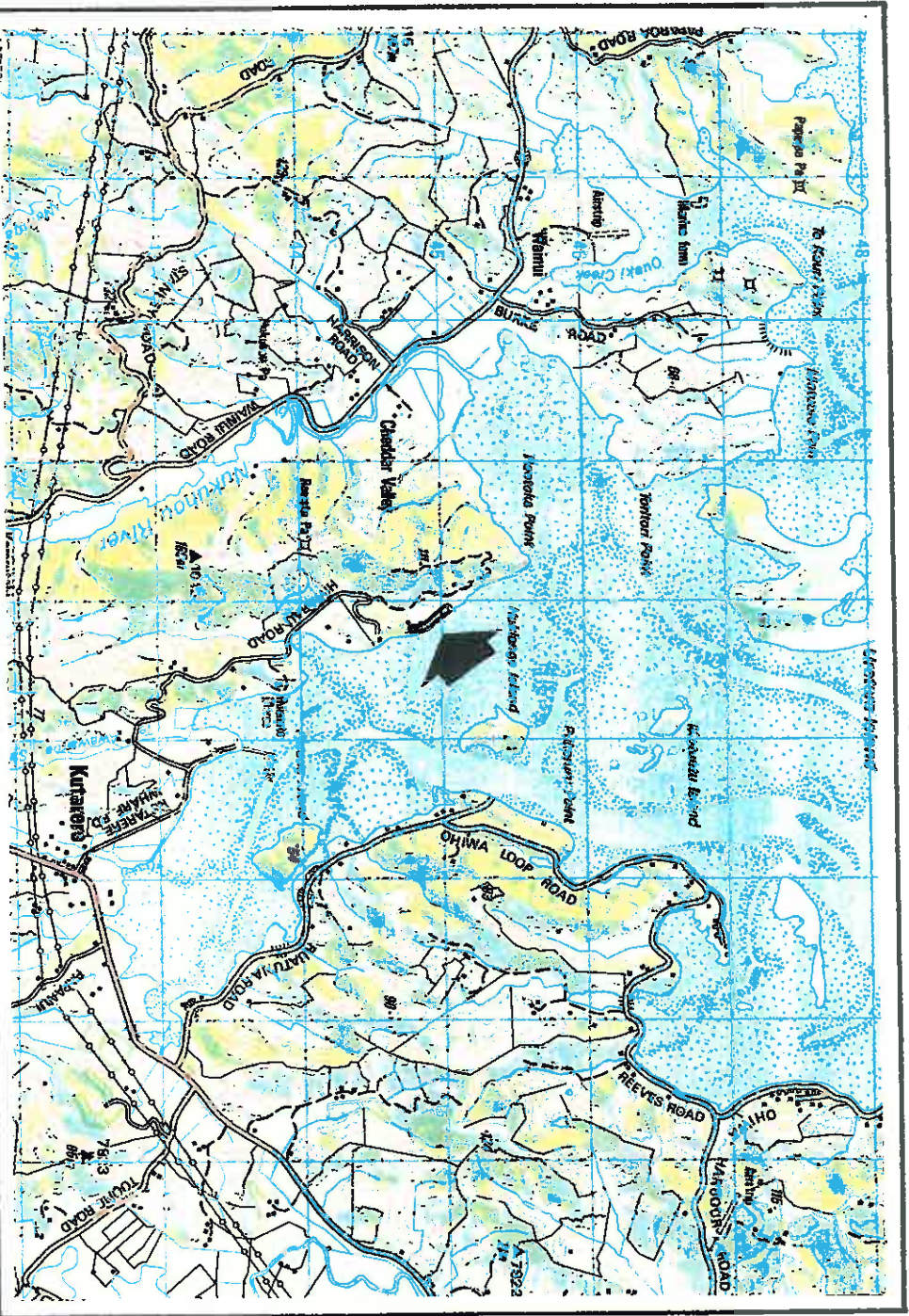
Sedimentary coastal hinterland

(Beadel 1993a)

Vegetation map: Beadel 1993a**Justification**

This site, although small, contains some of the largest (i.e. girth) pohutukawa observed during the recent survey of Ohiwa Harbour (Beadel 1993a). This site was identified as a category two area by Beadel 1993a; refer to Appendix 5.4. Several of these trees have fallen into the estuary and their trunks are buried in estuarine mud but they continue to survive. The understorey is generally in good condition.

SS HIWIRAU POHUTUKAWA



NUKUHOU

Area	Approx 18 ha
Altitude	0m
Grid reference	NZMS 260 W15 707463
Bioclimatic zone	Coastal
Ranking	Local

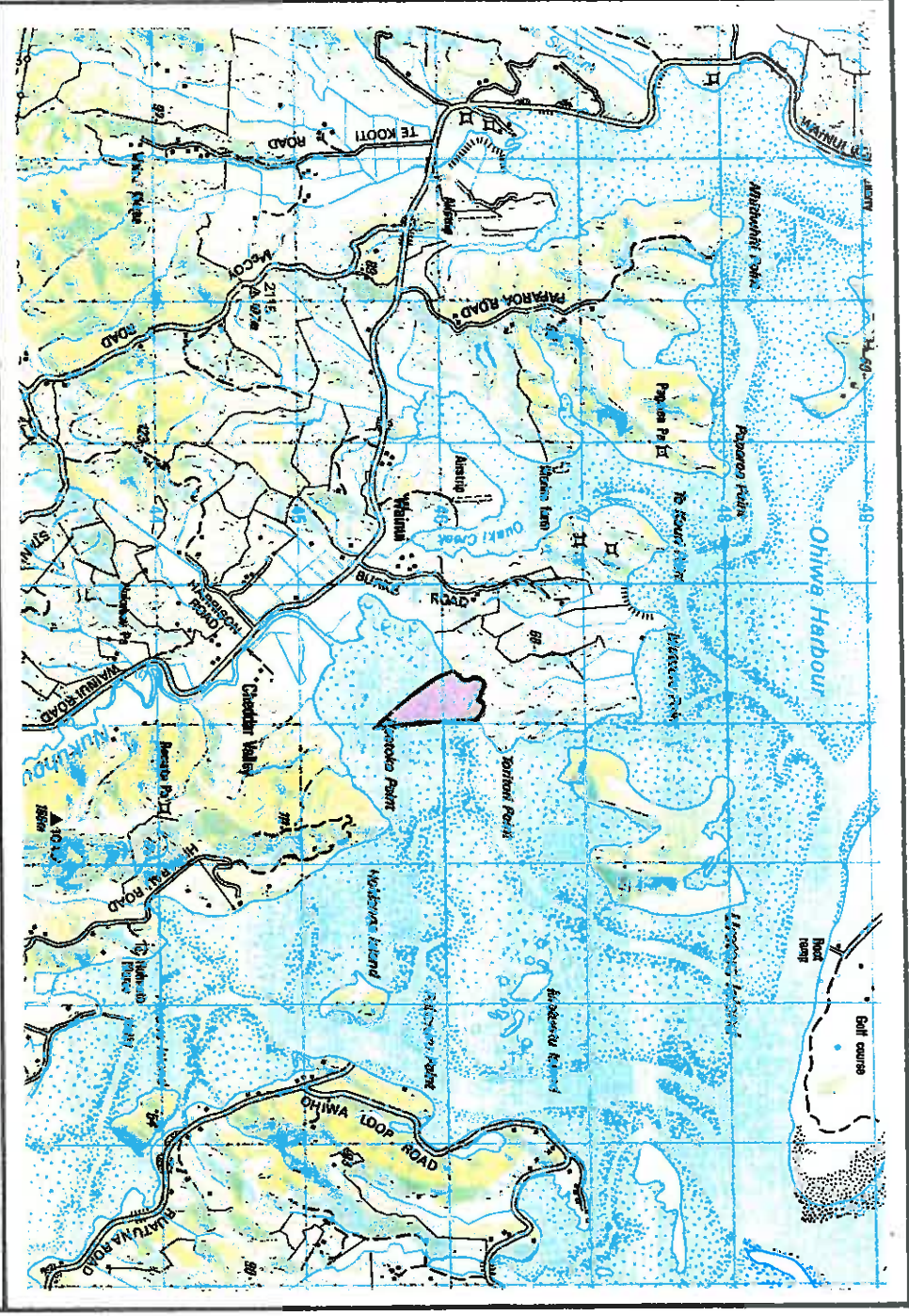
Vegetation type	Physical character
Grey willow forest	Freshwater wetland
Indigenous forest	Sedimentary coastal hinterland
Pohutukawa forest	Sedimentary coastal hinterland
Mangrove scrub	Saline wetland
Manuka shrubland	Saline wetland
Searush tussockland	Saline wetland
Oioi sedgeland	Saline wetland
Mangrove mudflat	Saline wetland
Estuary margin	Freshwater wetland and saline wetland

(Beadel 1993a)

Vegetation map: Beadel 1993a

Justification

A small inlet containing an area of mangroves and a small wetland. The manuka shrubland was unusual in that the understorey was dominated by dense oioi (differing from most other examples of manuka shrubland in the Chiwa Harbour). This site was identified as a category three area by Beadel 1993; defined in Appendix 5.4. It adjoins and complements SS Hiwiranu (which includes Nukuhou Conservation Area and the Hiwiranu Category One area; Beadel 1993a).



SS NUKUHOU

OHIWA (includes Ohiva Scenic Reserve)

Area	Approx 19 ha
Altitude	0-40m
Grid reference	NZMS 260 W15 742462
Bioclimatic zone	Coastal
Ranking	Local

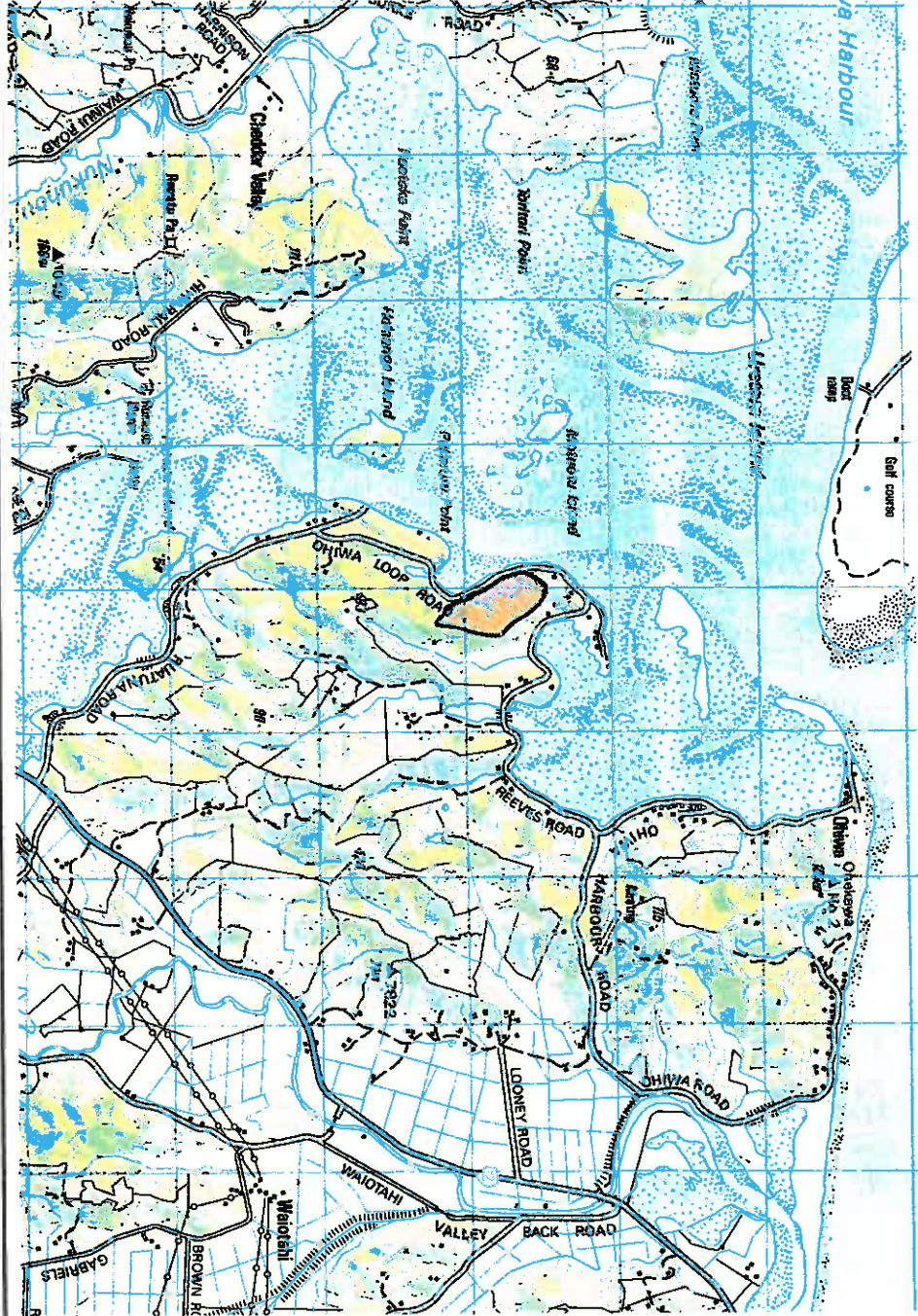
Vegetation type	Physical character
Pohutukawa forest	Sedimentary coastal hinterland
Pohutukawa/kanuka-mamaku forest	Sedimentary coastal hinterland
Rewarewa-black wattle-kamahai forest	Sedimentary coastal hinterland
Mamaku-silver fern treefernland	Sedimentary coastal hinterland
Mangrove/searush rush-shrubland	Saline wetland
Searush tussockland	Saline wetland
Oioi sedgeland	Saline wetland

(Clarkson and Regnier 1989; Beadel 1993a)

Vegetation map: Clarkson and Regnier 1989; Beadel 1993a

Justification

A good quality (although small) example of pohutukawa forest contiguous with saltmarsh. This site was identified as a category three area in Beadel 1993a; refer to Appendix 5.4.



SS OHIVA

PUKERURU

Area Approx 5 ha

Altitude 0m

Grid reference NZMS 260 W15 457739

Bioclimatic zone Coastal

Ranking Local

Vegetation type

Grey willow forest

Manuka scrub

Willow /manuka scrub

Searush tussockland

Oioi sedgeland

(Beadel 1993a)

Physical character

Freshwater wetland

Freshwater wetland

Freshwater wetland

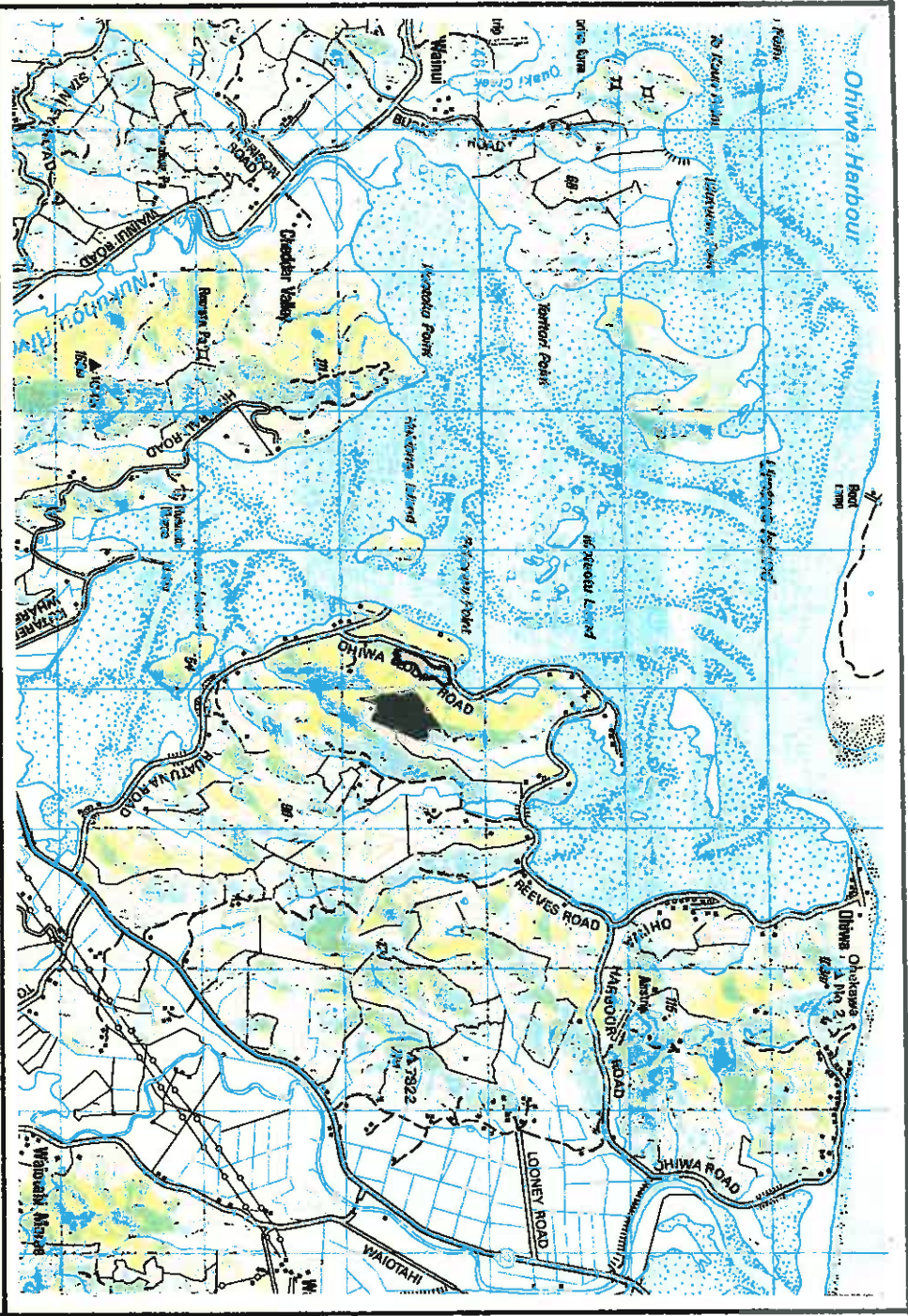
Saline wetland

Saline wetland

Vegetation map: Beadel 1993a

Justification

A small enclosed bay with saltmarsh and manuka scrub in relatively good condition. *Cortaderia toetoe* was recorded at this site . This site was identified as a category three area in Beadel 1993a; defined in Appendix 5.4.



SS PUKERURU

(PART) HOKIANGA ISLAND

Area	Approx 2 ha
Altitude	0m
Grid reference	NZMS 260 W15 728455
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type	Physical character
Mangrove scrub	Saline wetland
Mangrove/searush rush-shrubland	Saline wetland
Estuary margin	Saline wetland; Freshwater wetland; Dune and beach sands

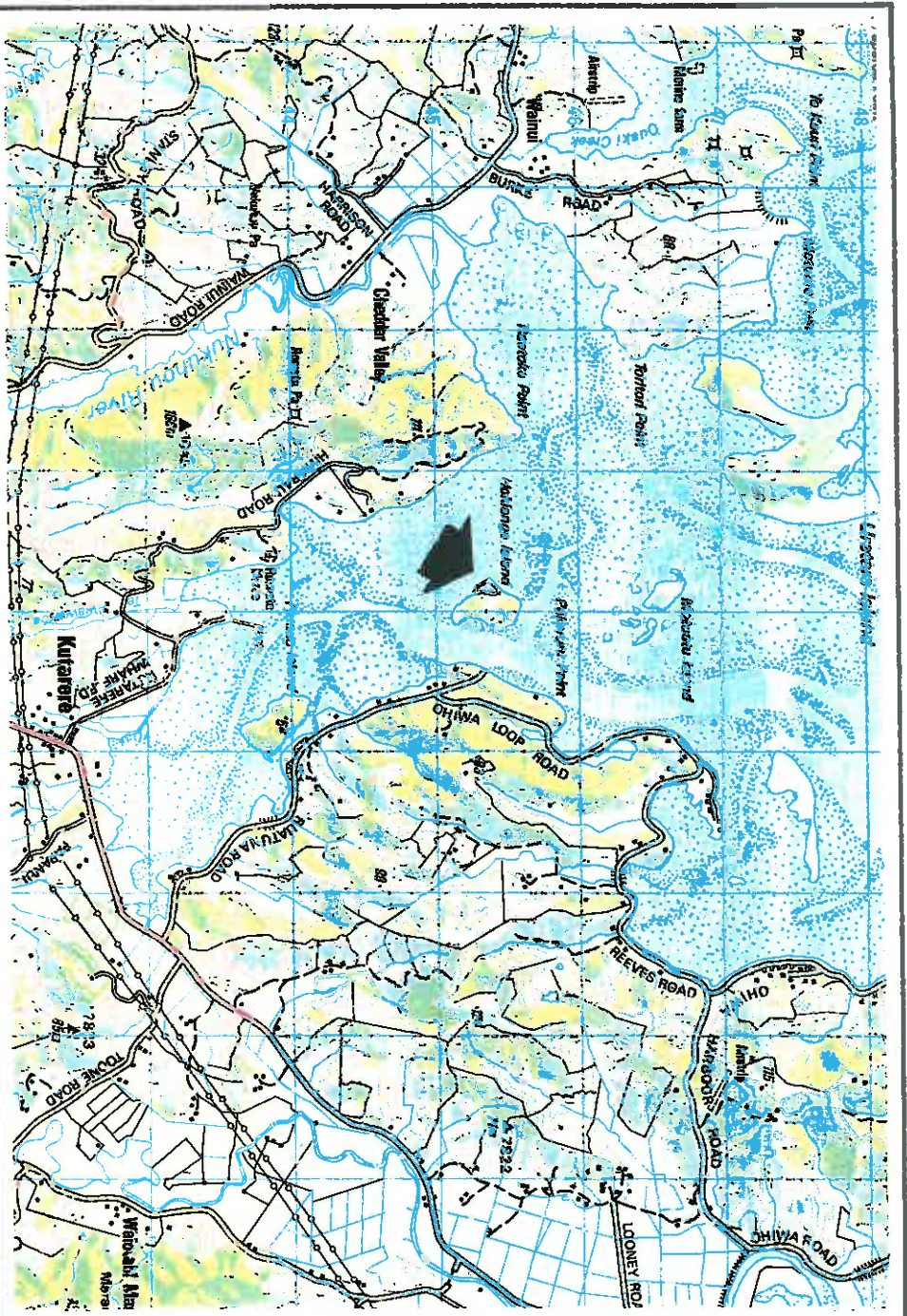
(Beadel 1993a)

Vegetation map: Beadel 1993a

Justification

This small site contains the best examples of wetland vegetation around a shell sand spit in Ohiwa Harbour. It was identified as a category three area by Beadel 1993a; defined in Appendix 5.4.

SS (PART) HOKIANGA ISLAND



RUATUNA

Area	Approx 13 ha
Altitude	0-80 m
Grid reference	NZMS 260 W15 751443
Bioclimatic zone	Coastal
Ranking	Local

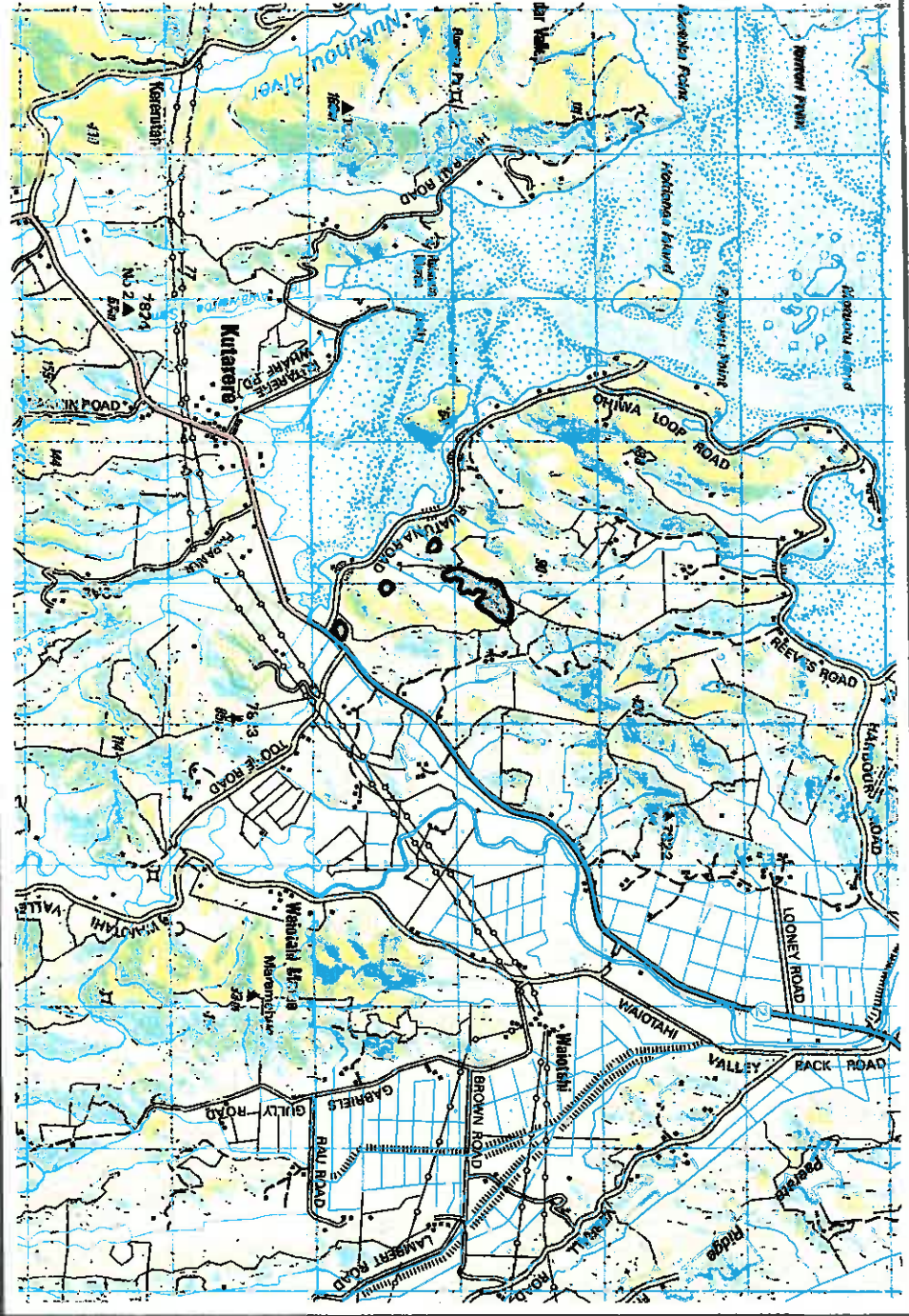
Vegetation type	Physical character
Black beech-pole kahikatea forest	Sedimentary coastal hinterland
Pole kahikatea forest	Sedimentary coastal hinterland
Pukatea-pole kahikatea forest	Sedimentary coastal hinterland
Pukatea-tawa-hard beech-puriri forest	Sedimentary coastal hinterland
Puriri-pukatea-tawa forest	Sedimentary coastal hinterland

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

Justification

These sites contain small remnants of lowland forest including several vegetation types under-represented within the Bay of Plenty coastal zone.

If these areas were fenced and stock excluded their values will improve.



SS RUATUNA

KUTARERE

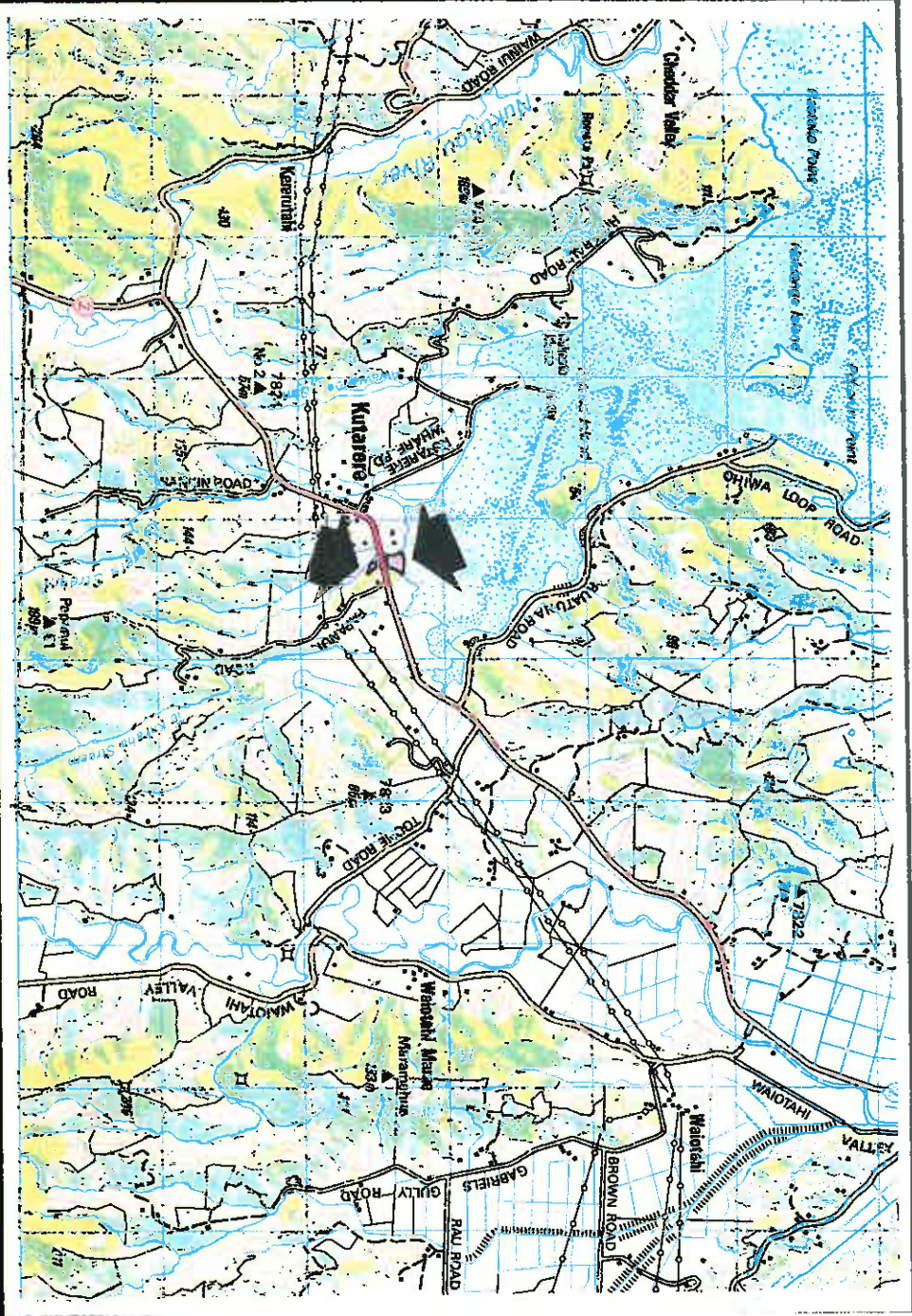
Area	Approx 3 ha
Altitude	0m
Grid reference	NZMS 260 W15 743426
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type	Physical character
Mangrove scrub	Saline wetland
Searush tussockland	Saline wetland
(Beadel 1993a)	
Vegetation map:	Beadel 1993a

Justification

This site contains the southern most mangrove population on the East Coast of the North Island (Crisp *et al.* 1990). Large representative examples of the Ohiwa Harbour mangrove populations occur in four Category One Areas - Uretara Island, Motuotu Island, Pataua Island and Hiwirau (see Beadel 1993a); all ranked as being of national significance.

This site was identified as a category three area in Beadel 1993a; defined in Appendix 5.4.



SS KUTARERE

3.2.3 OPOTIKI ECOLOGICAL DISTRICT

TE MATAU

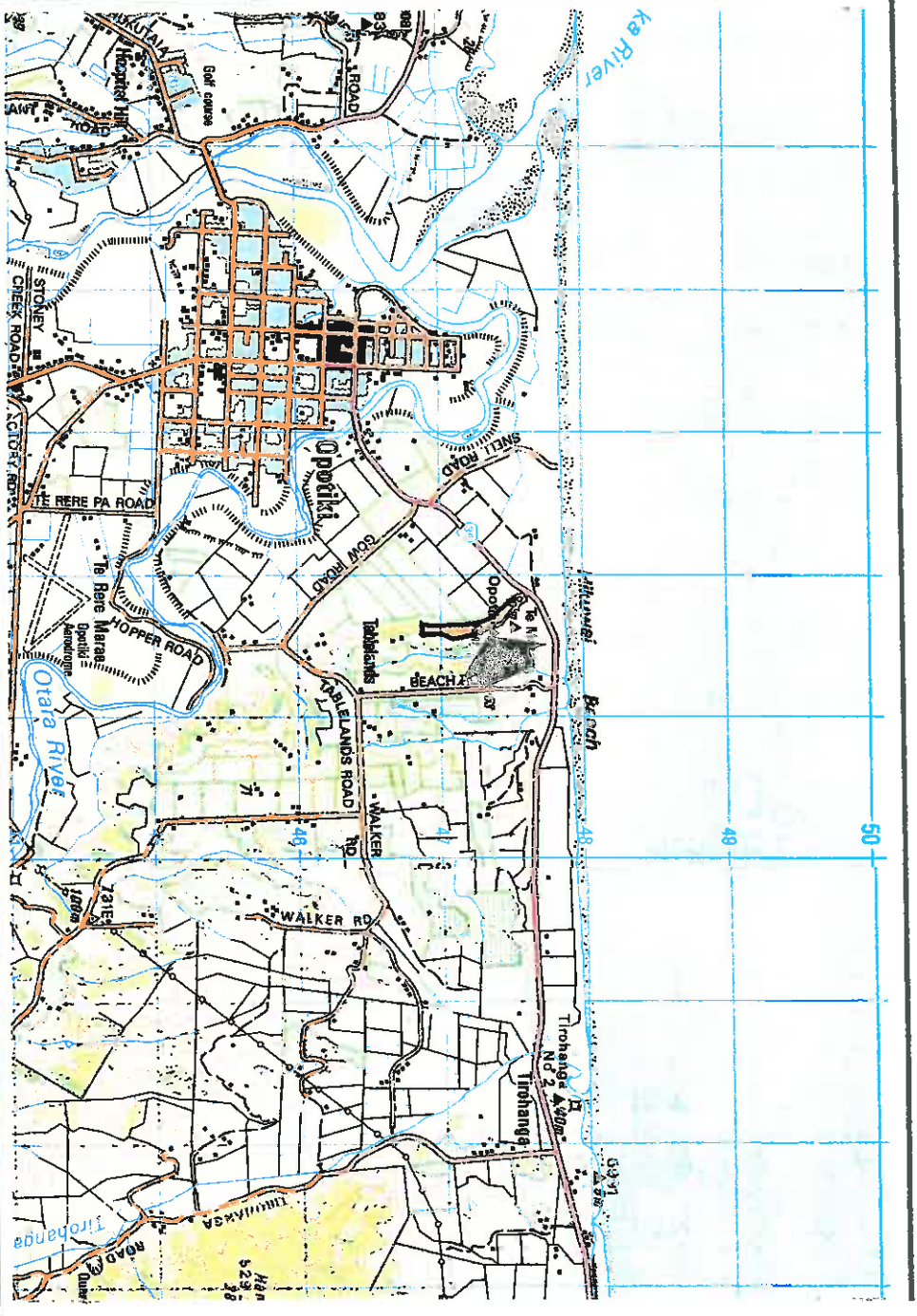
Area	Approx 8 ha
Altitude	10-40m
Grid reference	NZMS 260 W15 884475
Bioclimatic zone	Coastal
Ranking	District

Vegetation type	Physical character
Pohutukawa-puriri-karaka forest	Sedimentary coastal hinterland
(S. M. Beadel pers. obs. 1992)	

Justification

This is one of the few remaining examples of coastal forest in the Opotiki Ecological District. It is a narrow strip along a scarp.

SS TE MATAU



TIROHANGA PA (stewardship land)

Area	Approx 1 ha
Altitude	0-20m
Grid reference	NZMS 260 X15 917479
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type**Physical character**

Wharariki-New Zealand iceplant-pohuehue flaxland Sedimentary coastal hinterland
(Walls 1991)

Justification

This small site is the only example of this specific type of vegetation in the ecological district. Whilst the remainder of this pa site is regularly grazed, the area where the flaxland occurs is too steep to allow stock access.

This site was given a moderate conservation rank (two) in Walls 1991; defined in Appendix 5.4.

SS TIROHANGA PA



3.3 RAUKUMARA ECOLOGICAL REGION

3.3.1 MOTU ECOLOGICAL DISTRICT

HAPARAPARA RIVER

Area	Approx 7 ha
Altitude	0-20m
Grid reference	NZMS 260 X15 206685
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type

Physical character

Taraire-tawa forest

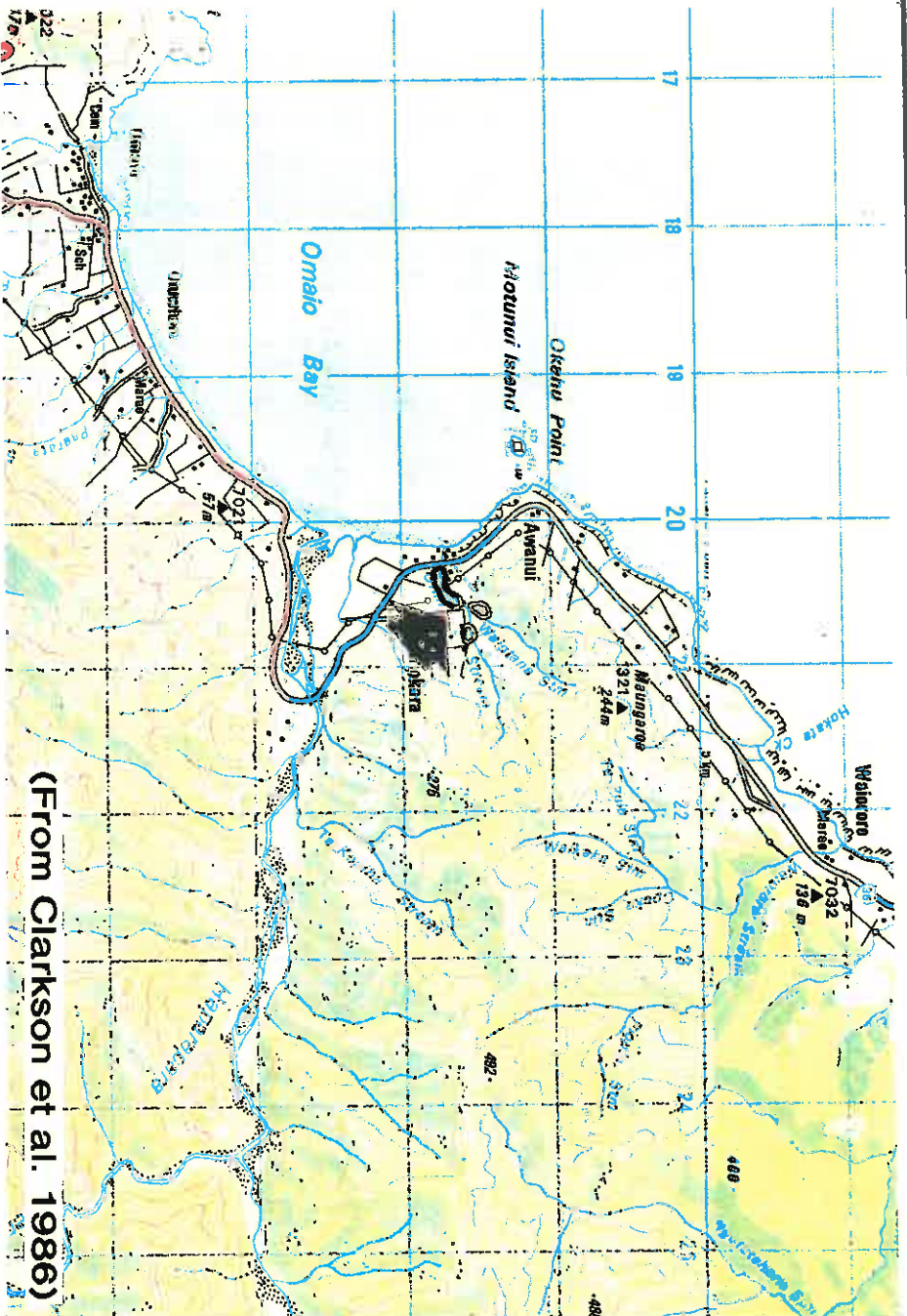
Exposed rocky coast and hinterland

(Clarkson *et al.* 1986)

Justification

This is the only example of taraire-dominant forest in the coastal zone of the Motu Ecological District. It is one of only three small remnants of this type (tawa) (Clarkson *et al.* 1986) in the Motu ecological district.

SS HAPARAPARA



(From Clarkson et al. 1986)



3.4 EAST CAPE ECOLOGICAL REGION

3.4.1 PUKEAMARU ECOLOGICAL DISTRICT

WHANGAPARAQA 2.

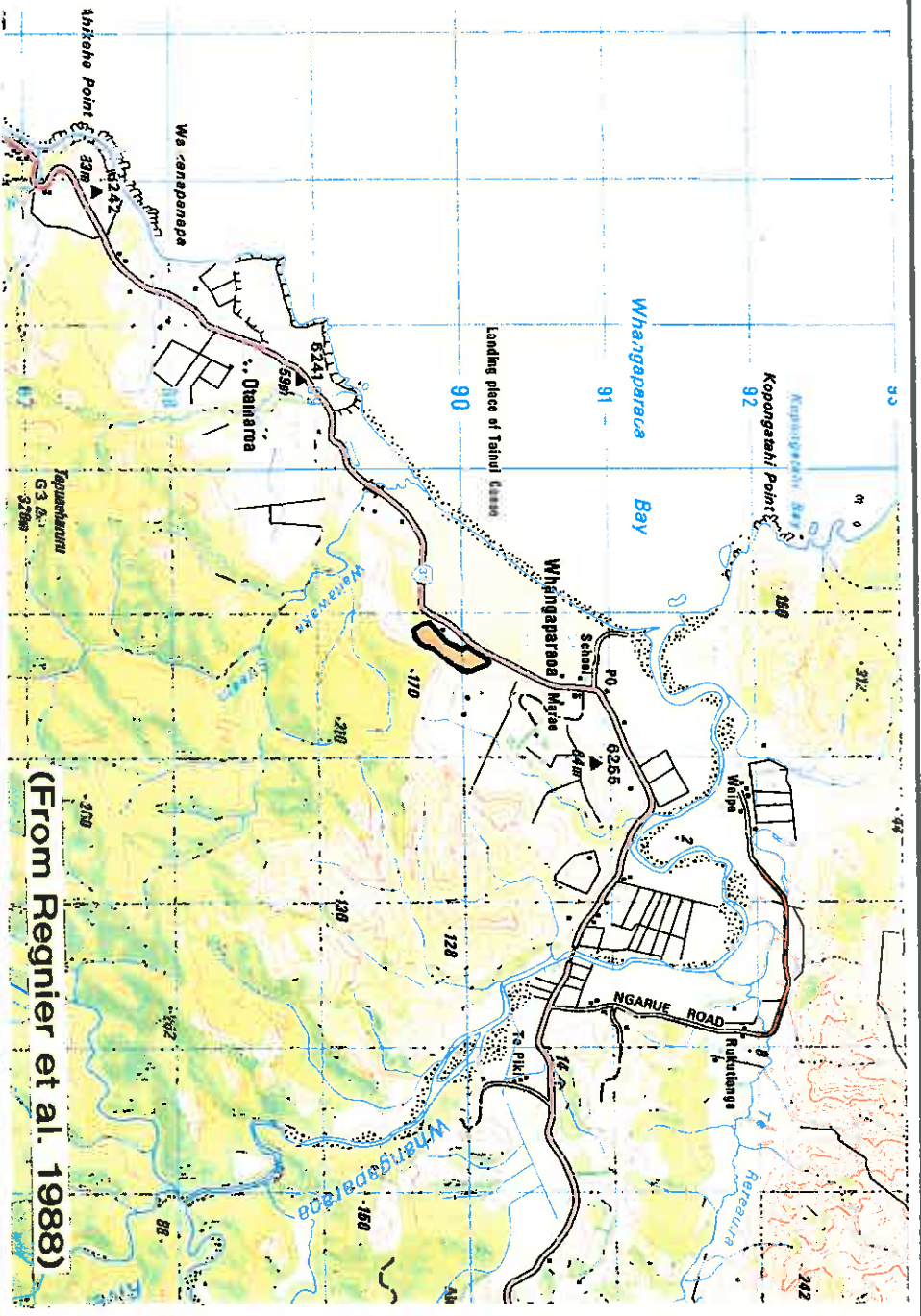
Area	Approx 9 ha
Altitude	0-60m
Grid reference	NZMS 260 Y14 513899
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type	Physical character
Kanuka-pohutukawa forest (Regnier <i>et al.</i> 1988)	Exposed rocky coast and hinterland

Justification

This small remnant is the only example of this forest type in the coastal zone of the Pukeamaru Ecological District. It is contiguous with the Whangaparaoa Category One Priority Area (Regnier *et al.* 1988).

SS WHANGAPARAOA 2



(From Regnier et al. 1988)



POTIKURA

Area	Approx 4 ha
Altitude	120-260m
Grid reference	NZMS 260 Y14 574935
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type**Physical character**

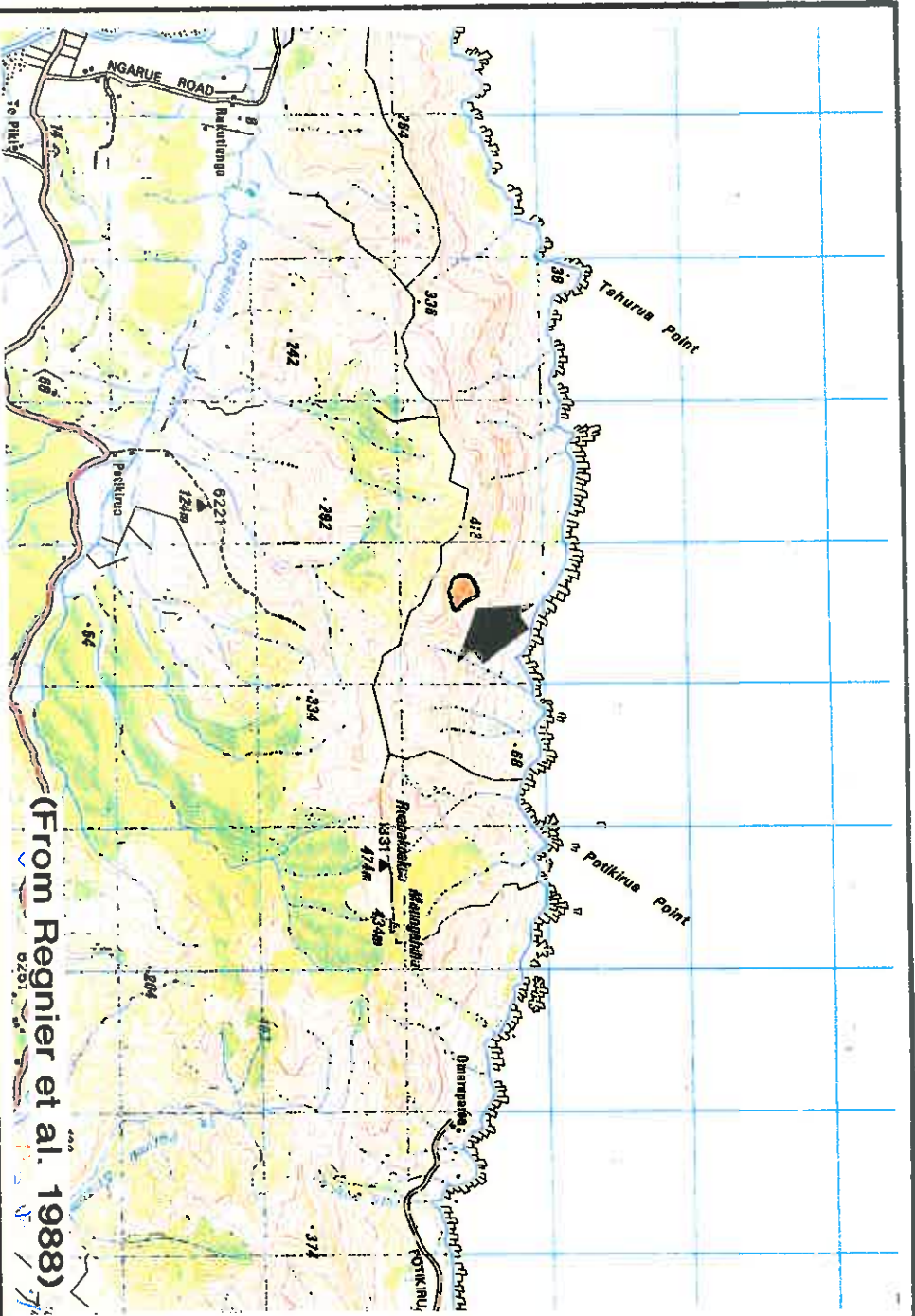
Tawa-kohekohe-pohutukawa-puriri forest

Volcanic hard coast

(Regnier *et al.* 1988)**Justification**

This small remnant is the only example of this forest type in the coastal zone of the Pukeamaru Ecological District (Regnier *et al.* 1988).

SS POTIKIRUA



(From Regnier et al. 1988)



MAUNGAHIHA

Area	Approx 28 ha
Altitude	80-434m
Grid reference	NZMS 260 Y14 595935
Bioclimatic zone	Coastal
Ranking	Local

Vegetation type

Tawa forest

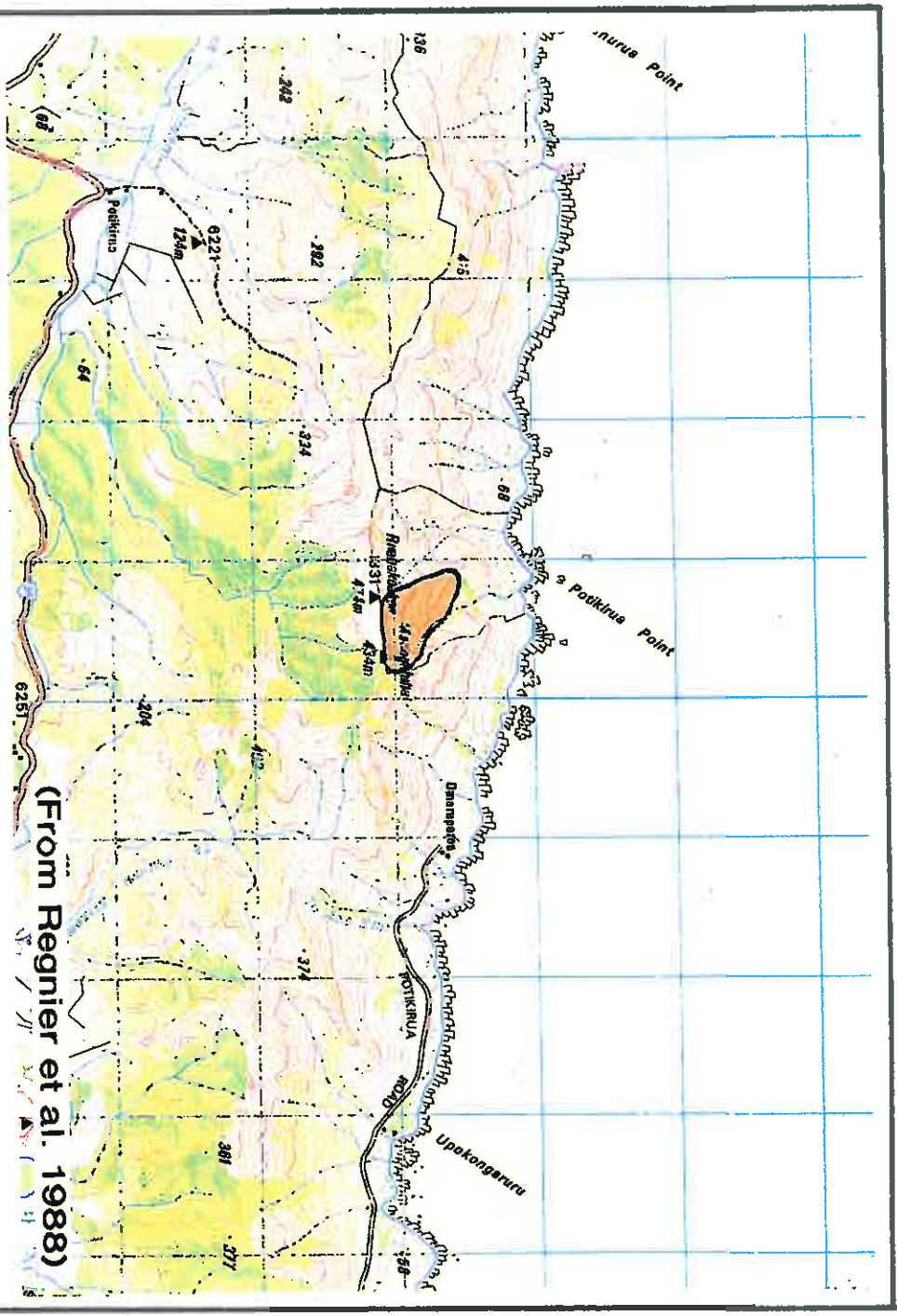
Physical character

Volcanic hard coast

(Regnier *et al.* 1988)**Justification**

This is the only example of this forest type in the coastal bioclimatic zone of the Pukeamaru Ecological District. However there are extensive areas of this type elsewhere in the district (Regnier *et al.* 1988).

SS MAUNGAHIHA



(From Regnier et al. 1988)



4 GLOSSARY

4.1 Common Plant Names used in the Text

African boxthorn	<i>Lycium ferocissimum</i>
akeake	<i>Dodonaea viscosa</i>
arrow grass	<i>Triglochin striata</i>
bachelor's button	<i>Cotula coronopifolia</i>
black beech	<i>Nothofagus solandri</i> var. <i>solandri</i>
blackberry	<i>Rubus</i> sp. (<i>R. fruticosus</i> agg)
bracken	<i>Pteridium esculentum</i>
brush wattle	<i>Racosperma mearnsii</i>
cabbage tree	<i>Coralyline australis</i>
catsear	<i>Hypochoeris radicata</i>
coast tea tree	<i>Leptospermum laevigatum</i>
cotoneaster	<i>Cotoneaster glaucophyllus</i> f. <i>serotina</i>
five finger	<i>Pseudopanax arboreus</i>
flax	<i>Phormium tenax</i>
giant spike sedge	<i>Eleocharis sphacelata</i>
gorse	<i>Ulex europaeus</i>
grey willow	<i>Salix cinerea</i>
hairy lotus	<i>Logus suaveolens</i>
hangehange	<i>Geniostoma ligustrifolium</i> var. <i>rupestre</i>
harakeke	<i>Phormium tenax</i>
hard beech	<i>Nothofagus truncata</i>
harestalk	<i>Lagarus ovatus</i>
houpara	<i>Pseudopanax lessonii</i>
hinau	<i>Eleoacarpus dentata</i>
kahikatea	<i>Dacrycarpus dacrydioides</i>
kamahi	<i>Weinmannia racemosa</i>
kanuka	<i>Kunzea ericoides</i> var. <i>ericoides</i>
karakara	<i>Corynocarpus laevigatus</i>
karamu	<i>Coprosma species</i>
karo	<i>Pittosporum crassifolium</i>
kauri	<i>Agathis australis</i>
kawakawa	<i>Macropiper excelsum</i> var. <i>excelsum</i>
kohekohe	<i>Dysoxylum spectabile</i>
kohuhu	<i>Pittosporum tenuifolium</i> subsp. <i>tenuifolium</i>
koromiko	<i>Hebe stricta</i> var. <i>stricta</i>
kowhai ngutukaka	<i>Cianthus puniceus</i>
lupin	<i>Lupinus arboreus</i>
maowhai	<i>Sicyos australis</i>
mahoe	<i>Melicytus ramiflorus</i> subsp. <i>ramiflorus</i>
mamaku	<i>Cyathea medullaris</i>
mangeao	<i>Lisea calicaris</i>
mangrove	<i>Avicennia marina</i> var. <i>resinifera</i>
manuka	<i>Leptospermum scoparium</i>
marram	<i>Ammophila arenaria</i>
marsh ribbonwood	<i>Plagiantus divaricatus</i>
meadow rice grass	<i>Microlaena stipoides</i>

mingimingi	<i>Leucopogon fasciculatus</i>
New Zealand ice plant	<i>Disphyma australe</i>
ngaio	<i>Myoporum laetum</i>
oioi	<i>Leptocarpus similis</i>
pampas	<i>Cortaderia seloana</i>
para	<i>Pisonia brunoniana</i>
pigeonwood	<i>Hedycarya arborea</i>
pingao	<i>Desmoschoenus spiralis</i>
pohutukawa	<i>Metrosideros excelsa</i>
prickly mingimingi	<i>Cyathodes juniperina</i>
privet	<i>Ligustrum sinense</i>
pukatea	<i>Laurelia novae-zelandiae</i>
puiri	<i>Vitex lucens</i>
rangiora	<i>Brachyglottis repanda</i>
raupo	<i>Typha orientalis</i>
reed sweet grass	<i>Glyceria maxima</i>
rewarewa	<i>Knightia excelsa</i>
ring fern	<i>Paesia scaberula</i>
sea couch	<i>Elytriga pungens</i>
searush	<i>Juncus maritimus</i> var. <i>australiensis</i>
sphagnum	<i>Splagnum cristatum</i>
spike sedge	<i>Eleocharis acuta</i>
spinifex	<i>Spinifex sericeus</i>
supplejack	<i>Ripogonum scandens</i>
swamp kiokio	<i>Blechnum minus</i>
swamp maire	<i>Eugenia maire</i>
swamp millet	<i>Isachne globosa</i>
tanekaha	<i>Phyllocladus trichomanoides</i>
taraire	<i>Betischniedia tarairi</i>
tauhinu	<i>Betischniedia taraii</i>
taupata	<i>Cassinia leptophylla</i>
tawa	<i>Coprosma repens</i>
tawapou	<i>Betischniedia tawa</i>
toetoe	<i>Planchonella costata</i>
totara	<i>Cortaderia fulvida</i> , <i>C. toetoe</i> and <i>C. fulvida</i> x <i>C. toetoe</i>
tutu	<i>Podocarpus totara</i>
wharariki	<i>Coriaria arborea</i>
willow	<i>Phormium cookianum</i>
woolly nightshade	<i>Salix</i> sp.
	<i>Solanum mauritianum</i>

4.2 VEGETATION CLASSES

(Source: Atkinson, 1985)

Grassland Vegetation in which the cover of grass in the canopy is 20-100% and in which the grass cover exceeds that of any other growth form or bare ground. Tussock-grasses are excluded from the grass growth-form.

Fernland Vegetation in which the cover of ferns in the canopy is 20-100% and in which the fern cover exceeds that of any other growth form or bare ground. Tree ferns >10 cm dbh are excluded as trees (cf. forest).

Forest Woody vegetation in which the cover of trees and shrubs in the canopy is >80% and in which tree cover exceeds that of shrubs. Trees are woody plants >10 cm dbh. Tree ferns >10 cm dbh are treated as trees.

Herbfield Vegetation in which the cover of herbs in the canopy is 20-100% and in which the herb cover exceeds that of any other growth form or bare ground. Herbs include all herbaceous and low-growing semi-woody plants that are not separated as ferns, tussocks, grasses, sedges, rushes, reeds, cushion plants, mosses or lichens.

Reedland Vegetation in which the cover of reeds in the canopy is 20-100% and in which the reed cover exceeds that of any other growth form or open water. Reeds are herbaceous plants growing in standing or slowly-running water that have tall, slender, erect, unbranched leaves or culms that are either hollow or have a very spongy pith. Examples include *Typha*, *Bolboschoenus*, *Schoenoplectus validus*, *Eleocharis spiculata*, and *Baumea articulata*.

Rushland Vegetation in which the cover of rushes in the canopy is 20-100% and in which the rush cover exceeds that of any other growth form or bare ground. Included in the rush growth form are some species of Juncus and all species of *Sporadanthus*, *Leptocarpus*, and *Empodisma*. Tussock-rushes are excluded.

Scrub Woody vegetation in which the cover of shrubs and trees in the canopy is >80% and in which shrub cover exceeds that of trees (cf forest). Shrubs are woody plants <10cm dbh.

Sedgeland Vegetation in which the cover of grass in the canopy is 20-100% and in which the grass cover exceeds that of any other growth form or bare ground. Tussock-grasses are excluded from the grass growth form.

Shrubland Vegetation in which the cover of shrubs in the canopy is 20-80% and in which the shrub cover exceeds that of any other growth form or bare ground. It is sometimes useful to separate tussock-shrublands as a subclass for areas where tussocks are >20% but less than shrubs. (Note: the term scrubland is not used in this classification.)

Treeland

Vegetation in which the cover of trees in the canopy is 20-80%, with tree cover exceeding that of any other growth form, and in which the trees form a discontinuous upper canopy above either a lower canopy of predominantly non-woody vegetation or bare ground, e.g. mahoe/bracken treeland.

(Note: vegetation consisting of trees above shrubs is classified as either forest or scrub, depending on the proportion of trees and shrubs in the canopy.)

Tussockland (including flaxland)

Vegetation in which the cover of tussocks in the canopy is 20-100% and in which the tussock cover exceeds that of any other growth form or bare ground. Tussocks include all grasses, sedges, rushes, and other herbaceous plants with linear leaves (or linear non-woody stems) that are densely clumped and > 10 cm height. Examples of the growth form occur in all species of *Cortaderia*, *Gahnia* and *Phormium*, and in some species of *Chinochloa*, *Poa*, *Festuca*, *Rytidosperma*, *Cyperus*, *Carex*, *Uncinia*, *Juncus*, *Astelia*, *Aciphylla* and *Celmisia*. It is sometimes useful to separate flaxland as a subclass for areas where species of *Phormium* are dominant.

Vineland

Vegetation in which the cover of unsupported (or artificially supported) woody vines in the canopy is 20-100% and in which the cover of these vines exceeds that of any other growth form or bare ground. Vegetation containing woody vines that are supported by trees or shrubs is classified as forest, scrub or shrubland. Examples of woody vines occur in the genera *Actinidia*, *Clematis*, *Lonicera*, *Metrosideros*, *Muehlenbeckia*, *Ripogonum*, *Vitis* and others.

4.3 SYMBOLS AND ABBREVIATIONS

approx.	approximately
CA	Conservation Area
DOC	Department of Conservation
ha	hectare
info	information
MBR	Maori Burial Reserve
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
ML	Maori land
NR	Nature Reserve
pers. comm.	personal communication
PL	Private land
RR	Recreation Reserve
SR	Scenic Reserve
SS	Significant site
SrR	Scientific Reserve
WMR	Wildlife Management Reserve
WR	Wildlife Refuge

/ Separates various tiers of the vegetation in the type descriptions

- Links plants in the same tier

() Less than 5% cover of the bracketed species

~ Mosaic

4.4 DEFINITIONS

4.4.1 Priority natural areas; Motu ecological district

"Priority natural areas were selected. The aim was to achieve, where possible, large viable corridors from sea coast to mountain top, with a complete altitudinal sequence of ecological super-units and incorporating as many special features (Table 2) as possible.

Only three localities exist where it is still possible to achieve such large representative reserves: Whanarua-Kereu, Motu and Torere.

Ecological super-units which were under-represented or unrepresented in these corridors, because they are generally outliers surrounded by high modified vegetation or developed land (e.g. kahikatea-pukatea forest), were then considered. The best three examples (if three existed) of each, based on size and condition, were selected as outlier Priority Natural Areas."

(Clarkson *et al.* 1986)

4.4.2 Priority natural areas; Pukeamaru ecological district

"Priority natural areas were chosen firstly to include the best examples of representative ecological units (i.e. those not represented or inadequately represented in Pukeamaru Scenic Reserve). An important criterion was to include as wide a range as possible of representative ecological units in a single large area. Where possible, ecological gradients (altitudinal, drainage etc) were included. Examples of ecological units that were not originally common but are significant features of the landscape, e.g. wetlands, dunes and estuaries; and outstanding features, e.g. endangered species, unique or uncommon vegetation communities and unique landform types were also selected as priority.

Following the land systems approach some priority natural areas have been selected because they contain ecological units that are the best or the only remaining examples on the unique set of geology, topography and soils of the land system.

Representative ecological units that are not the best examples, and non-representative ecological units have been also included in some priority natural areas to provide natural boundaries, adequate size and compact shape, complying with reserve design principles (Diamond, 1975)".

(Regnier *et al.* 1988)

4.4.3 Conservation ranks; Opoitiki ecological district

"1 = outstanding conservation value : containing natural features of national significance, or outstanding within ecological district.

2 = high conservation value : natural features significant within ecological district,

3 = moderate conservation value : much modified; major value lies in restoration potential.

4 = low conservation value : highly modified; lowest priority for conservation management. This ranking applies to the portions of coast not mapped in this survey.

Obvious archaeological features and known historical values have been interwoven into the fabric of the features of landform, vegetation and fauna in arriving at these rankings".

(Walls 1991).

4.4.4 Category one and two areas; Tauranga harbour

"Representative examples of vegetation sequences and mosaics were selected using the criteria proposed by Myers *et al.* (1987):

representativeness - the primary criterion
diversity and pattern
rarity and special features
naturalness
long term viability
size and shape
buffering and surrounding landscape

The aim was to identify, where possible, relatively large representative sequences of estuarine and contiguous freshwater wetland vegetation or other primarily indigenous vegetation. The best examples of these were classed as category one areas (C1A). Vegetation types which were under-represented or unrepresented in the larger representative areas were also considered. The best examples of these were also classed as C1A. A second category (category two areas of C2A) was used to denote areas which are relatively large and of good quality, but which contain vegetation which is represented to a large extent in C1A".

(Beadel 1992a)

4.4.5 Category one, two and three areas; Ohewa harbour

"The aim of this exercise was to identify representative examples of the vegetation within and adjacent to the harbour. In making these assessment the criteria proposed by Myers *et al.* (1987) were used:

representativeness - primary criterion
diversity and pattern
rarity and special features

naturalness
 long term viability
 size and shape
 buffering and surrounding landscape

The relatively large areas of indigenous vegetation remaining in the study area were identified. Five relatively large representative sequences of indigenous estuarine and contiguous freshwater wetlands and/or terrestrial vegetation in relatively good condition were selected.

These five sites together contain representative examples of the major vegetation types and habitats of the harbour. These were classed as Category One areas (C1A). In addition, one small site containing a taxon classed as vulnerable was also identified as a C1A.

A second category (Category Two areas or C2A) was used to denote:

- (a) relatively small sites with significant vegetation types which were under-represented or unrepresented in the larger representative areas; and/or
- (b) sites containing vegetation types which would once have been more common in the ecological district and are unrepresented in C1As but which are not of high quality (e.g. where adventive species are common).

The best examples of these were classed as Category two areas.

A third category (Category Three areas or C3A) identifies sites which are:

- (a) small areas of relatively good quality, but which contain vegetation which is already represented in a C1A; and/or
- (b) small sites containing significant features.

The best or one of the examples of every predominantly indigenous vegetation type and habitat has been included in a C1A, C2A or C3A.

Representative vegetation types that are not the best examples as well as non-representative vegetation types have been also been included in some C1A, C2A and C3A to provide natural boundaries, adequate size and compact shape, following sound reserve design principles (O'Connor *et al.* 1990; Myers *et al.* 1987; Diamond 1975)".

Beadel 1993a.

5 CRITERIA USED FOR RANKING VEGETATION FOR BOTANICAL CONSERVATION VALUE (Source: Shaw In Press)

"An important factor considered when assigning rankings was the botanical conservation values of the adjoining vegetation (i.e. whilst a particular vegetation type may cover only a small area it may be contiguous with other vegetation types which, when combined, are of significant botanical conservation value).

Exceptional

- (a) High quality¹ examples of nationally rare vegetation types, e.g.
- wetlands
 - indigenous sand dune communities
 - lowland conifer-dominant forest
 - mainland pohutukawa forest
 - pohutukawa-hard beech forest
- (b) Vegetation communities of conservation value, e.g.
- Offshore island or sizeable "mainland islands" with high quality indigenous vegetation unaffected or largely unaffected by browsing animals.
 - Nationally rare successional vegetation sequences or mosaics, where this can be assessed.
 - Containing no introduced plants, where this is an exceptional situation for the vegetation type concerned.
- (c) Sites where a vegetation type or more than one species attain a distributional limit.
- (d) Sites where a threatened taxon occurs which is endemic to the relevant ecological district or ecological region, or 2-3 ecological districts within adjacent ecological regions.
- (e) Sites where 'endangered' taxa occur; i.e. taxa threatened with extinction in the wild (Given, 1981).
- (f) Sites where 'vulnerable' taxa occur; i.e. taxa believed to be in danger of moving into the 'endangered' category if the factors causing depletion continue to operate (plants in this category are usually diminishing in abundance or geographic range) (Given, 1981).

¹ Dominated by indigenous vegetation types/species and containing few or no exotic taxa.

- (g) Sites where a vegetation type (cf. Atkinson, 1985) occurs which is endemic to a particular ecological district or region.
- (h) Large² areas which are entirely or to a significant degree representative of the natural character of an ecological district, cf. Ecological Areas. See Methodology section above, and Appendix 2 for Ecological Area selection criteria.

Very High

- (a) The last or one of a few³ remaining examples of a vegetation type which was once widespread in an ecological district. The example(s) must still largely exhibit its/their natural character.
 - (b) Containing regionally rare vegetation types that form part of a larger tract of vegetation: e.g. subalpine and alpine areas surrounded by a large area of subalpine and montane indigenous forest.
 - (c) An example of the vegetation of an Ecological District that forms a continuous ecological or altitudinal sequence across a large part of an ecological district.
 - (d) The only or one of a few remaining examples of a secondary succession that has developed following disturbance to the vegetation by human activities in pre-European or early European times.
 - (e) Good quality example(s) or the only example(s) of a secondary succession that has developed following disturbance e.g. mass movement, storm damage, fire.
 - (f) Nationally rare ecosystems or vegetation types which have been degraded in value, e.g. relatively large wetlands of natural origins containing conspicuous adventive plants; rare subalpine or alpine vegetation types surrounded by developed farmland; a rare shrubland type containing pines. Relative size and quality will need to be assessed within the context of the relevant ecological district.
 - (g) Sizeable (>100 ha) examples of secondary vegetation where there is a relatively little (e.g. <5%) indigenous vegetation cover remaining in an ecological district.
- Areas of an early secondary vegetation succession developing after major or repeated disturbances by humans where the present vegetation type (e.g. bracken fernland, manuka scrub) is vastly different from the vegetation type which would or could develop on the site over a very

²Preferably larger than 1,000 hectares, but 300-500 hectares in districts where no large areas remain.

³Up to 3-4

long period of time (e.g. tall forest) and where there are either very few or only very small remaining other examples of the natural vegetation of the ecological district; i.e. this secondary type is now representative of the natural character of the ecological district.

- (h) Sites where individual taxa attain limits of national distribution (north, south, east or west).

High

- (a) Good quality moderately large (>300 - 1000 ha) examples of the indigenous vegetation typical of an ecological district where there are other better quality large (i.e. > 1000 ha) examples present.
- (b) The last or one of a few remaining areas of a vegetation type within an ecological district in a modified condition but retaining the main elements of composition and structure.
- (c) An example of the indigenous of an ecological district that now forms part of a culturally interrupted ecological and/or altitudinal sequence across an ecological district; e.g. from the coast to inland ranges.
- (d) Regionally rare vegetation types (intact or relatively unmodified) completely or largely surrounded by an essentially completely modified landscape, e.g. small urban reserves.
- (e) Areas of unmodified or secondary vegetation which provide a buffer around areas or sites of 'exceptional' ranking. This could include exotic vegetation in some cases.
- (f) Areas which conform to Very High (e) above but which contain a conspicuous element of exotic plant species which will eventually be replaced by indigenous species. Natural replacement may involve a very long period of time.
- (g) Sites where 'rare' taxa or two or more 'local' taxa occur. Refer to Given (1981) for definitions of 'rare' and 'local'.
- (h) Sites where taxa or vegetation types are part of or are very close to a local limit of distribution, e.g. the inland limit of pohutukawa.

Moderate

- (a) Vegetation types or ecosystems which are substantially modified but still retain the main elements of their composition and structure, and where there are better examples elsewhere in the ecological district. Could include forest that has been selectively logged, cutover or light burnt.

- (b) Small examples of indigenous vegetation where there are larger or better examples of a similar type(s) elsewhere in the ecological district, e.g. small remnants of tawa or kanuka forest.
- (c) Parts of much larger areas as buffers around sites of high or very high rank,

Low/Potential

- (a) Mosaic(s) of indigenous and exotic vegetation where the areas of indigenous vegetation are very small and of no particular significance or interest.
- (b) Examples of an early secondary succession developing after major or repeated recent disturbance by humans where the present vegetation type (e.g. bracken fernland) is vastly different from the vegetation type which would or could develop on the site over a very long period of time (e.g. tall forest) and where there are other better quality representative examples of the vegetation in the ecological district.
- (c) Examples of an early secondary succession where the vegetation is dominated by naturally established exotic plant species, e.g. abundant pines or *Hakea* amongst low indigenous shrubland, and where better examples exist in the ecological district.
- (d) Sites that although containing indigenous vegetation are essentially human-made and are of recent origin. e.g. wetlands that were created for farm ponds".

6 RARE AND THREATENED PLANTS CLASSIFICATION (Source: Given 1981)

Extinct (Ex)

The species is believed to no longer occur naturally in the wild, although it may be growing in cultivation.

Endangered (E)

In danger of becoming extinct. Survival in the wild is unlikely if factors causing endangerment continue to operate. In New Zealand we include those plants whose survival depends on continuous management such as weeding, dispersal of seed or manipulation of the habitat.

Vulnerable (V)

Believed to be in danger of moving into the endangered category in the near future if the factors causing depletion continue to operate. Usually plants in this category are obviously diminishing in abundance or geographic range.

Rare (R)

Only small populations are known or the species is found only in restricted areas where it may be locally common. For the most part, however, the numbers of plants and localities where it is found are reasonably stable.

Indeterminate (I)

This category is used for taxa thought to be extinct, endangered, vulnerable or rare, but for which there is insufficient information to be certain.

Local (L)

Not particularly at risk but having a local distribution which suggests that, in time, the species could move into one of the above categories. These are plants which demand some sort of periodic monitoring.